



K A N S A S

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DEPARTMENT OF HEALTH AND ENVIRONMENT

KATHLEEN SEBELIUS, GOVERNOR

April 7, 2005

Andrea Stone
U.S. EPA – Region VII
901 North 5th Street
Kansas City, Kansas 66101

**RE: RFI Work Plan Comments
Koch Nitrogen Company, Dodge City
EPA ID #KSD044625010**

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RCRA RECORDS

Dear Ms. Stone:

The Kansas Department of Health and Environment (KDHE) reviewed the October 29, 2004 RCRA Facility Investigation (RFI) Work Plan submitted by Koch Nitrogen Company (KNC). The work plan describes KNC's approach to a RCRA Facility Investigation at the Dodge City, Kansas facility. The work plan was submitted in accordance with requirements in Part II of the facility's RCRA Post-Closure Permit.

KDHE's review of the RFI work plan focused on Task 1 - Chromium Destruct Unit Closure (Appendix A), and Task 3 - Groundwater Assessment. This review did not include the Health and Safety Plan (Appendix B), Sampling and Analysis Plan/Quality Assurance Assessment Plan (Appendix C), Shaw Standard Operating Procedures (Appendix L), Bench -Scale Treatability Study Procedures - Task 4 (Appendix M), nor the sample density for proposed soil sampling activities. Major issues identified in this review involve the absence of an off-site groundwater investigation, evaluation of possible contamination of the Dakota Aquifer, and KNC's proposed use of a groundwater model. These issues are discussed below followed by comments on specific sections of the work plan.

In Section 1.1, KNC defines "Facility" as "all contiguous property under the control of KNC." Although this definition is correct, KNC's use of the term to limit proposed investigative activities is inappropriate. As a result, the proposed activities in the work plan are not in compliance with Part I and Part II of the permit issued to KNC. The work plan only proposes on-site soil sampling and groundwater remedial system assessment activities. KNC did not propose activities to investigate off-site groundwater contamination in the Ogallala Aquifer (referred to in the work plan as the unconsolidated deposits underlying the facility) and the Dakota Aquifer (referred to as the bedrock deposits). In accordance with 40 CFR 264.101(c), and 3004(v), KNC is required to implement corrective action beyond the facility property boundary. More specifically the permit

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requires KNC to propose detailed methods for obtaining the necessary information to characterize the horizontal and vertical extent of the chromium, nitrate, and VOC contamination. The RFI work plan does not fulfill this requirement.

The work plan does not propose field activities to investigate contamination in the Dakota Aquifer. Historical data indicate contamination may have impacted the Dakota Aquifer. This formation is a viable drinking water source. Investigation must be conducted to determine the impact on the Dakota aquifer from facility activities.

KDHE is concerned with the proposed use of a groundwater model. KDHE agrees a groundwater model can aid in identifying deficiencies in a facility's conceptual site model; however, before making project decisions based on model simulations, care must be exercised to ensure the accuracy of the model through using adequate site-specific field data, accurate model calibration and adequate sensitivity analyses of model parameters. The RFI work plan does not include information to properly evaluate the groundwater model.

Comments on Specific Sections of the RFI Work Plan

- 1. Section 1.3, Project Tasks, Task 1 - CDU Closure:** Clean closure of a unit consists of remediating contaminated soil and groundwater to an established minimum health-based standard. While the closure plan addresses soil, it ignores contaminated groundwater. Groundwater at this facility exceeds health-based standards. In addition, no site-specific health-based standards for soil clean-up has been established for this site. Therefore, KDHE will review the clean closure determination once the above information is available. We believe once the RFI process is completed, the above determination can be made.

In accordance with Part II of the permit, the facility is conducting a site-wide investigation using the "post-closure rule." Although the facility could attempt to demonstrate clean closure of the CDU through an expensive investigation process, the results would not change the groundwater clean-up requirements under the Part II of the permit. Therefore, the inactive CDU investigation should be completed as a part of the entire site-wide investigation. KNC should revise the text, by deleting the reference to clean closure and refer to "no further action required." In addition, the determination of "no further action required" should be deferred until the RFI investigation is complete. This determination should be made in conjunction with the site-wide decision for corrective action.

- 2. Section 1.3, Project Tasks, Task 2 – Soil Investigation:** The site-specific PRGs and geotechnical samples should be defined in the RFI work plan. Region 9 PRGs are not intended as a set of final cleanup or action levels to be applied at contaminated sites. Before applying PRGs at a site, the facility must consider whether the exposure pathways and exposure scenarios at the site are fully accounted for the PRG calculations. Regions 9 PRGs do not consider impact to groundwater or livestock.
- 3. Figure 2-1:** During review of the RFI work plan, KDHE noticed Trench No. 7 was not discussed as part of SWMU 10, SWMU 11, or SWMU 17. Trench No. 7 is identified in Figures 3-1, 3-2, and 3-3, but was not identified in Figure 2-1 (map of SWMUs and AOCs). When the RFA was completed in July 2000, Trench No. 7 did not exist. This trench was approved by KDHE in a letter dated October 6, 2000. According to KDHE's files, Trench No. 7 was approved for lime sludge disposal under Solid Waste Permit #375.

To rectify reference to Trench No. 7, Part II of the permit should be modified to include Trench No. 7 as a SWMU or include this unit as a part of SWMU 10, SWMU 11, or SWMU 17. Although this unit lies within the footprint of SWMU 3 and two soil sample locations are proposed for this area, the RFI work plan should be also evaluated to see if additional investigation is necessary for Trench No. 7. Groundwater data from monitoring well TW-8 suggests Trench No. 7 could be a potential source of nitrate contamination.

4. **Section 2.3, Site History:** The second paragraph indicates storm water is retained on site within an earthen basin located east of the production facilities. Is this statement accurate? Is the former east pond used as a storm water retention basin?
5. **Section 2.4.2, Storm Water:** The text should be revised to clarify the issue of storm water retention in the east pond.
6. **Section 2.6.3, Environmental Indicators:** The human exposure pathway for groundwater cannot be eliminated. The potential exists for human exposure from contaminated groundwater. A comprehensive groundwater investigation is necessary to make this determination.
7. **Figure 3.1:** The contours depicted on this map do not accurately portray the location of chromium-contaminated groundwater.
8. **Figure 3.2:** The contours depicted on this map do not accurately portray the location of nitrate-contaminated groundwater.
9. **Section 3.3.2.1, Geology:** The text should discuss the details and thickness of each geologic unit beneath the site. KDHE assumes this section of the RFI work plan will be enhanced based on the information obtained during the RFI investigation.
10. **Section 3.3.2.2, Hydrogeology:** Second paragraph contains misleading information. Elevated levels of chromium have been detected in the Dakota even after the wells were repaired or replaced. The text should be revised to include historical information.
11. **Section 3.4.1, Chromium:** Elevated levels of chromium and nitrate have been detected in the Dakota. The text should be revised to include historical information.

Reference to wells screened in the Ogallala and Dakota aquifers not being used as potable water is incorrect and misleading. Until chromium and nitrate contamination was confirmed in the Ogallala and Dakota, each aquifer was used as a source of potable water. In addition, KDHE is not aware of any zoning restrictions in the use of groundwater in the Ogallala and Dakota Aquifer for potable purposes.

The last paragraph indicates two potential sources for chromium contamination in the groundwater. KDHE maintains that although the inactive CDU may not have been a major contributor to the chromium contamination found in the groundwater, the data does not eliminate the inactive CDU and associated piping as a potential contributor to the contamination. KNC states in Section 3.4.1.2 that "these ponds could have received both hexavalent and trivalent chromium."

12. **Section 3.4.1.1, Chromate Spill Location:** KDHE agrees that the spill is a potential source of the chromium groundwater contamination, but disagrees with the assumption that the inactive CDU is not a potential contributor to the chromium-contaminated groundwater. (See previous comment.)
13. **Section 3.4.1.2, South and North Ponds:** The last sentence is misleading. The current data indicates the groundwater chromium concentrations are higher beneath the east pond. The text should be revised to indicate the referenced time period for the information.
14. **Section 3.4.2, Nitrate:** The first paragraph should explain the historical use of the groundwater for potable purposes and indicate when the potable usage was discontinued. Documentation confirms the fact that two residential wells are no longer used for potable purposes due to elevated levels of chromium and nitrate. In addition, the text should discuss zone restrictions (if any) on groundwater usage for potable purposes.

The text in this section indicates only two potential sources of nitrate. Groundwater data for nitrate from the eastern portion of the facility (monitoring well TW-8) indicates the UAN tank and the north and south ponds may not be the only source of the nitrate.

15. **Section 3.4.2.1, 30,000-Ton UAN Tank Leak:** A reference for soil boring B-1 should be provided in the text.
16. **Section 3.4.2.2, South and North Ponds:** The last paragraph is misleading. Current nitrate data indicates the concentrations are higher beneath the east pond area, although historical data indicates the reverse. Text should reflect, at a minimum, the current conditions. In addition, the title of this section should be "South, North, and *East* Ponds."
17. **Section 3.5, Potential Exposure Pathway:** Elevated levels of chromium and nitrate have previously been detected in the Dakota Aquifer. Additional investigation should be conducted for this exposure pathway.

EPA questioned the use of the Dakota aquifer as a drinking water aquifer for the Bogner family. EPA based the argument on the lack of complete information regarding contamination of the Dakota aquifer. Historical data indicate contamination from the facility activities contaminated the Dakota. An investigation of the contamination of the Dakota aquifer should be included as a part of the RFI work plan.

18. **Section 3.5.1.2, Subsurface Soil:** The soil-to-groundwater leaching pathway must be considered for this RFI work plan. Once again, the elimination of the potable groundwater pathway is inappropriate at this time. Sufficient information regarding the potable groundwater conditions to the south of the facility is not available at this time.
19. **Section 3.5.2.1, Potable Water:** The potential exists for human or ecological receptors of groundwater south of the facility. Ownership of the land often dictates usage of groundwater. KNC cannot restrict use of groundwater beneath land that they do not own. KNC should include a discussion of zoning of the surrounding land and future use for groundwater in the area. In addition, the text should contain information about the historical use of the groundwater.

The text should include the historical data related to the elevated levels of chromium and nitrate in the Dakota aquifer.

KDHE disagrees with the last sentence which eliminates the potable groundwater as a potential pathway. The groundwater investigation should be completed prior to making that determination. There are residential homes down gradient of the plume, which currently use the groundwater from the Ogallala. The text should reflect this information.

20. **Section 4.2.1, SWMU 4 Former Injection Well No. 1:** KDHE disagrees with the assumption that this SWMU does not require additional investigation. The historical information indicate the facility continued to operations of the UIC well for approximately two years despite questions of the well's structural integrity and its ability to accept wastewater. Later investigations revealed the casing collapsed at a depth of about 500 feet below land surface. These factors could have impacted the Dakota aquifer.
21. **Section 4.2.15, ACO 6 Dakota Formation:** An investigation of the potential contamination of the Dakota aquifer should be included as a part of the RFI work plan. Historical data indicates chromium and nitrate contamination from the facility activities contaminated the Dakota. VOCs have not been evaluated for the Dakota. In addition, EPA questioned the use of the Dakota aquifer as a drinking water aquifer for Bogner family. EPA based the argument on the lack complete information regarding contamination of the Dakota aquifer.
22. **Section 4.3.1, SWMU 1 through 4 South, North, and East Ponds:** The second paragraph provides a detailed list of the process wastewater streams entering the ponds. This text is a snapshot in time (1985) and does not include a discussion of all waste streams that entered the ponds. In addition, in 1985 the east pond was not is use. It is known that the wastewater streams have changed over time (chromate was discontinued in the cooling water in 1983). The text should be revised to include all waste streams that entered the ponds.
23. **Section 4.3.1.3, Former East Pond:** The second sentence should be revised to indicate the prior owner ceased operations of the east pond as a wastewater pond in 1984, but no closure record can be located.
24. **Section 4.3.2, SWMU 5 Former Landfarm and SWMU 6 Former Washout Area:** The text should explain the surface water runoff from these SWMUs.
25. **Section 4.3.3, SWMU 7 Former General Facility Trash Landfill:** The RFI work plan should address subsurface and groundwater investigation associated with this SWMU. Monitoring wells TW-21 and TW-89, which are in the vicinity of the landfill, have historical detections of trichloroethylene.
26. **Section 5.0, Scope of Work:** KDHE notes the RFI work plan includes data collection for hexavalent chromium. Although KDHE has no objection to the collection of this information, KDHE will only consider "total chromium" for risk assessment purposes.
27. **Section 5.1, Task 1 – CDU Closure (SWMUs 8, 23, 24):** SWMU 25 should be added to the title of this section.

28. **Section 5.2, Task 2 - Soil Investigation:** The sampling for background is inadequate. KDHE recommends use of Region 9's PRGs recommended EPA guidance on determining background at sites, *Guidance for Characterizing Background Chemicals in Soils at Superfund Sites* (USEPA 2001b).

The RFI work plan describes the collection and location of soil samples during field activities, but does not provide details on sampling depths. Anticipated sampling depths for all samples must be included in the work plan. The work plan must consider the clean-up standards established in the RSK Manual for nitrates at various depths.

29. **Section 5.2.3, Former Landfarm:** Since this area of the site has been tilled for agricultural purposes, the collection of samples for VOCs at one-inch below land surface may be a waste of time and money.
30. **Section 5.2.4, Former General Facility Trash Landfill:** KDHE questions the value of a grab sample from the landfill. Subsurface and groundwater sampling would be more appropriate. (see comment number 4.3.3)
31. **Section 5.2.5, South Pond Disposal Area (SWMU 12) and 5.2.6 Former Gas Shed (AOC 4):** Sampling for TPH should be added to list of compounds of interest for these areas. The RSK Manual has established a risk standard for TPH, which must be considered.
32. **Section 5.3, Task 3 - Groundwater Assessment:** This section states this assessment for the groundwater will be to "confirm the presence and extent of constituents above risk based levels in groundwater in the unconsolidated deposits. . ." It is KDHE's policy to use MCLs as the cleanup goal and "risk based level" for groundwater remediation. This investigation does not propose field activities to confirm the presence and extent of constituents above risk based levels (MCLs). In addition, the Ogallala and Dakota are drinking water aquifers. Therefore, groundwater assessments should be completed for both aquifers. If remediation is necessary, remediation goals should be based on MCLs.

The assessment relies on the MODFLOW computer model, but no input information about the model is given in this work plan. Field data must be used to support the model for decision-making purposes. Detailed model data and assumptions, with supporting field data, must be included as part of the RFI report.

33. **Section 5.3.1.3, Hydraulic Characteristics Evaluation, Step 1:** The shut down of the recovery system will create an issue of noncompliance with Part I of the Permit. KNC may request temporary authorization to shut down the recovery system. This temporary authorization would allow KNC to complete the groundwater assessment, but require KNC to return the groundwater recovery system to service under the requirements of Part I of the permit or submit a request for permit modification within a specific period of time.
34. **Section 5.3.1.3, Hydraulic Characteristics Evaluation, Step 2:** This section requires more detail as to which recovery wells will be evaluated, where additional piezometers will be installed, and how much time will be require to complete this evaluation.

The text should explain how the evaluation of the performance of the groundwater recovery system will determine if low yield results are due to the aquifer, the well, or the pump.

35. **Section 5.3.1.3, Hydraulic Characteristics Evaluation, Step 3:** The work plan must provide additional information on the calibration of the model. The RFI report must include a discussion of model approach, documentation of all calculations, summary of sensitivity analysis, summary of all model calibration, boundary conditions, grid spacing, and field data to support the model.
36. **Section 5.3.1.4, Groundwater Refinement and Recovery Well Optimization:** If the groundwater model is use as a tool for this investigation, a groundwater model report should be submitted as a separate document. This report should detail all aspect of the model, with an electronic copy of the model and input data.
37. **Section 5.3.2, Subtask 3B - Groundwater Investigation:** This investigation does not address the off-site groundwater issues to the south of the facility or the Dakota. The work plan must be revised to include this investigation to delineate the extent of plume(s) in both aquifers.
38. **Section 5.4, Task 4 - Bench-Scale Treatability Study:** KDHE has no objection to this study, but a report "detailing" all aspects of the study must be submitted as a part of the RFI report.
39. **Section 5.5, Task 5 - Source Reduction Actions:** All samples must be analyzed by a "KDHE" certified laboratory, not a Kansas certified laboratory.

Is the focus of this task to delineate the contamination or complete a removal action? The text does not discuss a removal action, just delineation of contamination. But, the text in Section 5.7.5 indicates this task may involve soil excavation. If soil excavation is done, confirmation sampling must be completed to determine the levels of contamination remaining in the soil. This work plan must describe confirmation sampling to be completed for soil excavation activities.

40. **Section 5.6, Risk Assessment:** The risk assessment is incomplete as discussed in this work plan. The risk assessment must include an assessment of the groundwater in the Ogallala and the Dakota Aquifers. Completion of the risk assessment will not be possible without a complete investigation of the Dakota and Ogallala Aquifer.

Exposure area for SWMUs 1,2, and 3 is too large. For the purposes of risk assessment, large exposure areas lead to a significant amount of uncertainty regarding potential health risks at the site. Exposure units should be much smaller than the areas defined to estimate health risks. Hot spots should be considered as separate exposure units.

Define the "available livestock water quality rating information." As stated in previous comments, Region 9's PRGs were developed for human exposure pathways.

KDHE disagrees with the statement "groundwater samples from all wells during the most recent RFI sampling event will be considered to be representative of groundwater exposure point conditions." Considering only the most recent data is too restrictive. Temporal and geographical variability necessitates all groundwater data be assessed for trends, high and

low concentrations, potential migration pathways, containment of plume(s), and other similar evaluations.

41. **Section 7.0, Project Schedule and Deliverables:** Statements within the RFI work plan indicate a phased approach will be used to conduct the field investigation. Reference is also made to the submission of additional reports or work plans following the completion of various steps during the RFI investigation. However, the work plan does not describe the criteria to be used when determining if additional field data will be required, or the anticipated framework for each phase of the investigation. The RFI work plan must include all investigative activities to be completed as part of the site-wide investigation, including an off-site groundwater investigation.

Comments on the Appendix A - CDU Closure Plan

42. **Section 1.0, Introduction:** The term clean closure is used in the last paragraph and throughout the document. Replace the term "clean closure" with the term "no further action" or "no associated risk."

In the last paragraph, KNC proposes to confirm the absence of a soil-to-groundwater pathway for chromium from the CDU. Under the post-closure rule, any site-wide clean-up goals established for the facility must be based on the results of the RFI investigation. Because adequate information is not available, KDHE cannot make a determination concerning the clean-up goals.

43. **Section 2.0, Conceptual Site Model:** The text provides a detailed explanation of the spill as the source of the chromium contamination in the groundwater. The text does not recognize the possibility the CDU may have contributed to this contamination. Add a statement to the text identifying the CDU as a possible source of contamination.
44. **Section 4.2.3, Soil Sampling:** Here and in other locations in the document, KNC proposed the use of Synthetic Precipitation Leaching Procedure (SPLP) to analyze CDU soil samples. This method may not be acceptable for waste determination. Therefore, KDHE believes TCLP method is more appropriate for evaluating disposal options.
45. **Section 4.2.3, Soil Sampling:** A risk-based level of 4,000 mg/kg for trivalent chromium was listed. The RSK Manual does not list a value for the soil-to-groundwater pathway. Under the post-closure rule, any site-wide clean-up goals established for the facility must be based on the results of the RFI investigation. KDHE will not agree to proposed cleanup numbers until the site-wide investigation is complete.
46. **Section 5.4, Soil-To-Groundwater Protection:** The text describes KNC's intentions to multiply the MCL for chromium by a factor of twenty to arrive at a "target leachate concentration of 2 mg/L." While the SPLP method may be appropriate to determine if soils can be left in place, sufficient information is not available to determine appropriate clean-up goals.

KNC states that there are no drinking water wells in use at or immediately downgradient of the CDU. KDHE does not agree with this statement. Present and future wells could provide exposure pathways to the contaminated groundwater (see Comment #12).

47. **Figure 5:** The value reported for SB-4 is 13 mg/kg. However, analytical results in Appendix E reports a value of 31.2 mg/kg. Please correct this discrepancy. In addition, only shallow analytical values were reported on Figure 5. Please show all sample locations, depths, and analytical results on this figure.
48. **Supplemental Letter:** In the October 26, 2004 addendum to the CDU Closure Plan, KNC stated that chromium-containing wastewater might have been discharged directly to the effluent structure prior to treatment. KNC indicated these wastewaters were pumped to the influent box for treatment in the CDU. In addition, in Section 3.4.1.2 of the RFI work plan, KNC states that the north and south ponds could have received both hexavalent and trivalent chromium. Please submit documentation to support this position.

Please incorporate these comments into EPA's correspondence with KNC as you deem necessary. Should you have any questions, please contact me at (785) 296-1616 or espellma@kdhe.state.ks.us.

Sincerely,



Everett Spellman
Environmental Geologist
Hazardous Waste Permitting Section

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