

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5**

IN THE MATTER OF:

DynaChem, Inc.
Westville, Illinois
Proceedings Pursuant to
Section 113(a)(3) of the
Clean Air Act, 42 U.S.C.
§ 7413(a)(3)

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FINDING OF VIOLATION

EPA-5-24-IL-16

FINDING OF VIOLATION

The U.S. Environmental Protection Agency (EPA) is issuing this Finding of Violation under Section 113(a)(3) of the Clean Air Act, 42 U.S.C. § 7413(a)(3). EPA finds that DynaChem, Inc. (DynaChem) is violating the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing at 40 C.F.R. § 63.2430, Subpart FFFF, the Hazardous Organic NESHAP (HON) at 40 C.F.R. §§ 63.100-63.184, Subparts F, G., and H, and its Title V Permit (No. 96030129) as follows:

Statutory and Regulatory Background

1. Section 112 of the Clean Air Act (CAA), 42 U.S.C. § 7412, requires EPA to promulgate a list of all categories and subcategories of new and existing “major sources” and “area sources” of hazardous air pollutants (HAPs) and establish emissions standards for the categories and subcategories. These emission standards are known as the NESHAP. EPA codified these standards at 40 C.F.R. Parts 61 and 63.
2. A “Major Source” of HAP is defined as any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAP, unless the Administrator establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence. 42 U.S.C. § 7412(a)(1) and 40 C.F.R. § 63.2.
3. “Area Source” means any stationary source of hazardous air pollutants that is not a major source. See 40 U.S.C. § 7412(a)(6).
4. “Stationary source” is defined as “any building, structure, facility, or installation, which emits or may emit any air pollutant.” 42 U.S.C. § 7411(a)(3) and 40 C.F.R. § 63.2.
5. “Hazardous air pollutant” is defined as “any air pollutant listed in or pursuant to” Section 112(b) of the CAA. 42 U.S.C. § 7412(a)(6) and 40 C.F.R. § 63.2.
6. Pursuant to Section 502(b) of the CAA, 42 U.S.C. § 7661a(a), EPA promulgated regulations establishing the minimum elements of a Title V permit program to be administered by any air pollution control agency. See 57 Fed. Reg. 32,295 (July 21, 1992). Those regulations are codified at 40 C.F.R. Part 70.

Title V Permit

7. The Illinois Environmental Protection Agency (IEPA) Title V Permit Program was initially submitted on November 15, 1993; interim approval became effective on March 7, 1995, and interim approval expired December 1, 2001.
8. The Illinois Environmental Protection Agency Title V Permit Program revisions were submitted on May 31, 2001; the submittal adequately addressed the conditions of the interim approval which expired on December 1, 2001. Illinois was granted final full approval effective November 30, 2001, for its Title V Permit Program.
9. On November 7, 2002, IEPA issued a Title V Permit No. 183806AAB (Title V Permit) to DynaChem.
10. Condition 5.1.1 of the Title V Permit states that the Title V Permit is issued based on the source requiring a Clean Air Act Permit Program (CAAPP) permit as a major source of volatile organic matter (VOC) and HAP emissions.
11. Condition 5.2.5a of the Title V Permit states, in part, should DynaChem become subject to a regulation under 40 CFR Parts 61 or 63 then it shall comply with the applicable requirements of the regulation.

NESHAP Subpart FFFF

12. Pursuant to Section 112(d) of the CAA, 42 U.S.C. § 7412(d), on November 10, 2003, EPA promulgated the NESHAP for Miscellaneous Organic Chemical Manufacturing (Subpart FFFF), codified at 40 C.F.R. §§ 63.2430-2550. See 68 Fed. Reg. 63852.
13. EPA has promulgated revisions to Subpart FFFF on a number of occasions, including July 14, 2006 (71 Fed. Reg. 40316), August 12, 2020 (85 Fed. Reg. 49084), and December 21, 2022 (87 Fed. Reg. 77985).
14. Subpart FFFF applies to a facility that owns or operates miscellaneous organic chemical manufacturing process units (MCPU) that are located at, or are a part of, a major source of HAP emissions as defined in section 112(a) of the CAA.
15. Subpart FFFF at 40 C.F.R. § 63.2435(b)(3) states that, in order to qualify as an MCPU, the MCPU can not be an affected source or part of an affected source under another Subpart of Part 63, except for process vents from batch operations within a chemical manufacturing process unit (CMPU), as identified in 40 C.F.R. § 63.100(j)(4). For this situation, the MCPU is the same as the CMPU as defined in 40 C.F.R. § 63.100, and the MCPU is subject only to the requirements for batch process vents in Subpart FFFF.
16. Subpart FFFF at 40 C.F.R. § 63.2445(b) sets forth that if a source was existing on November 10, 2003, the owner or operator must comply with the requirements for existing sources in Subpart FFFF no later than May 10, 2008.

17. Subpart FFFF at 40 C.F.R. § 63.2450(a)(2) requires the owner or operator of the facility to comply with the emission limits and work practice standards in Tables 1 through 7 to Subpart FFFF at all times, and requires that the owner or operator of the facility must meet the requirements specified in 40 C.F.R. §§ 63.2455 through 63.2490 and meet the notification, reporting, and recordkeeping requirements specified in 40 C.F.R. §§ 63.2515, 63.2520, and 63.2525.
18. Subpart FFFF at 40 C.F.R. § 63.2460(a) requires the owner or operator to meet each applicable emission limit in Table 2 of Subpart FFFF, and meet each applicable requirement specified in § 63.2460(b) and (c) and §§ 63.2492 and 63.2493(a) through (c).
19. Table 2 to Subpart FFFF requires, among other things, for each process with Group 1 batch process vents, the owner or operator must reduce collective uncontrolled organic HAP emissions from the sum of all batch process vents within the process by ≥98 percent by weight by venting emissions from a sufficient number of the vents through one or more closed-vent systems to any combination of control devices (except a flare).
20. Subpart FFFF at 40 C.F.R. § 63.2450(e) requires that, an owner or operator who reduces organic HAP emissions by venting emissions through a closed-vent system to any combination of control devices (except a flare) or recovery devices, must meet the requirements of §63.982(c) and the requirements referenced therein.
21. Subpart FFFF at 40 C.F.R. § 63.2450(k)(2) provides that, “when subpart SS of this part 63 uses the term ‘a range’ or ‘operating range’ of a monitored parameter, it means an ‘operating limit’ for a monitored parameter for the purposes of this subpart.”
22. Subpart FFFF at 40 C.F.R. § 63.2520(d)(2)(iii) requires the submission of a notification of compliance report which contains, among other things, descriptions of the operating limits established during the initial compliance demonstrations, including data and calculations to support the levels you establish.
23. Subpart FFFF via 40 C.F.R. § 63.982(a) provides that an owner or operator who is referred to Subpart SS for controlling regulated material emissions process vents by venting emissions through a closed vent system to a nonflare control device shall comply with the applicable provisions of paragraph (c)(2) of § 63.982.
24. Subpart FFFF via 40 C.F.R. § 63.982(c) requires that owners or operators who control emissions through a closed vent system to a nonflare control device shall meet the requirements in § 63.983 for closed vent systems, the applicable recordkeeping and reporting requirements of §§ 63.998 and 63.999, and the applicable requirements listed in § 63.982(c)(1) through (3).
25. 40 C.F.R. § 63.982(c)(2) provides that, for process vents, an owner or operator using absorbers, condensers, or carbon adsorbers to comply must meet the requirements of § 63.990; the applicable general monitoring requirements of § 63.996 and the applicable performance test requirements and procedures of § 63.997; and the monitoring, recordkeeping and reporting requirements referenced therein.

26. Subpart FFFF via 40 C.F.R. § 63.990(c)(2) requires that owners or operators using a condenser to comply shall either use (1) an organic monitoring device capable of providing a continuous record, or (2) a condenser exit (product side) temperature monitoring device.
27. Subpart FFFF via 40 C.F.R. § 63.990(c)(3) requires that owners or operators using a carbon adsorber to comply shall either use (1) an organic monitoring device capable of providing a continuous record, or (2) an integrating regeneration stream flow monitoring device and a carbon bed temperature monitoring device.

HON NESHAP

28. Pursuant to Section 112(d) of the CAA, 42 U.S.C. § 7412(d), on April 22, 1994, EPA promulgated the National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry. This rule is commonly known as the Hazardous Organic NESHAP (HON) and it established maximum achievable control technology (MACT) standards to regulate the emissions of organic HAPs from production processes located at major sources.
29. The HON is comprised of three Subparts: 1) Subpart F at 40 C.F.R. §§ 63.100-107, Subpart G at 40 C.F.R. §§ 63.110-63.153, and Subpart H at 40 C.F.R. §§ 63.160-63.183. See 59 Fed. Reg. 19454 (1994).
30. Subpart F, at 40 C.F.R. § 63.100(a), sets forth applicability provisions, definitions, and other general provisions that are applicable to Subparts G and H.
31. Except as provided in 40 C.F.R. § 63.100(b)(4) and in 40 C.F.R. §§ 63.100(c), Subparts F, G, and H apply to “chemical manufacturing process units” meeting all criteria specified in 40 C.F.R. § 63.100(b)(1), (b)(2), and (b)(3). See 40 C.F.R. § 63.100(b).
32. A “Chemical manufacturing process unit” is the equipment assembled and connected by pipes or ducts to process raw materials and to manufacture an intended product. For the purpose of the Hazardous Organic NESHAP, “chemical manufacturing process unit” includes air oxidation reactors and their associated product separators and recovery devices; reactors and their associated product separators and recovery devices; distillation units and their associated distillate receivers and recovery devices; associated unit operations; associated recovery devices; and any feed, intermediate and product storage vessels, product transfer racks, and connected ducts and piping. A chemical manufacturing process unit includes pumps, compressors, agitators, pressure relief devices (PRVs), sampling connection systems, open ended valves or lines, valves, connectors, instrumentation systems, and control devices or systems. A chemical manufacturing process unit is identified by its primary product. See 40 C.F.R. § 63.101(b).
33. For Subparts F, G, and H to apply to a “chemical manufacturing process unit:”
 - a. 40 C.F.R. § 63.100(b)(1) requires that the chemical manufacturing process unit manufactures as a primary product one or more of the chemicals listed in:

- i. Table 1 of Subpart F; or
 - ii. Tetrahydrobenzaldehyde (CAS Number 100-5-5); or
 - iii. Crotonaldehyde (CAS Number 123-73-9);
 - b. 40 C.F.R. § 63.100(b)(2) requires that the chemical manufacturing process unit use as a reactant one or more of the organic HAPs listed in Table 2 of Subpart F; and
 - c. 40 C.F.R. § 63.100(b)(3) requires that the chemical manufacturing process unit is located at a plant site that is a major source as defined in Section 112(a) of the CAA.
34. The owner or operator of a source subject to Subpart F is required to comply with the requirements of Subparts G and H. See 40 C.F.R. § 63.102(a).
35. Subpart G of the HON, at 40 CFR §§ 63.151(a)(3) and 63.152(a)(3) requires each owner or operator of an existing or new source subject to Subpart G to submit a Notification of Compliance Status as described in 40 C.F.R. § 63.152(b).
36. Subpart G of the HON, at 40 C.F.R. § 63.152(b), requires submission of a Notification of Compliance Status report.

Factual Background

37. DynaChem owns and operates a batch chemical processing plant located in Georgetown, IL (the Facility), that produces epoxy resins, modified phenolic resins, sulfonic acids, and other specialty organic chemicals as primary products.
38. At all times relevant to this FOV, DynaChem was and is a “person” as that term is defined in Section 302(e) of the CAA, 42 U.S.C § 7602(e).
39. DynaChem was and is an “owner” and an “operator” as those terms are defined in Section 112 of the CAA, 42 U.S.C. § 7412.
40. The Facility is a major source of HAPs.
41. On July 31, 2008, EPA approved an Alternative Monitoring Plan (AMP) for multiple monitoring requirements under Subpart FFFF.
- a. The approved AMP requires, among other things, DynaChem to operate several process vent treatment trains, consisting of a refrigerated vent condenser followed by two carbon canisters configured in series, to control HAP emissions from Group 1 batch process vent streams containing toluene, epichlorohydrin, benzene, and xylene. These HAP emissions occur during production of epoxy resins and sulfonic acids.
 - b. The AMP specifies that for the single use carbon canisters, in lieu of monitoring the parameters specified in 40 C.F.R. § 63.990(c)(3):

- i. DynaChem must monitor the total hydrocarbon concentration using a portable Flame Ionization Detector (FID) at the inlet of the lead carbon canister, the outlet of the lead carbon canister, and the outlet of the lag carbon canister;
 - ii. DynaChem must monitor no less frequently than every three operating days;
 - iii. A carbon canister replacement event is triggered by either one of the following monitoring results: “(a) the VOC concentration at the outlet of the lead carbon canister is greater than or equal to 90 percent of the concentration at the inlet, indicating that the lead canister is close to its saturation point; OR (b) the VOC concentration at the outlet of the lag carbon canister is greater than or equal to 5 percent of the inlet to the lead canister.”
42. In October 2008, DynaChem submitted a Notification of Compliance Status Report pursuant to 40 C.F.R. Part 63, Subpart FFFF (2008 NOCS). The 2008 NOCS identified that the Facility operates five MCPUs and associated batch process vents, storage tanks, transfer racks, fugitive leak components, wastewater streams, and heat exchangers subject to Subpart FFFF. These include: the Acid Plant MCU, the Epoxy Plant MCU, the Novolac Intermediate MCU, the Coron Urea Formaldehyde Fertilizer MCU, and the Cold Box (Catalyst MCU).
- a. The Acid Plant MCU includes, among other things, three main reactors (R1, R2, R3). The Acid Plant is also a CMU under Subparts F and G, and therefore the batch process vents from the reactors are subject to Subpart FFFF and the other associated equipment (storage tanks, loading racks, wastewater streams, heat exchange systems, and equipment leaks) is subject to Subparts F, G, and H of Part 63. The Acid Plant batch process vents from R1, R2, and R3 use a combination of condensers and carbon adsorbers to meet the Subpart FFFF requirement of $\geq 98\%$ reduction of organic HAP.
 - b. The Epoxy Plant MCU includes, among other things, the EPI Still, the Wash Vessel, and the 6000 Vessel.
 - c. According to Section 2.3.1 of the 2008 NOCS, “the Novolac Intermediate MCU contains a total of two batch process vents, one from each of the two main reactor vessels (9500 Vessel and Phenol Still).”
43. The 2008 NOCS established the following operating parameters:
- a. For the Acid Plant batch vents, the 2008 AMP was incorporated to establish the monitoring and operating limits; and,
 - b. For the Acid Plant MCU, Dynachem set the frequency of monitoring for carbon canisters breakthrough as every three operating days;
44. On November 11, 2009, DynaChem submitted an addendum to the 2008 NOCS for 40 C.F.R. Part 63, Subpart FFFF (2009 NOCS).

45. The 2009 NOCS established, among other things, an operating limit as follows: “[t]o demonstrate on-going compliance with the batch vent emission standard, DynaChem will operate the refrigerated vent condenser at an average exit (product side) temperature of equal to or less than 44.3°F, which corresponds to the value measured during the performance test” conducted on July 29, 2009. The 2009 NOCS also states that “[i]nstead of daily averages, average temperatures will be determined over operating blocks equal to the time from the beginning to the end of batch process operations, as allowed under § 63.2460(c)(4), while emissions are vented to the condenser.”
46. On September 26, 2022, EPA conducted an onsite CAA inspection of the Facility (the Inspection) where, among other things, EPA requested documents.
47. On May 8, 2023, US EPA issued a request for information to DynaChem (the RFI).
48. Pursuant to the Inspection and the RFI, DynaChem submitted, among other things:
 - a. The daily condenser exit (product side) temperature during batch processes at the Acid Plant MCPU;
 - b. Copies of Subpart FFFF Notification of Compliance Status; and,
 - c. Records of Carbon bed changeouts and monitoring results.
49. Daily condenser exit (product side) temperatures were greater than 44.3°F for 50 batches in 2020, 28 batches in 2021, 34 batches in 2022, and 17 batches in 2023 producing toluene sulfonic acid, phenol sulfonic acid, xylene sulfonic acid, or benzene sulfonic acid. See Appendix A.
50. From January 1, 2019, through June 30, 2023, at the toluene carbon bed system, there were at least 122 dates when carbon bed monitoring did not take place, even though 3 operating days had occurred since the last carbon bed monitoring event. See Appendix B.
51. From January 1, 2019, through June 30, 2023, at the benzene carbon bed system, there were at least 20 dates when carbon bed monitoring did not take place, even though 3 operating days had occurred since the last carbon bed monitoring event. See Appendix B.
52. From January 1, 2019, through June 30, 2023, at the toluene carbon bed system, there were 104 instances where a carbon bed changeout pursuant to the 2008 AMP was triggered, but DynaChem did not changeout the carbon bed before resuming production, reflecting 929 days when a spent carbon bed was left in operation. Notably, in 51 of these instances, the monitoring had shown that the carbon canister system was getting less than 95% reduction in HAP emissions. See Appendix C.
53. From January 1, 2019, through June 30, 2023, at the benzene carbon bed system, there were 25 instances where a carbon bed changeout pursuant to the 2008 AMP was triggered, but DynaChem did not changeout the carbon bed before resuming production, reflecting 1,064 days when a spent carbon bed was left in operation. Notably, in 3 of these instances, the

monitoring had shown that the carbon canister system was getting less than 95% reduction in HAP emissions. See Appendix C.

54. EPA requested a copy of the HON NOCS in the RFI, a December 12, 2022 call, and January 10, 2023 email. On January 23, 2023, Dynachem replied to EPA's January 10, 2023 email and stated, among other things: "DynaChem has searched facility files and has been unable to locate copies of these reports. The personnel who would have been responsible for environmental regulatory compliance at the time of the NOCS submittal deadlines are no longer with the company. DynaChem is continuing to look, but does not believe these reports will be located."

Violations

55. DynaChem failed to meet condition 5.2.5a, of its Title V Permit requiring compliance with Subpart FFFF and the HON.
56. From January 1, 2020, to July 20, 2023, DynaChem failed to operate the Acid Plant MCPU Condenser average exit (product side) temperature at or below 44.3°F for 129 batches, in violation of 40 C.F.R. § 63.2460(a) and Table 2 of Subpart FFFF.
57. DynaChem failed to monitor the carbon beds at least every three operating days, in violation of its AMP and 40 C.F.R. §§ 63.2450(e), 63.982(a) and 63.990(c)(3).
58. DynaChem failed to timely changeout the carbon beds when its monitoring showed the carbon beds to be spent, in violation of its AMP, 40 C.F.R. § 63.2460(a), and Table 2 to Subpart FFFF.
59. DynaChem failed to submit the initial HON NOCS, in violation of 40 C.F.R. § 63.152(b).

Environmental Impact of Violations

60. These violations have caused or can cause excess emissions of HAP including, but not limited to: benzene, toluene, and xylene.
61. Respiratory exposure to benzene can lead to a variety of health problems including drowsiness, dizziness, rapid heart rate, headaches, tremors, and cancer of the blood-forming organs.
62. Respiratory exposure to toluene can lead to a variety of health problems on the nervous system (brain and nerves) including, but not limited to, headaches, dizziness, and cognitive impairment.
63. Respiratory exposure to xylene can lead to a variety of health problems including, but not limited to, irritation of the skin, eyes, nose and throat, difficulty breathing, impaired memory and nervous system effects.

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