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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

CERTIFIED MAIL
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Article No. 7006 2760 0000 8650 5514

13 JUN 2008

Mr. Gary J. LeRock
Plant Manager
Koch Nitrogen Company
P.O. Box 1337
Dodge City, KS 67801-1337

Dear Mr. LeRock:

RE: Phase II RFI Work Plan and letter dated January 25, 2008
Koch Nitrogen Company
EPA I.D. #KSD044625010

The U.S. Environmental Protection Agency Region 7 (EPA) is in receipt of the above-referenced document. EPA has reviewed this document and is offering the enclosed comments.

Please note: This is Koch Nitrogen Company's (KNC's) *one* opportunity to revise this document in an approvable form. Failure to submit an approvable Work Plan will result in the EPA modifying and/or drafting the Phase II RFI Work Plan. The EPA modified/drafted document *will be* the approved Phase II RFI Work Plan as specified in the Part II Permit Condition C.14.c.

KNC stated that it would like the opportunity to discuss several issues with EPA. EPA is willing to discuss these issues prior to revision of the Phase II RFI Work Plan. Once EPA and KNC have had an opportunity to discuss these issues either in a conference call or a face-to-face meeting, KNC will need to respond to EPA's comments in writing; and submit the Revised Phase II RFI Work Plan within thirty (30) days from that discussion. If you have any questions regarding this letter or wish to set up a conference call or meeting, please contact me at 1-800-223-0425, extension 7662; or (913) 551-7662.

Sincerely,

Andrea R. Stone

Andrea R. Stone
Environmental Scientist
RCRA Corrective Action & Permits Branch
Air & Waste Management Division

Enclosure (1)

cc: Everett Spellman, KDHE
AnnieLaurie Burke, KNC-Dodge City, KS

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OVERALL GENERAL COMMENT:

1. As stated in EPA's August 10, 2007 comments, the purpose of the RCRA Facility Investigation is to define the vertical and horizontal extent of contamination to the approved background levels.

   KNC is proposing a "step-in" approach vs. a "step-out" approach. The "step-in" approach does not satisfy the purpose of the RFI, which is to determine where the contamination is vertically and horizontally (i.e., how far down from the surface does it go and how far out in all directions does it go?).

   In addition, the "step-in" approach has a downside which comes later during the remediation of the SWMUs/AOCs. As KNC has described, the "step-in" approach will define the <u>outer</u> boundaries of the SWMUs/AOCs. Potentially, KNC will be required to remediate the *entire* SWMU/AOC *instead of* specific areas, based on the contamination, within the SWMU/AOC. EPA is trying to assist KNC from unnecessary remediation costs. Please see further discussion of this in the comments below.

EPA RESPONSES to KNC RESPONSES to GENERAL COMMENTS (G):

G.1. In the first paragraph of KNC's response, KNC states that there are no discernible patterns in the distribution of soil contamination in most of the solid waste management units (SWMUs) and areas of concern (AOCs). The EPA believes there some trends evident in the distribution of contaminants. For example, Figures 4-11 and 4-12 presents analytical results for chromium and for nitrate-nitrite in SWMU 2 (North Pond). In these figures, the results from the three deep borings (S02-SB28, S02-SB29, and S02-SB30) indicate as general trends that chromium levels tend to decrease with depth while nitrate-nitrite levels tend to increase with depth. Also, the areas where both chromium and nitrate-nitrite are clearly above background levels are generally in the same areas. The method for displaying the distribution of contamination is important in identifying patterns of contamination, and the EPA believes that if KNC would present the data graphically using isoconcentration contouring of results the distribution of the contaminants would become clearer and any additional areas requiring sampling would be clearly shown. Contouring analytical results also clarifies where the extent of contamination has been sufficiently determined, and where any data gaps remain; it tends to make the most use of each sampling point insofar as overall characterization of the study area is concerned.

In the second paragraph of KNC's response to General Comment 1, the EPA is concerned that a miscommunication has occurred with regard to the goal of defining the extent of soil contamination within the solid waste management units (SWMUs) and areas of concern (AOCs). The "step in" strategy as described in KNC's response to General Comment 1 appears to have as its goal to determine

only the perimeter of the contaminated area. While it is important to determine the areal limit of soil contamination, it is also necessary to determine the types, distribution, and concentrations of contaminants *within* the contaminated area (SWMU or AOC). This information is needed in order to (1) assess risk throughout the entire contaminated area and as deep as the contamination extends, and (2) based on the assessment of risk, whether any cleanup or stabilization measures are needed in order to mitigate unacceptable risks. The EPA recommends a "step out" approach to assessing soil contamination in specific areas, beginning in the area most likely to be contaminated. Less sampling is likely to be needed using this method because once the limit of contamination is reached no more sampling is needed, while with the "step in" approach several steps may be needed before the contamination is found.

In the third paragraph KNC states that aboveground and belowground conditions may limit sampling in some areas and that KNC will discuss these situations with the EPA. The EPA is aware of the active status of the KNC facility, and will work with KNC with regard to characterizing specific areas.

G.2. Response noted. Please ensure that the final RFI Report contains all of the information.

G.3. Response noted. Please ensure that the final RFI Report contains all of the information.

EPA RESPONSES to KNC RESPONSES to SPECIFIC COMMENTS (S):

S.1. KNC's response to Specific Comment 1 states that the aboveground and belowground obstructions at AOC 1 - Chromate Spill, including high-voltage electrical lines, may prevent adequate sampling. As stated previously, the EPA will work with KNC in these situations. The response also states that potential additional sampling locations will be detailed in the Phase II RFI Work Plan, but the EPA could not find where this was presented in the Work Plan. KNC needs to specify what is being proposed for additional work in AOC 1.

S.2. KNC states that the concentrations of nitrate-nitrite in soil at AOC 5-UAN Storage Tank Leak Area do not show any apparent pattern of distribution in that they do not diminish with distance from the center of AOC 5, and proposes the "step in" strategy to define the perimeter of the AOC. The Phase II RFI Work Plan proposes to advance four (4) borings to a depth of fifteen feet as shown in Figure 14.

In order to help KNC in preparing soil sampling plans in general, the EPA would like to explain how it views the process of defining the extent of soil contamination and utilize the effort at the UAN Storage Tank Leak Area as an example; please refer to Figure 4-3 in the RFI Interim Status Report, and Figure 14 in the Phase II RFI Work Plan. The work proposed in the Phase II RFI Work

Plan will not be able to characterize the extent of nitrate-nitrite contamination at the UAN Storage Tank Area, primarily because only one sampling location is proposed near the location of previous boring AOC5-SB11 where nitrate-nitrite was found at 3130 mg/kg. When contamination is found at levels of concern, such as at location AOC5-SB11 at a depth of 6 feet, additional sampling is needed outward from this location and depth interval in order to assess the extent of contamination. In this instance, the depth of the contamination has been defined, because deeper sampling has already been done and the levels, in general, decrease with depth. However, as far as vertical (depthwise) extent is concerned, the interval *above* the 6 foot depth needs to be sampled because the levels from the ground surface to 6 feet may be even higher than that found at 6 feet.

Referring to Figure 4-3 in the RFI Interim Status Report, the EPA would like to make observations and offer recommendations for characterizing the extent of contamination at AOC 5. The action levels for nitrate-nitrite that are applicable to AOC 5 are those values established by KDHE for soils in areas where no vegetation is present: upper 8 inches in depth - 85 mg/kg, below 8 inches in depth - 40 mg/kg. The initial sampling as shown in Figure 4-3 tentatively (based on only three deep (3) borings within a study area of nearly half an acre) indicates that nearly all the contamination is limited to a depth of 20 feet. The EPA recommends that KNC consider locating three (3) additional borings spaced midway between the three previous deep borings at 10-20 feet from the outline of the perimeter of the former tank toward the center of the AOC as was done previously, and three (3) additional borings each located 40-50 feet inward from the outline of the former tank. Each of these six (6) borings should be advanced to a depth of 28 feet, with samples collected at two-foot intervals as was done previously. To assess the 0-8 inch interval, KNC should consider using a hand auger sampling method and collect 20-30 samples evenly distributed in locations across the AOC, and both inside and outside the outline of the former tank. One previous boring, SB-11, had significant levels (up to 3130 mg/kg) from 6-12 feet, but primarily at the 6-8 foot depth interval. Another nearby boring, SB-02, had a detection of 550 mg/kg at a depth of 10 feet. The EPA recommends evaluating these two locations using a total of seven (7) borings, including the two (2) proposed, surrounding and approximately 25 feet equidistant from these two locations, and sampling to a depth of least 28 feet in two-foot intervals. This sampling effort is only a recommendation, but it does have a realistic chance to adequately define the aerial and vertical extent of nitrate-nitrite contamination at AOC 5. Depending upon results obtained, this effort may or not be sufficient, but it should provide enough information such that any further sampling, if needed, would likely be minimal. Also, as stated previously in General Comment 1 above, sampling results should be presented graphically using isoconcentration contour maps and cross sections. These techniques will clearly illustrate the three-dimensional extent of contamination.

S.3. Though not mentioned specifically in their response, KNC needs to include the potentiometric (groundwater surface elevation) contour maps and hydrogeologic cross sections mentioned in the original comment with the information they will submit regarding their assessment of the Dakota Formation.

S.4. The issue raised by the original comment was defining the extent of chromium and nitrate contamination in SWMU 1 - South Pond. The comment pointed out the high levels of chromium and nitrate-nitrite in samples collected from the northwest portion of SWMU 1 and the need for further assessment of the extent of this contamination. Again it would be very helpful if KNC would present soil sampling results using contaminant isoconcentration contour maps and cross sections.

KNC states that the Phase II Work Plan proposes to collect samples immediately outside the perimeter of the SWMU in order to determine whether the contamination is confined to the area within the perimeter of the SWMU. This again is the "step in" strategy, and as the EPA stated previously in the response regarding General Comment 1, the nature and extent of contamination must be determined throughout the SWMU - it is not sufficient to only determine the boundary of the SWMU.

Please also refer to the previous discussion regarding Specific Comment 2 and defining the extent of contamination at the UAN Storage Tank Leak area. This same approach to assessing soil contamination needs to be applied to the South Pond. The sampling proposed in the Phase II Work Plan for SWMU 1- South Pond, illustrated on Figure 4 of the plan, is not sufficient to adequately characterize the soil contamination. The area of high concentration of chromium and nitrate-nitrite in the northwest part of SWMU 1 must be characterized through additional sampling, using the same approach as was explained in the previous discussion of the assessment of the UAN Storage Tank Leak Area; i.e. proceeding outward from the regions of high contamination until background levels are found.

KNC needs to revise the proposal for sampling to assess soil contamination in SWMU 1 - South Pond.

S.5. Response noted. Please ensure that the final RFI Report contains all of the information.

S.6. KNC's response states that additional sampling will be performed in the southwest corner of SWMU 2 - North Pond near the inlet from the South Pond, but in the Phase II Work Plan, Figure 5 shows no sampling proposed for this area. The proposed sampling locations appear to be designed to confirm the perimeter boundary of the SWMU.

KNC needs to review the previous data from the Interim RFI Report with regard to SWMU 2 - North Pond and then propose sampling to characterize the extent of contamination as was detailed previously in Specific Comment 2 above. As stated previously, it would be very helpful if KNC would prepare contaminant isoconcentration contour maps and cross sections to clearly illustrate the distribution of soil contamination.

In the Phase II Work Plan on page one of Table 3, under the column 'Area Description' for SWMU #2, the text states that there is an emergency spillway on the north side. Samples should be collected from at least two locations near the outlet of this spillway, in the pathway that any discharge from the spillway would flow. Please show the location of this spillway, the flow path (using arrows) and the sampling locations when revising Figure 5.

S.7. Response noted. Please ensure that the final RFI Report contains all of the information.

S.8. For SWMU 3 - East Pond, chromium is the only contaminant with detections significantly higher than background. It would be helpful if KNC would utilize contaminant isoconcentration contour maps and cross sections to clearly illustrate the extent of soil contamination. The sampling proposed in the Phase II Work Plan (Figure 6) will not be able to adequately characterize the extent of soil contamination within SWMU 3. As stated previously in the discussion of Specific Comment 2 above, KNC needs to propose additional sampling outward from locations where chromium levels exceeded background concentrations, which were listed in the original comment.

S.9. Response noted. Please ensure that the final RFI Report contains all of the information.

S.10. The EPA concurs with the KNC response.

S.11. Response noted. Please ensure that the final RFI Report contains all of the information.

S.12. Response noted. Please ensure that the final RFI Report contains all of the information.

With regards to SWMU 21, EPA stated in its November 8, 2007 comment letter on the RFI Interim Status Report dated August 10, 2007, that, "KNC also needs to collect several samples from SWMU 21. Please include the sampling information in the Phase II RFI Work Plan." KNC has responded that, "KNC would appreciate the opportunity to discuss the findings of this survey *[geophysical]* in greater detail with EPA to determine the optimum approach for this SWMU." (emphasis added)

EPA is willing to discuss the findings of the geophysical survey to determine the optimum approach for SWMU 21.

S.13. KNC states in their response that the location of SWMU 7 is still uncertain. In the RFI Interim Status Report on page 19 it is stated that two of the four borings that were advanced in the area of SWMU 7 yielded evidence of the buried

materials. The report further states that the buried materials were first encountered at a depth of two (2) feet below ground surface in each of the two borings. Considering the very shallow nature of the buried materials, the EPA suggests that KNC consider excavation, such as utilizing a backhoe, to determine the areal extent of the buried materials. Excavation could begin at the locations of the two borings where buried materials were found, and then expand outward from there until the limits of SWMU 7 are found. Whether it is decided to leave buried materials in place or to remove them will require a determination of the extent of SWMU 7. Depending upon what is found and the area involved, KNC may want to consider characterization and removal of the buried materials at that time. Insofar as characterizing the extent of SWMU 7 as well as the extent of any hazardous constituents associated with the buried materials, the EPA believes excavation to be a more effective and efficient strategy than advancing a sufficient number of subsurface borings to achieve the same goals.

S.14. Response noted. Please ensure that the final RFI Report contains all of the information.

With regard to the Geotechnical Testing parameters listed in the approved RFI Work Plan in Table 6-1 on page 4 of 13 for SWMU # 7, the EPA is in agreement with KNC's response stating that these geotechnical parameters are not necessary unless the information is to be used specifically for well design.

S.15. KNC states in their response that they would like to discuss further action on SWMUs 8, 23, 24, and 25 (Former Chrome Destruct Unit) with the EPA before proposing additional activities. The EPA agrees with this proposal.

S.16. Response noted. Please ensure that the final RFI Report contains all of the information.

EPA is willing to discuss alternative approaches to characterizing SWMUs 8, 23, 24, and 25.

S.17. This is another situation where the original comment requested additional sampling in order to determine the extent of contamination outward from a previous sampling location (S10-SB02) where a significant concentration of chromium (834 mg/kg) and nitrate/nitrite (690 mg/kg) was found. Although KNC's response states that additional sampling will be performed near location S10-SB02, the Phase II Work Plan again proposes to collect samples immediately *outside* the berms of the sludge ponds in order to verify that contamination is contained within the sludge ponds instead of the area around S10-SB02 *within* SWMU 10. While the EPA agrees that it is important to verify that contamination was not released outside of SWMU 10, the concentrations and horizontal and vertical extent of contamination *within* the SWMU must also be determined.

KNC needs to propose additional sampling in order fully characterize the extent of chromium and nitrate/nitrite contamination within SWMU 10. Please refer to the RFI Interim Status Report, Figures 4-26 and 4-27. In Figure 4-26, results for S10-SB02 indicate chromium at 834 mg/kg at a depth of two feet. Because sampling from a deeper interval at this location was not performed, it is not known whether the chromium contamination found at two feet extends deeper or not; therefore deeper sampling needs to be performed at this location to determine this. Samples must also be collected outward from this location in order to determine the areal extent of chromium contamination. In Figure 4-27, significant levels of nitrate/nitrite was found at locations S10-LS02 and S10-LS03. At these locations it appears that the nitrate/nitrite contamination is likely in the shallow depth interval, as the contamination decreases in concentration with depth. Additional sampling is needed to verify the areal extent of nitrate/nitrite contamination by moving outward from the two locations S10-LS02 and S10-LS03; samples should be collected from intervals deeper than two feet in order to demonstrate the vertical extent.

S.18. Response noted. Please ensure that the final RFI Report contains all of the information.

With regard to the Geotechnical Testing parameters listed in the approved RFI Work Plan in Table 6-1 on page 7 of 13 for SWMU # 10, and page 8 of 13 for SWMU #11, the EPA is in agreement with KNC's response stating that these geotechnical parameters are not necessary unless the information is to be used specifically for well design.

S.19. Response noted. Please ensure that the final RFI Report contains all of the information.

S.20. Referring to Figure 12 in the Phase II RFI Work Plan, please modify this figure to clearly illustrate the boundary of SWMU 17. Once this is done, please ensure that the additional sampling proposed will be sufficient in order to define the extent of contamination within SWMU 17.

S.21. Response noted. Please ensure that the final RFI Report contains all of the information.

S.22. Referring to Figure 13 in the Phase II RFI Work Plan, please modify this figure to clearly illustrate the boundary of SWMU 19, and the boundaries of Trenches 1, 2, and 3. The sampling locations shown on Figure 13 appear to be adequate to provide the additional data needed to define the extent of chromium and nitrate/nitrite contamination in the vicinity of previous sampling locations S19-SB06 and S19-SB07.

There appears to be some significant levels of nitrate/nitrite consistently within the 6-10 foot depth interval throughout the area sampled. Additional sampling should be performed to define the extent of this contamination.

S.23. Response noted. Please ensure that the final RFI Report contains all of the information.

S.24. KNC's response states that they would like to discuss with EPA whether additional sampling in SWMU 22 is needed; the EPA agrees that this issue may be discussed in order to resolve it.

S.25. It was EPA's understanding that the purpose of the RFI Interim Status Report was to present findings to date so that data needs could be identified and additional work proposed in the Phase II RFI Work Plan, with the intention to complete investigative activities before the RFI Report is drafted. In their response to this comment, KNC states that hydrogeologic cross sections have been prepared and will be provided in the Final RFI Report. If KNC's goal is to still try to complete the investigation before preparing the final RFI Report, the cross sections requested in the EPA comment should be submitted for review at this time. If not included until the final RFI Report, additional work may be required upon review of the final report if the horizontal and vertical extent of groundwater contamination has not been defined.

S.26. The EPA concurs with the KNC response.

S.27. Response noted. Please ensure that the final RFI Report contains all of the information.

S.28. Please see the response relative to Specific Comment 25 above.

S.29. The EPA concurs with the KNC response.

S.30. One of the main reasons the EPA requires collection of unfiltered groundwater samples is that the groundwater used by potential receptors is not filtered, so it becomes a matter of accurately assessing whether potential exposures to contamination could occur under actual conditions of groundwater use. The EPA can provide guidance documents that discuss the issue of sorption of a variety of contaminants, including metals, onto colloidal-size particles which are mobile at normal groundwater flow velocities.

The EPA can assist KNC in assessing the monitoring wells where low-flow sampling techniques are unable to yield samples of sufficiently low turbidity. This will involve evaluation of monitoring well design and installation such as screen placement relative to subsurface materials, screen material and slot size, filter pack gradation, and well development methods, as well as an evaluation of well purging and sampling methods.

S.31. The EPA concurs with the KNC response.

S.32. The EPA will need to review all relevant information and data, including all hydrogeologic cross sections, relative to the assessment of the design and operation of the groundwater remediation system before rendering an opinion on any changes to the system.

S.33. The EPA did note the misspelling of Mr. Conrardy's name, and points out that this error occurred during the process of KNC transcribing EPA's comment, as the original comment in official correspondence from EPA to KNC did not contain this error. The EPA does not understand why KNC did not correct the error, considering their response acknowledges the misspelling.

As stated previously, The EPA will need to review all relevant information and data, including all hydrogeologic cross sections, relative to the assessment of the design and operation of the groundwater remediation system before rendering an opinion on any changes to the system.

S.34. The EPA concurs with the KNC response.

S.35. The EPA concurs with the KNC response.

S.36. The EPA concurs with the KNC response.

S.37. Please refer to the EPA response to Specific Comment 2 above.

S.38. Please refer to the EPA responses to Specific Comment 4 and 5 above.

S.39. Please refer to the EPA response to Specific Comment 6 above.

S.40. The KNC response referred to the response to Specific Comment 39, which concerns SWMU 2 - North Pond. The EPA assumes KNC intended to refer to the response to Specific Comment 8 which discusses additional sampling in SWMU 3 - East Pond. The EPA response to Specific Comment 8, concerning additional sampling in SWMU 3 - East Pond, is applicable to Specific Comment 40, also.

S.41. Response noted. Please ensure that the final RFI Report contains all of the information.

EPA is willing to discuss the findings of the geophysical survey to determine the optimum approach for SWMU 21.

S.42. Please refer to the EPA response to Specific Comment 17 above.

S.43. The EPA had requested sulfate as an analyte because there was a process at the facility which resulted in the production of substantial quantities of sulfate. The chromium-containing corrosion inhibitor that was used previously was Nalco 374, which consisted of an aqueous solution composed of 40% chromic acid and 28%

sodium dichromate. When the cooling water containing this compound was treated in the former Chrome Destruct Unit, the hexavalent chromium was reduced to trivalent chromium by mixing it with sulfur dioxide and sulfuric acid. One of the products of this reaction would have been sodium sulfate, a water-soluble compound. After treatment with sulfur dioxide and sulfuric acid, the treated cooling water was then neutralized using lime, and then discharged into the wastewater lagoons. Therefore the wastewater and sludge generated from this process would likely have contained soluble sulfate.

There is a secondary drinking water standard (MCL) of 250 mg/l for sulfate. Although secondary MCLs are primarily for ensuring aesthetic qualities of drinking water, the EPA is concerned with any adverse impact on a drinking water supply that results from a chemical release.

S.44. The EPA concurs with the KNC response.