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RESPONSE TO COMMENTS ON OU 1 REMEDIAL INVESTIGATION REPORT

06/21/94

USEPA DOE-FN
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COMMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

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REPLY TO THE ATTENTION OF:

HRE-8J

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

RE: Response to Comments on OU 1 Remedial Investigation Report

Dear Mr. Craig:

On April 1, 1994, The United States Environmental Protection Agency (U.S. EPA) conditionally approved the revised Operable Unit (OU) 1 Remedial Investigation (RI) Final Report, provided that the United States Department of Energy (U.S. DOE) adequately address U.S. EPA's comments with appropriate responses and incorporate them into the text of the RI report.

U.S. EPA has completed its review of the OU 1 Responses to Comments and the Revised Draft Final Report. Although U.S. DOE has addressed the majority of U.S. EPA's comments, there still remain outstanding issues.

Therefore, until the attached comments are resolved the RI report can not be considered approved. U.S. EPA recommends that a conference call be held to discuss these remaining issues.

U.S. DOE must appropriately respond to the attached comments and incorporate the changes into the OU 1 RI Report within thirty (30) days receipt of this letter.

Please contact me at (312) 886-0992 if you have any questions.

Sincerely,

James A. Saric, Remedial Project Manager
Technical Enforcement Section #1
RCRA Enforcement Branch

Enclosure

cc: Tom Schneider, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ
Don Ofte, FERMCO
Jim Theising, FERMCO
Paul Clay, FERMCO

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: June 9, 1994

SUBJECT: Review of Response to Comments and Document Revisions, Remedial Investigation Report for Operable Unit 1, Fernald Environmental Management Project (FEMP), Fernald, OH, May 1994

FROM: Pat Van Leeuwen, Toxicologist PVL
Technical Support Unit

TO: Jim Saric
Project Manager

I have reviewed the Response to USEPA and Ohio EPA Comments and Documents Revisions package for the OU 1 Draft Remedial Investigation Report, Fernald Environmental Management Project (FEMP), dated May 1994, including in my review the changes made in the March 15, 1994 revision which were not previously reviewed. I find that the response to some comments has been inconsistent, and that some changes made in the previous drafts in partial response to earlier comments have now been eliminated in this draft. This apparent hedging does not seem to be getting us anywhere, and I suggest that we arrange a teleconference to discuss some of these issues. One response that is of particular concern to me is the action taken for my comment #40. Please see my response below to this comment. Several other errors (mathematical, references, footnotes) were also uncovered. These should be corrected.

My comments follow chronological order, rather than the new comment numbers assigned here; however I have made an attempt to reference the new number when it was included in the text response. Table comments are indicated only by Table number, as no cross-reference was provided.

My comments on the changes and response comments follow. If you have any questions on these comments or any section of the risk assessment, please contact me at 886-4904.

Section 6.0

Table 6-3, p. 6-26 (No comment id#)

It does not appear that both radiocarcinogenic risks and chemical carcinogenic risks were included in the

"Total" risk. For example, for the air exposure to the off-property young child, the rad risk is listed as 2x10-7 and the chemical risk as 8x10-8, for a total of 2.8x10-7 rather than 2x10-7. There are other such disjoints in this table. If such problems are due to rounding, either the table values should be used to calculate the total or two-digit values should be reported. Please review these calculations.

Section 7.0

Table 7-5, p. 7-51 (No comment id#)
Same as above.

Table 7-6, p. 7-53/54 (No comment id#)
Same as above.

Table 7-7, p. 7-60a (Saric #26)
The discussions regarding the Data Limitations of TICs are inconsistent. (1) I am not convinced that the origin of the TICs is any more uncertain than any other organic contaminant on the CLEP screening list. The compounds are TICs because they have a relative retention time outside a given range for a CLEP compound (which often occurs due to interference by other contaminants), they are not on the CLEP list or an appropriate standard was not included to facilitate their quantitation. A mass spectrum was obtained for all compounds, so a tentative identification is available. (2) The Table of TICs (included elsewhere) indicates that some are projected to be present at highly elevated concentrations. (3) If the compounds are thought to be break-down products, as suggested, their presence relative to the toxicity of the parent compounds should be discussed. (4) The "Significance" column indicates that toxicity and risk to these compounds is uncertain, while the "Recommended Action" column indicates that the TICs are relatively non-toxic; which is correct? Section E.6.3.2 indicates that many of these compounds may in fact be CNS poisons or carcinogens. (5) The presence of TICs should be reviewed in a manner similiar to other site contaminants - i.e., if the estimated concentration is present, will it contribute to the risk to any identified receptor populations? Clearly some rewriting is needed.

Section E.1

Page E-1-21a, "Body surface area for dermal exposure"
DOE has received guidance on this issue from ECAO; the comments in this section are no longer appropriate and should be revised.

Section E.2

Page E-2-15, bullet, lines 25-31 (comment #44-12)

The new statement which refers to the "95th percentile background value as a decision making point" is not clear. Paragraph 1, page E-2-12, describes a two-step process, whereby a "location" test (Student's t-test or Wilcoxon Rank Sum test) is followed by the "95th Percentile Test". My understanding is that the 95th percentile test is applied to see if any eliminated contaminants exceed this value; if so, the eliminated chemical is is added to the CPC list. I think that the intent/methodology is correct in the bullet, but the explanation is not clear. Also, this bullet does not really describe the "tox" screening process, which is the given topic for the bullets.

Section E.3

Page E-3-66, Section E.3.5.7.5 (comment #40)

I am totally confused by the response and action here. The first question raised in the comment was how did DOE resolve the apparent inconsistent exposures for the on-site CT and RME farmer exposure scenarios - e.g., the gamma exposure for the RME scenario assumes that the farmer spends 2000 hrs/year outdoors (footnote h, Table E.3-18), while the explanation of the soil ingestion rate lists the time farming/outdoors as 800 hrs/year; the gamma exposure value for the CT scenario is 1155 hrs/year and the calculation for the ingestion rate is not given. I/the reader does not understand why the gamma exposure time period is significantly different than the ingestion exposure time period. DOE's response to this comment was to eliminate the rationale for the ingestion rate for the RME exposure in section E.3.5.7.5, rather than explan the difference. This is even more unacceptable because the total description of the farmer ingestion rate was added in respose to a request for this detail in an earlier comment! We have now gone full circle on this one, and I am no closer to an explanation.

The second question raised in my original comment was if the values used were based on the activities of the "average" farmer (1987 Census of Agriculture data), did they represent the CT exposure rather than the RME exposure. I asked if a farmer whose exposure would not incur a risk using the listed values might in fact constitute a risk if he chose to plant more than 10% of his land in hay, and what a realistic upper bound might be for the RME scenario. I expected to see a discussion of this point in this section and in the uncertainties section. This question was not addressed at all. I indicated that these questions may not be important in the OU #1 report, but they may well be important if some land is returned to the public (as in OU #5), and I would like to see a consistent approach used thoughout the site.

I am futher disappointed to see that the ingestion rate explanation was replaced by a reference to the OU #4 RI

report (USDOE, 1993f), as though the use of the value in that OU grants validity for its use here. Actually, these questions were raised during the review of the OU #4 document, and we were informed that a further explanation would be provided in the current OU under preparation. When the explanation for the values were included in this OU report, it was apparent that there might be some inconsistencies in the exposure scenarios, both in the OU #4 report as well as in this one. We had pointed out that this situation might occur when two or three OU reports were on the same time-line, and issues were not being addressed concurrently within and between documents.

Table E.3-18

Footnote r was removed as indicated in response to comment #35. The remaining reference to footnote "r" in the table is incorrect.

The use of footnot "a" in reference to the on-site CT resident farmer soil/sediment ingestion rate is incorrect. No explanation is provided in the text/table for this value.

The averaging time for the on-property home builder (comment 39) might be too conservative, unless it is assumed that the builder spends 7 days a week onsite; an AT value of 205 days might be more appropriate.

Section E.4

Page E-4-46 (comment #41-c)

The new sentence is still not quite correct. (1) The version of the IEUBK model for Lead referenced should be "version 0.99d". (2) Actually the SAB has reviewed versions 0.5 and 0.6; version 0.99d and the revised manual reflect changes made in respose to comments from those reviews. (3) The sentence appears to be rather out-of-place; perhaps it would fit better at the end of the previous paragraph.

Table E.4-5, p. E-4-109

The Relative Potency Factor for chrysene is incorrect; it should be 0.001. The oral slope factor for benzo(a)pyrene is 7.3 (mg/kg-day)-1. We do not usually round-off the toxicity values; why is it done here?

Section E.5

Page E-5-21, (comment 415)

I am not certain that all readers understand the difference between the average and the median value, or know that the two values may differ depending on the distribution. Why introduce this complexity?

Second, the reference to the use of the upper 95% confidence interval value on the mean for the exposure point concentration confuses the issues. The text discussion is centered on differences in exposure considered in the RME and CT

scenarios. However, the use of the upper-bound value for the exposure point concentration addresses a different issue - the inability to fully determine contaminant media concentrations due to incomplete or less than perfect sampling schemes, rather than the inability to characterize the exposure pattern. The resulting explanation obscures the two issues. Some revision is needed here.

Table E.5-1

See comments on sections 6.0 and 7.0 tables regarding summing problems.

Section E-6

Page E-6-14, line 38

The reference to Clement International, 1990 does not appear to be correct here. This paper deals with PAH TEFs, not dioxins and furans. I think you want the EPA 1986 document on interm procedures for dioxins.

Page E-6-21a, 1st para.

I'm not certain I agree with all of this discussion. (1) The TIC concentrations may be in error due to the lack of appropriate standards for quantitation, but the mass spectra are available so the identities are usually fairly well known. Therefore, grouping of TICs and estimation of impact on risk to receptor populations is possible. (2) The instrumentation should correct for the release of soild phase bleed during temperature programing, so I am not certain what constitutents are refered to in the last sentance. (3) If significant levels of degradation compound are present, the discussion of these compounds should include the toxicity/exposure to the parent compounds.

Individual TIC Discussions

Actually, this section is pretty good, especially since it is a late addition. I do have a number of specific comments to improve the discussions.

Page E-6-21b, line 3

Do you mean "epidemics"?

Page E-6-21b, line 30

When you say effects occur at "fairly high" exposure, it would be helpful to the reader if you include a number, so that this inpact can be evaluated in relation to site exposures. Please consider this approach throughout the TIC section.

Page E-6-21c, para. 1, last setence

I did not understand this comment. I thought we

were evaluating chronic and subchronic exposures in the RI. Maybe we need to identify the acute/short-term effects as being of importance in the FS report.

Page E-6-21d, para. 3

The first sentence and the last setence are not compatible.

Page E-6-21f, para. 1

The Conclusion does not seem to follow from the last sentence. Perhaps the level of exposure which causes liver and kidney damage should be indicated.

Page E-6-21f, discussion of overall impact

Again, I am not certain I agree with all the comments made in this section. (1) From the discussion of the individual classes, it is obvious that some of these classes of TICs contain some constitutents which are pretty toxic at higher concentrations or with prolonged exposures. Therefore, the statement that the TICs appear to be relatively non-toxic does not seem to follow from the preceeding discussions. (2) The text indicates that the TICs may be present from residuals blown over from crop farms, and that the compounds would have reduced toxicity. If this were the case, such TICs should have been detected in background samples at concentrations which were orders of magnitude greater. Was this the case? Also many compounds applied to crops are very toxic. (3) Maybe it would help the discussion to relate to the potential receptor populations being considered when discussing the impact of these TICs - e.g., which recepter populations are likely to be impacted by the TIC exposure. (4) The second to last sentence in this section is not clear.

Table E.6-4

(1) Indicate the units for the values in parens. (2) Clarify notation in the esters section - e.g., esters of these acids.

Section E-7

Page E-7-2, line 11

The revised notations used for uranium (U-238) and cesium (CS subscript 137) are not consistent.

Table E.7-1

Refer to prior discussions of the apparent discrepancies in the summation of totals.

Table E.7-9

It is not clear whether the values listed under "Cancer Risks/ Operable Unit 1" include background risks. This should be indicated in the header/footnotes if background is included in this calculation.

U.S. EPA COMMENTS ON THE U.S. DOE COMMENT RESPONSE DOCUMENT FOR THE OU 1 RI DRAFT FINAL RI REPORT

Original Comment 15: The original comment stated that the amount of uranium detected in each zone is a result of the limited number of samples collected from the zones. Only one sample was collected from the Deep Saturated Sand and Gravel Layer (Boring 4011), and this boring is located upgradient of OU 1. There is a negative bias in U.S. DOE's conclusion that no contamination exists in Zone 4 when this conclusion is based solely on upgradient Boring 4011. U.S. DOE should justify the lack of data from downgradient Zone 4 borings.

Original Comment 23: The maximum contaminant limit (MCL) for beryllium of 0.004 milligrams per liter is missing in footnote "m" of Table 4-2. The MCL for beryllium should be added to footnote "m".

Original Comment 28: U.S. DOE added footnote "u" to table E.3-18. However, footnote "u" is not referenced and does not appear in the body of Table E.3-18. This table should be revised to include references to footnote "u" in the body of the table, specifically in the parts of the table labeled "Incidental ingestion of soil/sediment" and "Dermal contact with soil/sediment."

Original Comment 29: U.S. DOE revised the text in Section E.3.5.7.4 to describe the inhalation rate for the homebuilder as 2.5 cubic meters per hour (m^3/hr). However, in Table E.3-18 the inhalation rate for the homebuilder is still presented as 0.83m^3/hr. Table E.3-18 should be revised to present the inhalation rate for the homebuilder as 2.5 m^3/hr. Intake calculations for the homebuilder should also be revised as necessary to reflect this change.