



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY  
LANSING



LIESL EICHLER CLARK  
DIRECTOR

November 12, 2019

Mr. Sathya V. Yalvigi, Project Director  
Corporate Remediation Group  
The Chemours Company  
P.O. Box 2047  
1007 Market Street, #3084  
Wilmington, Delaware 19899

Dear Mr. Yalvigi:

**SUBJECT:** Approval of Corrective Measures Study Work Plan with Conditions;  
Chemours-Montague, Montague, Michigan; MID 000 809 640;  
Waste Data System Number 392822

This letter is in response to the October 2018 Corrective Measures Study (CMS) Work Plan (Plan) that was submitted by AECOM, on behalf of The Chemours Company (Chemours). The Department of Environment, Great Lakes, and Energy (EGLE), Materials Management Division (MMD), has reviewed the Plan, and subsequent data received since its submittal for compliance with Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and its administrative rules. Based on that review, the Plan is hereby approved subject to the following conditions:

**1. General**

- A. Enclosed is an updated draft of the waste management unit/area of concern (WMU/AOC) corrective action status table. Chemours shall address the issues noted under the Overall CA Comments column in evaluating corrective action needed at each WMU/AOC. Additionally, Chemours shall use the names noted in the table when referring to individual WMU/AOCs.
- B. Chemours shall use the cleanup criteria established under Part 201, Environmental Remediation, dated September 28, 2012, except where those criteria are not as stringent as those required by the Resource Conservation and Recovery Act of 1976, as amended (RCRA). These are the environmental protection standards adopted under the administrative rules promulgated pursuant to Part 111 and approved for use by the United States Environmental Protection Agency as part of the state's authorized program.
- C. Chemours shall evaluate the vapor intrusion to indoor air pathway (VIAP) relative to groundwater plume movement. This is an important consideration relative to existing structures and potential future construction on-site, as well as off-site homes and other structures that are present above the

- groundwater plume. Please note that the current Part 201 criteria for the protection of the VIAP are not considered to be as stringent as is required by RCRA. Please contact Mr. Joe Rogers, Geologist Specialist, Permit and Corrective Action Unit (PCAU), Hazardous Waste Section (HWS), MMD, at RogersJ5@Michigan.gov; or (517) 284-6569 for assistance in obtaining site specific criteria for this pathway.
- D. Chemours shall revise its sitewide groundwater monitoring parameter list to include the Michigan 10 Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc) and basic geochemical parameters. This is necessary as there have been several locations identified where metal(s) concentrations exceed one or more criteria for a given pathway (e.g., arsenic at the CaF<sub>2</sub> Basin).
2. **Section 1.2:** There is no formal Voluntary Corrective Action Agreement in place between Chemours and EGLE. The MMD is working on an enforceable document to address the corrective action obligations at the facility.
  3. **Section 7.0:**
    - A. In preparing the CMS Report, Chemours shall prepare the selected corrective measures for each WMU/AOC such that they can easily be incorporated into the Corrective Measures Implementation (CMI) Plan.
    - B. The cost estimates for corrective action shall include discussion of the required financial assurance.
  4. **Table 3-1:** The MMD does not concur that no further investigation is necessary for the CaF<sub>2</sub> Basin, Lime Pile, Mirror Lake, and groundwater plume. As noted in the enclosed table, additional information gathering will be necessary as part of the CMS, and this information will need to be considered in the development of the CMS.
  5. **Table 4-1:** This table shall be revised to include columns and evaluations for the VIAP, particulate, and ecological risk pathways.
  6. **Figure 8.1:** EGLE does not select the final remedies for corrective action. Rather, Chemours shall indicate what corrective action it has selected for each WMU/AOC as part of the CMI Plan. The MMD will review the selections relative to the applicable requirements. The CMI Plan will then be subject to a public participation process, including a public hearing. With respect to the CMI Plan, EGLE will either approve it, approve it with modifications, or deny it.

If you have questions, please contact Ms. Ronda L. Blayer, Environmental Engineering Specialist, Management and Tracking Unit, HWS, MMD, at 517-284-6555 or BlayerR@Michigan.gov; or Mr. Dale Bridgford, Geology Specialist, PCAU, HWS, MMD, at 517-582-3050 or BridgfordD@Michigan.gov. You may also contact me at TaylorA@Michigan.gov or the telephone number listed below.

Sincerely,



Allan B. Taylor, Manager  
Hazardous Waste Section  
Materials Management Division  
517-614-7335

Enclosure

cc/enc:

Mr. Rich Conforti, EGLE  
Ms. Kimberly Tyson, EGLE  
Ms. Ronda L. Blayer, EGLE  
Mr. Dale Bridgford, EGLE  
Mr. Joe Rogers, EGLE  
Corrective Action File

**WASTE MANAGEMENT UNIT (WMU) AND AREA OF CONCERN (AOC) CORRECTIVE ACTION STATUS TABLE  
CHEMOURS – MONTAGUE, MID 000 809 640**

October 24, 2019

WMU/AOC	RI Done	CMS REQUIRED	OVERALL CA COMMENTS
1. Former PCB spill area	Yes	NA	Cleaned up to applicable cleanup criteria for unrestricted use. Documentation approved by DEQ. NFA.
2. Former HW storage area	Yes	NA	Closed per applicable cleanup criteria for unrestricted use. 1/7/00 closure certification acceptance letter. NFA
3. Former flammable HW storage area	Yes	NA	Closed per applicable cleanup criteria for unrestricted use. 1/7/00 closure certification acceptance letter. NFA
4. Former injection well	Yes	NA	Closed 1982 per state well abandonment regulations. NFA.
5. Air stripper condensate area	Yes	NA	No releases. No restrictions. NFA.
6. HCl storage tanks	Yes	NA	No restrictions. NFA.
7. East railcar un/loading area	Yes	NA	Soil samples all ND at MDLs < residential criteria. MDLs < [ ]s at which soil leaching likely to result in [ ]s > GW criteria. No restrictions. NFA.
8. Bury Pit landfill	Yes+	Yes	Residual [ ]s < residential criteria in soil and GW samples. Competent clay layer under landfill at ~ 100'. Waste in place requires dig and deed restrictions. CMS suggests dioxins/furans analyses and identification of bounds of unit.
9. North Landfill	Yes	Yes	Majority within P&T capture area. Waste left in place requires dig and deed restrictions. Final sitewide approval to address P&T performance and shutdown criteria and protocol. [Cu] soil > nonresidential unrestricted – page 12 of CMSWP, ecological concerns?
10. Northeast landfill	Yes	Yes	Within existing P&T capture area. Waste left in place requires dig and deed restrictions. Final sitewide approval to address P&T performance and shutdown criteria and protocol.
11. West railcar un/loading area	Yes	Yes	Soil < residential, only GW concern but subject to P&T. Usage restriction not yet recorded on deed but required. Final sitewide approval to address P&T performance and shutdown criteria and protocol. Provide a geologic cross-section along the GW plume axis from former plant to White Lake, which includes iso [ ]s of 3 main parameters of concern.
12. NPDES impoundments and corrosive treatment	Yes	Yes	GW from area captured by P&T. May/may not be partial source of GW contamination. No former NPDES violations. Provide information on distance out and depth of outfall. Usage restriction not yet recorded on deed but required. Final sitewide approval to address P&T performance and shutdown criteria and protocol.
13. Waste neoprene landfill	Yes	Yes	5/23/13. 2 [Cu] > statewide default background standards, 1 chloride > residential and nonresidential. Some waste left in place requires dig and deed restrictions. Lime over some of landfill.
14. Basin sludge area	Yes	Yes	5/23/13. Chloride in soil at 990,000 ug/kg > nonresidential DHC of 500,000 ug/kg at one location, restriction required. No waste left in place. Lime over some of area.
15. CaF <sub>2</sub> basin	Yes+	Yes	Waste left in place which requires dig and deed restrictions. Usage restriction not yet recorded on deed but required. Final sitewide approval to address P&T performance and shutdown criteria and protocol. Fenced. Elevated levels of antimony, arsenic, and fluorine, page 17 of CMSWP? [As] > nonresidential particulate criteria. Will require more than institutional control to address, perhaps capping or source removal to [As]s that meet criteria.
16. Lime pile	Yes+	Yes	<i>Does leachate/GW contain elevated Rn or other Ra decay, possibly originating from geochemical association of Ra with Ca in sedimentary formations that were source of CaCO<sub>3</sub> to produce the lime used in CaC<sub>2</sub> production. Radiological survey?</i>
17. Mirror Lake	Yes+	Yes	CMS to evaluate depth and volume of lime in lake, and pH and [Se] of lake water. Address if lake is “waters of the state” and impact. Ecological risks?
18. Pierson Creek landfill	Yes	Yes	Fenced area. Soils at 10PCLSS-06 [ ]s > nonresidential drinking water and direct contact criteria. After installation of well cluster in GW flow path on Lake Michigan side of Pierson Creek, east of N. Old Channel Trail, indications are that GW from landfill is discharging to Pierson Creek at [ ]s that would be allowable if MZ pursued. Preliminary MZ screening conducted in 2015. Chemours doing voluntary residential well sampling per CEIC’s request, data? Waste left in place requires dig and deed restrictions.

**NOTES:** “NFA” = no further action at this time, corrective action done to applicable regulations/cleanup category, either unrestricted use or with controls if not unrestricted use.  
 area = indicates WMU/AOC that does not require CMS or CMI.  
 “+” = tasks to be completed in CMS phase.  
 “[ ]” = concentrations.  
*Italicized text* = public comments to consider