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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

23 OCT 2008

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
Article No. 7006 2760 0000 8651 0587

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

Dear Mr. LeRock:

RE: Approval with comments of Koch Nitrogen Company's (KNC's) September 24, 2008 revised Phase II RFI Work Plan
Dodge City, KS
EPA I.D. #KSD044625010

Dear Mr. LeRock:

The U.S. Environmental Protection Agency Region 7 (EPA) is in receipt of KNC's September 24, 2008 submittal of the revised Phase II RFI Work Plan.

EPA has noted that in KNC's responses to EPA comments, KNC references "meeting notes" from our June 13, 2008. We do not necessarily agree with all of the points in KNC's meeting notes, but do not believe it necessary to address the discrepancies in this letter. Instead we have focused our review and approval on the technical response to comments. We are approving the document with comments. KNC may commence field activities at any time. Please revise the appropriate pages, sections, figures and tables, and send in those revised pages, sections, figures and tables within fourteen (14) calendar days from receipt of this letter. The comments are:

General Comments:

1. Throughout this document, KNC has indicated that it will sample to 50 feet below ground surface (bgs), but only sample the top 20 feet for Chromium. The basis for this was limited sampling at depth for Chromium in Phase I. By not sampling for Chromium past 20 feet, KNC runs the risk of having to complete a third (III) phase of the investigation, if Phase II shows Chromium contamination at the 20 foot depth in any of the sampling locations.

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Specific Comments:

1. Section 2.3 Findings Impacting Delineation, Page 8, First Paragraph: This paragraph discusses AOC 1. KNC states that this AOC had four releases, and this area might be better addressed as multiple separate sites. KNC does not include any information on how it wants to address these separate releases. Please modify this section to include additional detail on how KNC wants to address this AOC as separate sites.

2. Section 3.3 Sampling at SWMU 1 and SWMU 2, Page 13, Second Paragraph: KNC describes the Tier 1 sampling methodology for these SWMUs. Please include a reference to Table 3.

3. Section 3.4 Sampling at AOC 1 and AOC 5, Page 15, First Paragraph, First full sentence: This sentence states the sample locations completed by Prairie Land are on the AOC 1 figure, but does not reference the appropriate figure. Please add the appropriate Figure number.

4. Section 3.4 Sampling at AOC 1 and AOC 5, Page 16-AOC 5, Third Bullet Paragraph: This bulleted paragraph is the same as the second bulleted paragraph on Page 15 which describes AOC 1 not AOC 5. Please correct the third bulleted paragraph on Page 16 for AOC 5, not AOC 1.

5. Section 3.6 Sampling at SWMUs 3, 5, 6, 7, 8,. 10, 11, 12, 17, and 19, Page 17: This paragraph lacks detail on what sampling activities will happen at each of these SWMUs. Please revise this section to add additional detail. Also, since SWMUs 23, 24, and 25 will be grouped with SWMU 8, please include discussion on these SWMUs.

6. Table 3 SWMU #1-Approximate Period of Operation: The years shown in this column are 1968-1988; however, in the previous column entitled, "Area Description," it states, "Wastewater discharge was stopped in 1998." Is the correct ending date 1988 or 1998? Please correct.

7. Table 3 SWMU #1-Phase II Scope: The text for Soils states, "Advance 18 additional DPT soil borings..." However, on Figure 4 for SWMU #1, there are 20 yellow dots showing the sampling locations. Please correct the text in Table 3 to coincide with the number of sampling locations on the map.

8. Table 3 SWMU #19-Phase II Scope: The text for Soils states, "Advance 5 additional DPT soil borings..." However, on Figure 13 for SWMU #19, there are 6 yellow dots showing the sampling locations. Please correct the text in Table 3 to coincide with the number of sampling locations on the map.

9. Table 3 AOC #5-Phase II Scope: The text for Soils states, "Advance 18 additional DPT soil borings..." However, on Figure 15 for AOC #5, there are only 16 yellow dots showing the sampling locations. Please correct Figure 15 to coincide with the number of sampling locations stated in the text in Table 3.

10. Figure No. 4-SWMU 1: In the RFI Interim Status Report, Sampling point S01-SS07&SB07; S01-SX01, and S01-SS06&SB06 showed elevated contamination. Figure #4 does not have any sampling points around these areas of elevated contamination. These three previous sampling locations form a triangle when lines are drawn to connect them. It is recommended that a sampling location be added in the middle of the triangle area. See enclosed diagram (Koch, Figure 4-7).

11. Figure No. 7-SWMUs 5, 6 and 21: KNC has included a separate Figure No. 16 for SWMU No. 21. Please correct Figure No. 7 and delete SWMU 21 from the text on the Figure.

12. Figure No. 14-AOC 1: In the Legend for this Figure it lists "Former (1991 and 2003) Sample Location;" however Page 15 states 1992 as the year of one of the former investigations. Please correct Figure No. 14.

13. Figure No. 17-SWMU 22: This Figure shows "Suspected Buried Pipelines." Are these pipelines currently used? What timeframes were they used and what was their use? Please include any information on the buried pipelines, if known, in Section 3.7 Sampling at SWMUs 21 and 22, pages 17 and 18.

Geologist Comments:

1. Page 11, Section 3.2.1. The work plan proposes to analyze soils for total chromium only, and then evaluate "the soluble component" using the synthetic precipitation leaching procedure (SPLP), EPA Method 1312. The extract from the SPLP is proposed to be analyzed for total chromium using Method 6010B, and hexavalent chromium using Method 7196.

   The EPA does not agree with this approach. Koch needs to evaluate chromium contamination in soils with respect to quantifying the amounts of total chromium and hexavalent chromium through analysis of the soil itself. From this information the amounts of hexavalent chromium and trivalent chromium in the soil may be determined, and this is the data needed for risk assessment purposes. This data is significant because the preliminary risk-based cleanup levels for chromium in soils under an industrial-use scenario, for example, is 71 mg/kg for hexavalent chromium, and 100,000 mg/kg for trivalent chromium. In order to obtain the most accurate results and overcome the inherent heterogeneity of soil contamination, a soil sample from a specific location and depth interval and of as small a volume as necessary should be homogenized and split for the two analyses, total chromium and hexavalent chromium.

   A separate issue is that of evaluating the potential for chromium contamination in soil to migrate to groundwater as the result of infiltration of precipitation from rain and snow. The recommended way to evaluate this is to utilize the SPLP (EPA Method 1312). The purpose of the SPLP is to simulate the effect of infiltrating precipitation to dissolve a soil contaminant, thus mobilizing it and potentially resulting in its migration downward to the water table. The EPA agrees that it is important to evaluate this migration pathway as it must be considered when making cleanup decisions, but in the case of chromium the SPLP may be problematic. This is because according to Method 1312, the extraction

fluid that should be used is the #2 fluid, which is reagent water with a mixture of sulfuric acid and nitric acid added to it to produce an extraction fluid with an acidic pH of 5.00 ± 0.05; this is done to simulate the pH of rain. A sample of the soil is agitated with an amount of this fluid equal to twenty times its weight for a period of 18 hours. The concern is that during this process, any hexavalent chromium initially present in the soil may become reduced to the trivalent form as a result of mixing with the acidic extraction fluid. Thus quantifying the amount of (total) hexavalent chromium in soil cannot be done using the results of the SPLP. The results of the SPLP can, however, be used to assess the amount of chromium that can be expected to leach from soil due to infiltrating precipitation, and the EPA agrees that this would provide very valuable data for use in making corrective action decisions. The EPA recommends that the SPLP should be performed as directed in Method 1312; even if a portion of hexavalent chromium, if actually present, is reduced, this is what could be expected to occur as a result of acidic precipitation.

2. Page 12, Section 3.2. The work plan states that analysis for nitrogen-bearing compounds of interest (NCOI) will be by Method SM 300.0 for nitrate and nitrite. The work plan then states that because nitrite has not been detected in previous sampling, KNC proposes to analyze only 25% of the Phase II samples for nitrite. The EPA does not agree with this proposal because the Kansas RSK Manual states that analytical results expressed "as ammonia", "as nitrate", or "as nitrite" must be converted to "as N" based on the ratios of the molecular weight of nitrogen to the molecular weights of the compounds in question in order for comparison to soil cleanup guidelines. The EPA believes it is important to document that nitrite, as a potential component of total nitrogen, was not included because it was not detected, and not because it was intentionally excluded for analysis. Further, excluding an arbitrary percentage of analyses in many cases ends up generating questions. If it is a matter of reducing costs, the EPA would rather consider discussing the number of sampling locations and/or sampling depths rather than obtaining incomplete data among sampling points.

3. Page 13, Section 3.3. In discussing proposed sampling at SWMUs 1 & 2, the work plan again proposes to characterize hexavalent chromium using only SPLP extract analysis. The same discussion as presented in Comment 1 above also applies to work done in SWMUs 1 & 2.

4. Page 13, Section 3.3. The sampling locations proposed for SWMU 2 and as shown in Figure 5, as well as the proposed sampling depth intervals, are acceptable.

5. Page 14, Section 3.3. In discussing proposed sampling at SWMUs 1 & 2, the work plan again proposes to limit the number of analyses for nitrite to 25% of the samples. The same discussion as presented in Comment 2 above also applies to work done in SWMUs 1 & 2.

6. Page 15, Section 3.4. In discussing proposed sampling at AOC 1, the work plan again proposes to characterize hexavalent chromium using only SPLP extract analysis. The same discussion as presented in Comment 1 above also applies to work done in AOC 1.

7. Page 15, Section 3.4. The sampling locations proposed for AOC 1 and as shown on Figure 14, as well as the proposed sampling depth intervals, are acceptable to the EPA.

8. Page 16, Section 3.4. In discussing proposed sampling at AOC 5, the work plan again proposes to limit the number of analyses for nitrite to 25% of the samples. The same discussion as presented in Comment 2 above also applies to work done in AOC 5.

9. Page 16, Section 3.4. The sampling locations proposed for AOC 5 and as shown on Figure 15, as well as the proposed sampling depth intervals, are acceptable.

10. Page 17, Section 3.5. In discussing proposed sampling at SWMU 14, the work plan states that "samples will be analyzed for total and soluble Cr", and also states that "samples will be analyzed in accordance with the analytical procedures listed in Section 3.2.1". Again, the same discussion regarding use of the SPLP for characterizing chromium in Comment 1 above also applies to work done at SWMU 14.

11. Page 17, Section 3.5. The sampling locations proposed for SWMU 14 and as shown on Figure 19, as well as the proposed sampling depth intervals, are acceptable.

12. Page 17, Section 3.6, SWMU 3. Regarding proposed sampling for SWMU 3 (East Pond), the EPA does not understand the proposed sampling. Based on the results of the initial sampling as reported in the RFI Interim Status Report, the EPA does not see a need to further characterize the extent of nitrate-nitrite. Some additional sampling is needed for chromium due to several areas exhibiting significant levels, and it would be very helpful to determine the proportions of hexavalent and trivalent chromium. The EPA has some suggestions for additional sampling locations for completing the assessment of chromium contamination. These additional points are shown on a copy of Figure 6 from the Phase II RFI Work Plan (9-24-08). Also, the EPA believes the data from past sampling indicate the chromium contamination is limited in depth in SWMU 3, and recommends sampling from the surface (0-0.5 ft.) down to 20 feet as proposed in Table 3.

13. Page 17, Section 3.6, SWMU 5 and SWMU 6. The EPA believes that two (2) additional sampling locations are needed near former sampling location S05-SS04/SB04. In previous sampling which went to two feet below ground surface (BGS), chromium was found at 158 mg/kg at 0-0.5 feet BGS, and nitrate-nitrite was found at 160 mg/kg at two feet BGS. It is recommended that the two additional sampling locations should be located 30-50 feet east and west of the former sampling location S05-SS04/SB04.

14. Page 17, Section 3.6, SWMU 7. SWMU 7 has been identified as a landfill for general plant trash. The work plan proposes to excavate test pits in four areas as shown on Figure 9. From the brief description of proposed work in Table 3, it appears as if these four locations will be the only areas excavated for the purpose of determining the extent of the landfill and assessing its contents. Because the precise location and configuration of the landfill is unknown, the EPA recommends that excavation should continue until the landfill is found. Once it has been found, excavation should continue until the extent is determined. If and when the excavation nears former sampling location S07-SB01, an

effort should be made to determine if there is an obvious source of the tetrachloroethene that was detected in the previous sampling. Depending upon what is found in the landfill, Koch may need to collect additional soil samples to confirm that no releases of hazardous constituents were released to the soil. Because of the previous detection of tetrachloroethene, soil samples should also be analyzed for volatile organic compounds (VOCs) in addition to chromium and nitrate-nitrite.

15. Page 17, Section 3.6, SWMU 8. The sampling locations proposed for SWMU 8 as shown on Figure 10, as well as the proposed sampling depth intervals, are acceptable.

16. Page 17, Section 3.6, SWMUs 10 & 11. The sampling locations proposed for SWMUs 10 and 11 as shown on Figure 11, as well as the proposed sampling depth intervals, are acceptable.

17. Page 17, Section 3.6, SWMU 12. The sampling locations proposed for SWMU 12 and as shown on Figure 8, as well as the proposed sampling depth intervals, are acceptable.

18. SWMU 17. The sampling locations proposed for SWMU 17 and as shown on Figure 12, as well as the proposed sampling depth intervals, are acceptable.

19. SWMU 19. The sampling locations proposed for SWMU 19 and as shown on Figure 13, as well as the proposed sampling depth intervals, are acceptable.

20. Table 3. Table 3 must be revised to reflect the previous comments referring to the problems involving SPLP analysis for chromium, and limiting the number of samples proposed for nitrite analysis.

21. Pages 18 & 19, Section 3.8. This section describes proposed activities to collect and interpret data needed to evaluate and optimize the existing groundwater recovery system. The EPA has the following comments and recommendations:

    (a) At least two (2) hydrogeologic cross sections should be prepared, one cross section trending parallel with the natural groundwater flow direction (flow not impacted by pumping), and one cross section trending perpendicular to the natural groundwater flow direction. These cross sections should be of such a size that the entire vertical and horizontal extent of the groundwater contaminant plume(s) will be clearly illustrated.

    (b) A groundwater surface elevation contour map should be prepared that covers the entire areal extent of the contaminant plume(s). A "base" map is needed that represents static non-pumping water surface elevations so that the natural groundwater flow may be determined.

    (c) A map depicting the entire horizontal or areal extent of the plume(s) needs to be prepared. Isoconcentration contouring of the analytical results needs to be done in order to clearly depict the contaminant concentrations within the plume(s).

(d) The EPA assumes that by the term "hydraulic testing" that KNC is referring to the determination of aquifer parameters such as hydraulic conductivity and transmissivity. The EPA agrees that this type of aquifer assessment is essential in order to design an effective and efficient groundwater recovery system. KNC needs to provide more details regarding what is being proposed; ex. pumping tests, slug tests, etc.

(e) One of the most important components of an evaluation of a pump-and-treat recovery system is a careful analysis of both horizontal and vertical capture zones of existing and proposed recovery wells. Once an accurate understanding of the horizontal and vertical extent of the contaminant plume(s) has been achieved, the next step is to evaluate and/or design a recovery system capable of capturing the plume(s), taking into consideration the natural groundwater flow direction. The EPA has recently developed guidance on evaluating capture zones, and can provide a link to this guidance to KNC. A computer flow model can also provide assistance in assessing capture zones.

22. Page 20, Section 3.9.2. In describing the two monitoring wells installed in the Dakota Formation, the EPA noted that these wells have 20-foot screens. For wells installed in the much thinner (~ 55 feet of saturated thickness) uppermost unconsolidated aquifer, the EPA would prefer that KNC utilize 5-foot, but not more than 10-foot, well screens.

As stated above, please send in the revised pages, sections, tables and figures within fourteen (14) days from receipt of this letter.

If you have any questions regarding these comments or letter, please contact me at (913) 551-7662, or 1-800-223-0425, extension 7662.

Sincerely,

Andrea R. Stone

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

Enclosure (2)

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