



Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544



JUN 8 1994

Ms. Barbara Hoditschek
RCRA Permits Program Manager
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
P. O. Box 26110
Santa Fe, New Mexico 87502

re: Response to Noted Deficiencies in the Amendment to the Closure Plan for Technical Area 35, TSL-85 Surface Impoundment

Dear Ms. Hoditschek:

Attached is the response to the Notice of Deficiency (NOD) dated May 5, 1994, for the Technical Area (TA) 35, TSL-85 surface impoundment. Items are referenced by item number, document section, page and paragraph if applicable, and consist of the New Mexico Environment Department (NMED) comment, the proposed resolution, and any necessary text changes. Where an extension is requested for an individual item, justification is provided along with an expected submittal date. Once approval is received for all items, a Revised Amendment to the Closure Plan will be submitted which incorporates the deficiency resolutions, as well as minor changes due to internal University of California (UC) and DOE comments.

It is requested that NMED approve the technical responses to the deficiency items included with this letter and grant an extension of the deadline for response to items 2, 3 and 4 so that UC and DOE may proceed with modifications to the amendment of the closure plan.

If you have any questions, please call me or have your staff call Court Fesmire at 665-4718.

Sincerely,

Joseph Vozella FOR

Joseph Vozella, Chief
Environmental, Safety and Health
Branch



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cc w/attachment:

B. Swanton, NMED-AIP, MS M993
C. Fesmire, LAAO, ES&H, MS A316
K. Schenck, Sciencetech/LAAO, ES&H, MS A316
LAAO\ER Program file [OU 1127] 1.4.2.6.1.17

cc w/o attachment:

T. Taylor, LAAO, ES&H, MS A316
K. Boardman, AL-ERPO, MS A906
W. Spurgeon, EM-452, HQ
T. Baca, UC-LANL, EMP, MS J591
J. Jensen, EM/ER, MS M992
RPF, MS M707

TA-35, TSL-85, RESPONSE TO NOTICE OF DEFICIENCY (NOD)

ITEM 1

Section and Comment

"Section 2.0, Response to *NMED's Reason for Closure Plan Disapproval*, page 2-2, paragraph 2. **The action level calculated for selenium in the Closure Certification Report risk assessment (BEC, 1991) is summarized in Table 2-2 of this amendment.**"

- a. Table 2-2 - In deriving action levels for a systemic toxicant in soil:
 - i. The source of the reference dose (RfD) needs to be cited and dated for the time the reference was published;
 - ii. An intake of 0.2 grams per day for a 16 kilogram child per 5 years of exposure must be used.
- b. Why was other criteria used in Table 2-2? Use of the provided RfD (assuming that the RfD was the most current at the time the presentation was made and assuming that the RfD was from an acceptable source) versus a screening action level of 250 mg/kg, the calculated screening action level for selenium would have been lower."

Response

Item 1.a.i. The footnotes to the RfD, as well as the slope factors (SF), will be revised to indicate that source of the data was the U.S. Environmental Protection Agency (EPA)'s July 1991 edition of the Integrated Risk Information System (IRIS) database. The following are the revised footnotes:

- "c "SF" refers to a carcinogenic slope factor. The data was obtained from the EPA's Integrated Risk Information System (IRIS) database (July 1991 edition). Units are (milligrams per kilogram-day)⁻¹.
- d "RfD" refers to a reference dose for a systemic toxicant. The data was obtained from the EPA's IRIS database (July 1991 edition). Units are milligrams per kilogram-day."

Item 1.a.ii. Section 4.1 of the amendment to the closure plan details how health-based soil concentration action levels will be calculated for systemic toxicants. The governing equation is listed along with definitions of the parameters. The definitions indicate a child weight of 16 kilograms (kg) and an intake of 0.2 grams per day (g/day).

Item 1.b. The information regarding action level determination contained in Table 2-2 was taken from the "Closure Certification Report, TA-35 TSL-85 Surface Impoundment" (Benchmark Environmental Corporation, 1991). The intent of the table was to present the action levels for selenium and antimony. The intake value listed in Table 2-2 is 0.0002 kg/day which is equal to 0.2 g/day. Enclosure 5 of the Closure Certification Report, entitled "Explanation for Risk Calculation Tables," states that NMED recommended assuming 10 kg for a child's body weight.

Section 4.1 of the amendment to the closure plan stipulates that health-based soil concentration action levels will be calculated for the constituents listed in Tables 3-2 through 3-5. However, based on the NMED statement that using the provided RfD would result in a lower calculated screening level, the following calculations are provided using the data presented in Table 2-2.

$$C = (RfD \cdot W) / (I \cdot A \cdot CF)$$

$$RfD = 0.005 \text{ mg/kg/day}$$

$$W = 10 \text{ kg}$$

$$I = 0.0002 \text{ kg/day}$$

$$A = 1 \text{ (dimensionless)}$$

$$CF = 1 \text{ (no conversion factor is necessary because the intake is in units of kg/day)}$$

$$\text{Therefore, } C = (0.005 \cdot 10) / (0.0002 \cdot 1 \cdot 1) = 250 \text{ mg/kg}$$

ITEM 2

Section and Comment

"Section 2.0, Response to *Section and Comment*, page 2-2, paragraph 3.

However, a comparison of beryllium concentrations detected at sample locations 85PL-1 through 85PL-12 (Table 2-1), with background levels for beryllium (Table 2-3) shows that the beryllium concentrations are all below background levels.'

In order to verify that beryllium concentrations are below background levels, the Table 2-3 reference to background study reports must be provided to NMED for review and approval. Submittal of these documents must be separated from the Closure Plan or an amendment to the Plan. Unless the method and procedure used to make the background determination are acceptable, NMED will not agree with the findings in the above comparison."

Response

It is requested that a deadline extension of 30 days, from the date of receipt of approval for this request, be granted for this item. This request is based on the need to resubmit, under separate cover, relevant documentation on background levels at the

Los Alamos National Laboratory (LANL) facility. In accordance with NMED's request, it is proposed that the report entitled "Sigma Mesa: Background Elemental Concentrations in Soil and Vegetation" (Ferenbaugh et al., 1979) be resubmitted to NMED as well as the draft study "Preliminary Background Elemental Concentrations in Bandelier Tuff and Selected Soil Series" (Longmire et al., November 1993), and additional supporting documentation, including site-specific information, to address the concerns expressed by NMED in Item 3.

ITEM 3

Section and Comment

"Section 2.0, Response to *NMED's Reason of Closure Plan Disapproval*, page 2-2 through 2-3, paragraph 4. **Background levels for beryllium are documented in the report entitled *Sigma Mesa: Background Elemental Concentrations in Soil and Vegetation* (Ferenbaugh et al., 1979) (Appendix B) and the study *Preliminary Background Elemental Concentrations in Bandelier Tuff and Selected Soil Series* (Longmire et al., November 1993). The study by Longmire et al., (1993) will be completed in November 1993; Attachment 2-1 of this amendment provides a telephone log with summaries of the background concentration data determined by Longmire et al. for antimony, beryllium and selenium.'**

The documentation for Attachment 2-1 and Appendix B, referred to above, must be reviewed and approved by NMED, as a separate document submittal, prior to being acceptable for the support of establishing background values. If it is the desire of LANL to pursue the establishment of background values, provide all materials necessary for NMED to validate the documented hypothesis.

In addition to the report itself, the following information are examples of concerns which may be addressed in the background investigation:

- a. Describe the geographical location of the Sigma Mesa relative to the TA-35, TSL-85 surface impoundment.
- b. Report the detection limits for the metals that were analyzed, and indicate whether these limits were below the calculated screening action levels.
- c. Provided a demonstration to show that sample sites were not previously contaminated. Stratigraphic cross-sections need to be provided to show that samples for background represent the same stratigraphic layer and soil type as the unit being investigated.

RFI Guidance: Volume II of IV, *Soil, Groundwater, and Subsurface Gas Releases*, EPA 530/SW-89-031, May 1989, OSWER Directive 9502.00-6D, page 9-44 states: 'Background soil samples should be taken from areas that

are not near a suspected source of contamination and from the same stratigraphic layer as the study area samples, if possible."

Response

As in the response to Item 2, it is requested that a 30-day deadline extension be granted to make a separate submittal of background information to NMED. Collectively, the documentation provided in the additional submittal will allow NMED to evaluate and determine the applicability of the various background values presented in the associated documentation. The submittal will also, at a minimum, address the three samples of concern posed by NMED in the comment portion of this item.

ITEM 4

Section and Comment

"Section 2.0, Response to *NMED's Reason of Closure Plan Disapproval*, page 2-3, paragraph 3. **The presence of nonhazardous dielectric waste oil in the soils appears to have interfered with the SVOC analyses for the soils, resulting in samples with elevated LOQs.'**

Remediation of the dielectric oil is necessary for the following reasons:

- Inability to accurately determine the presence of semivolatiles as a result of the masking affect from the dielectric waste oil;
- The presence of waste oil in the soil indicates that a leak occurred under the surface impoundment; and
- Hazardous waste constituents were part of the overall waste stream generated at the surface impoundment."

Response

It is agreed that the presence of nonhazardous dielectric waste oil in the soils, in the area of the former surface impoundment (TSL-85), is interfering with the semivolatile organic compound (SVOC) analyses for those soils. It is requested that a 60-day deadline extension, from the date of receipt of approval of this request, be granted to address this item. This request is based on the need for an evaluation of remedial options as well as other applicable alternatives. At the end of the 60-day extension, a written plan will be submitted to NMED that presents all relevant and applicable information regarding the proposed resolution to this item. At a minimum, this plan will address NMED's three reasons for remediation that are listed in NMED's comment for this item.

ITEM 5

Section and Comment

"Section 2.0, Response to NMED's Reason of Closure Plan Disapproval, page 2-4, paragraph 4. **For the proposed additional sampling presented in Section 3.0 of this amendment, LANL's Environmental Chemistry Group (EM-9) will conduct analyses for all Appendix VIII analytes that their in-house laboratories have the analytical capability to perform.'**

This statement seems to imply that not all Appendix VIII constituents can be analyzed through in-house capabilities, and that any constituents that cannot be analyzed through in-house capabilities may not be analyzed at all. Provide clarification for the above sentence that may include how outside laboratories may be called upon to conduct analysis that will not be conducted at LANL."

Response

Based on a review of relevant documentation for other Resource Conservation and Recovery Act (RCRA)-regulated sites at the LANL facility, as well as, research on the analytical capabilities of an analytical laboratory that performs contract work under EPA's Contract Laboratory Program (CLP), it is proposed that all additional samples associated with the TSL-85 surface impoundment be analyzed for the standard suite of analytes for volatile organic compounds (VOCs) by Method 8260, SVOCs by Method 8270, polychlorinated biphenyls (PCBs) by Method 8080, total metals by Method 6010, and toxicity characteristic leaching procedure (TCLP) metals by Method 1311 as specified in "Test Methods for Evaluating Solid Waste" (SW-846) (U.S. EPA, 1992). It is strongly believed that this approach will adequately reflect site conditions and will result in identifying all constituents present at the TSL-85 site that may be of concern. In addition, it is proposed that gel permeation chromatography (GPC), SW-846 Method 3640, be performed for all samples prior to analyses for individual analytes. GPC, a size exclusion procedure, will be used to separate hydrocarbon oils, if present, from SVOCs. All resulting tentatively identified compounds (TICs) and J-flags, if any, will be addressed in accordance with SW-846 protocol.

This proposal is based, in part, on the knowledge that accepted analytical techniques and methods are not available for a large number of Appendix VIII constituents. Attachment 1 includes a record of telephone conversation with Joan Fisk of EPA, as well as, a copy of a letter from Craig Leasure of LANL's Environmental Chemistry Group (CST-9) to Robert Vocke of LANL's Environmental Restoration and Waste Management (ERWM) Program dated June 4, 1993 regarding this issue.

In addition, this proposal is based on the fact that this proposed approach is consistent with the approaches accepted by NMED or EPA, Region VI for other RCRA units at the LANL facility. Most recently, approval of clean closure demonstration was granted by NMED for the TSL-125 surface impoundment at TA-35 (refer to Attachment 2). Samples associated with this clean closure demonstration were analyzed for VOCs by Method 8240, SVOCs by Method 8250 or Method 8270, PCBs by modified Method

8080, total metals by Method 6010, and metals by the extraction procedure (EP) toxicity test (Method 1310) using SW-846 standard analytical methods and protocol. LANL's operable unit (OU) 1148 workplan was approved by EPA, Region VI in December 1993. This workplan specified use of the EPA's CLP target analyte lists for VOCs and SVOCs as well as analyzing for metals, pesticides, and PCBs according to SW-846 protocol. Copies of the approval letter and the relevant text in the response to EPA's NOD are included as Attachment 3.

If this proposal is approved, Tables 3-2 through 3-5 of the Amendment to the Closure Plan for TSL-85 will be revised to reflect the standard suite of analytes, as represented in SW-846, for each category of analyses (e.g., VOCs, SVOCs) and will be included in the revised Amendment to the Closure Plan for TSL-85 to be submitted to NMED.

ITEM 6

Section and Comment

"Section 2.0, Response to NMED's Reason of Closure Plan Disapproval, page 2-7, paragraph 2. **Acetone and 4-isopropyltoluene are not listed in Appendix VIII; therefore, they were not included in the Closure Certification Report risk assessment (BEC, 1991).'**"

The New Mexico Hazardous Waste Regulations dealing with closure activity (HWMR-7, Part V, §264.111) states that the owner or operator must close a facility in a manner that minimizes the need for further maintenance and controls, minimizes or eliminates to the extent necessary, to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

Therefore, acetone and 4-isopropyltoluene must be included in the Closure Certification Report risk assessment."

Response

It is agreed that acetone and 4-isopropyltoluene should be included in the risk assessment. Therefore, these constituents will be added to Table 3-2 for VOC analysis and inclusion in the risk assessment.

ITEM 7

Section and Comment

"Section 2.0, Response to NMED's Reason of Closure Plan Disapproval, page 2-8, paragraph 1. **Pure 1,1,1-trichloroethane was the primary degreasing solvent used in Building 85 and 118... Current analytical methods are unable to measure concentrations of hazardous constituents down to a concentration of 0.'**"

The phrase 'primary degreasing solvents' implies that other solvents were used. Provide a complete list of those solvents used for degreasing operations in Building 85 and 118 prior to the closure of the TA-35, TSL-85 surface impoundment.

Measuring the concentrations of constituents is typically done to the estimated quantitation limit. J-flag or TIC reporting is also necessary and must be included in any acceptable baseline risk assessment."

Response

Based on the research conducted regarding knowledge of process, 1,1,1-trichloroethane, acetone, freon, and methanol were the only known solvents used in Buildings 85 and 118. Therefore, it is proposed to revise the subject sentence as follows:

"The only known degreasing solvents used in Buildings 85 and 118 were 1,1,1-trichloroethane, acetone, freon, and methanol."

EPA guidance entitled "Guidance for Data Useability in Risk Assessment" (EPA/540/G-90/008, October 1990) allows for the use of J-flag data and TIC's in risk assessment. Therefore, J-flag and TIC data will be utilized in accordance with EPA guidance.

ITEM 8

Section and Comment

"Section 2.0, Response to *NMED's Reason of Closure Plan Disapproval*, page 2-9, paragraph 2. **'PCBs were detected in Phase I, III and IV at concentrations listed in Enclosure 4 of the Closure Certification Report (BEC, 1991) that exceeded calculated action levels. However, all detected concentrations of PCBs were below the NMED clean closure required cleanup level of 10 mg/kg (ppm) as specified in the Closure Certification Report risk assessment. Therefore, PCB concentrations are not considered a concern at the site and unless determined otherwise do not require any remedial action.'**

Due to the fact that there is an occurrence of multiple hazardous waste constituents present in the soil at the closure, PCB values must be included in the calculation during risk assessment for aggregate risk or for the hazard index."

Response

The maximum concentration of PCBs detected in the soils was 1.1 parts per million (ppm). This is well below the NMED clean closure required cleanup level of 10 mg/kg (ppm). Therefore, PCBs have been discounted from further consideration and should not be considered in the risk assessment. Furthermore, the slope factor for PCBs is such that a concentration of 0.08 ppm results in a risk of 1×10^{-6} . Therefore, a

concentration of 1.1 ppm would indicate a risk much greater than 1×10^{-6} (in the range of 1×10^{-4} to 1×10^{-5}). If this risk is included in the aggregate risk calculation, the aggregate risk will appear much greater. This would, in essence, force the cleanup level for PCBs down to a level of 0.08 ppm. At the TA-35 TSL-125 surface impoundment, a sister unit to the TA-35 TSL-85 surface impoundment, clean closure has been granted by NMED. PCBs were detected in five samples at TA-35 TSL-125, ranging from 0.11 to 0.58 ppm. NMED agreed that cleanup of PCBs was not needed as long as the concentrations were below the TSCA cleanup level of 10 ppm. Based on the above, it is not appropriate to include PCBs in the risk assessment unless resampling detects PCBs equal to or greater than the 10 ppm cleanup level.

ITEM 9

Section and Comment

"Section 2.0, Response to *NMED's Reason of Closure Plan Disapproval*, page 2-9, paragraph 4. **A summary of the most current IRIS values used for the proposed risk evaluation will be included with the submittal of the Revised Closure Plan Certification Report as part of the risk evaluation.'**

In the case that toxicological data is not found in IRIS, LANL must look for HEAST data or other available, EPA approved sources. Sources must be referenced in the report along with a date for the reference."

Response

It is agreed that if toxicological data are not found in the current IRIS database, current Health Effects Assessment Summary Tables (HEAST) data or data from other EPA approved sources will be used. Therefore, it is proposed that the subject text be revised as follows:

"A summary of the most current IRIS, Health Effects Assessment Summary Tables (HEAST), or other EPA approved toxicity values used for the proposed risk evaluation will be included with the submittal of the Revised Closure Certification Report as part of the risk evaluation."

It is also proposed that the same type of change be made to the first sentence of Section 4.1, Calculation of Action Levels. The sentence will be revised as follows:

"Screening action levels will be calculated for the constituents listed in Tables 3-2 through 3-5 only if toxicological data (i.e., slope factors or reference dose) are available in the most current IRIS database, the most current HEAST, or other EPA approved sources."

ITEM 10

Section and Comment

"Section 3.0, Proposed Sampling and Analysis Plan, page 3-1, paragraph 3. **All analyses, QA and QC will follow guidance specified in "Test Methods for Evaluating Solid Waste" (SW-846) (U.S. EPA, 1992). If hazardous constituents are detected in any of the samples, a risk evaluation will be performed as outlined in Section 4.0 of this amendment.'**

Quality assurance results must be supplied with all analytical results. The analytical report must include any J-flag data and TICs, which in turn must be used in risk assessment or when multiple constituents have been detected."

Response

Quality assurance results, as well as J-flag data and TICs, will be supplied with all analytical results. J-flag data and TICs will be utilized in the risk assessment in accordance with EPA guidance.

ITEM 11

Section and Comment

"Section 3.0, Proposed Sampling and Analysis Plan, page 3-1, paragraph 3. **The analyses performed for Phase I soil samples generated analytical data for VOCs and SVOCs that are suspected due to surrogate recovery results outside EPA limits and missed EPA-allowable holding times. In addition, the SVOC data were compromised due to the interference from dielectric waste oil resulting in elevated LOQs. Therefore, Phase VI soil samples will be collected in the area of the former surface impoundment at locations representative of the locations sampled during Phase I.'**

The comment for item 4 provides reasons for the need to remediate the dielectric waste oil. One of the given reasons was the interference from the dielectric oil, effecting the LOQ.

No response is needed for this comment. Attention is being focused on this part of the reviewed document for the same concern that is brought out in item 4 of this paper."

Response

No response is necessary for this comment.

ITEM 12

Section and Comment

"Section 3.0, Proposed Sampling and Analysis Plan, page 3-2, paragraph 3. **Twelve soil samples will be collected, following the procedures**

described in Section 3.4.1.2, at a depth of 3.5 to 4.5 feet at approximately the same sampling locations as the Phase III samples.'

- a. Indicate sampling locations for all Phase III samples collected on a site map.
- b. A minimum of five samples must be collected below the fill soil of where the underground storage tank had been positioned.
- c. Provide the basis for deciding upon twelve soil samples to characterize the horizontal and vertical extent of contamination.

Be advised that composite sampling is not acceptable for characterizing VOCs in contaminated soils."

Response

Item 12.a. Figure 2-2 is a site map presenting the Phase III sample locations. Figure 3-2 is a site map presenting the proposed Phase VI sample locations.

Item 12.b. It is agreed that five samples will be collected below the fill soil of where the underground storage tank (UST) had been positioned. Figure 3-2 will be revised to indicate that the five samples will be taken from the center and corners of the tank excavation. The following text will be inserted into the subject paragraph after the sentence ending "...surface impoundment (Figure 3-2).":

"Five additional samples will be collected from below the fill soil of where the UST had been positioned. Sampling personnel will collect these samples from the approximate center and four corners of the tank excavation".

Item 12.c. The twelve sample locations are based on the locations of the joints in the pipe from the abandoned UST to the surface impoundment. These are the most likely locations for contamination due to leaks in the pipe. The Phase III sample locations are being resampled due to missed EPA allowable holding times on the SVOCs and mercury (Hg) analyses and surrogate results outside EPA limits for the majority of the VOCs. Therefore, the samples are not intended to characterize the horizontal and vertical extent of contamination. They were selected to indicate if there has been a release to the soil.

ITEM 13

Section and Comment

"Section 3.0, Proposed Sampling and Analysis Plan, page 3-3, paragraph 4. **'Take small, equal portions of sample from the surface or near the surface of the material to be sampled. Composite the samples in a glass container.'**

It is not acceptable to composite samples being analyzed for VOCs as noted in item 14 above. Make the appropriate changes in the text of the Sampling and Analysis Plan."

Response

It is agreed that it is not acceptable to composite samples being analyzed for VOCs. It was never the intent to composite samples, only to describe the progress by which the sample jar would be filled. Therefore, it is proposed to revise the text and combine the two subject bullets as follows:

- "• Take small, equal portions of the material to be sampled from the surface or near surface to fill the sample jar."

ITEM 14

Section and Comment

"Section 3.0, Proposed Sampling and Analysis Plan, page 3-5, paragraph 4. **'The analytical methods expected to be employed for analysis of samples collected during closure activities are denoted in Table 3-6.'**

- a. Include the following hazardous waste constituents to the appropriate analytical methods list in Table 3-6: Cobalt, copper, acetone, isopropyltoluene, and PCBs.
- b. The Table must also include columns that indicate the method detection limits, the estimated quantitation limits, and the screening action levels for each constituent being analyzed.
- c. Since not all Appendix VIII constituents can be analyzed at LANL, provide a comparative list of analytical methods and associated constituents from a U.S. EPA Contract Laboratory Procedure (CLP) approved laboratory. The CLP laboratory selected must be capable of using unmodified methods for the Appendix VIII list of hazardous constituents."

Response

Item 14.a. Based on a telephone conversation with Ms. Lee Winn at NMED on May 25, 1994 (Attachment 4), cobalt does not need to be included. Based on the same conversation, copper cyanide was to be included (already in Appendix VIII) as opposed to copper. However, there is no current analytical method to analyze for copper cyanide (refer to Item 5 for a discussion of difficulties associated with analyzing for all Appendix VIII constituents). Furthermore, copper cyanide is used for electroplating copper on iron. Based on the knowledge of process, this activity never took place in TA-35 Buildings 85 or 118. Therefore, it is proposed that copper cyanide not be included in further analysis. Acetone, 4-isopropyltoluene will be added to Table 3-2, Method 8260 (VOC analysis), and PCBs (in the form of individual and mixed

aroclor) will be added to Table 3-4, Method 8080 (pesticide analysis). These constituents will not be added to Table 3-6 as they are not Appendix VIII constituents.

Item 14.b. The purpose of Table 3-6 was to present a comparison of the Appendix VIII constituents to the CST-9 analytical capabilities. It is not possible to analyze for all of the constituents listed in Appendix VIII (see Item 5). It is also very unlikely that all of the constituents analyzed for will be detected. Common industry practice is to calculate screening action levels (SALs) for only those constituents expected to be present or actually detected. Calculating SALs for all constituents in Appendix VIII would be premature, time consuming, and expensive. It is therefore proposed that revision of this table to include SALs for suspected and detected constituents be postponed until the Phase VI analytical results are available. The analytical results will include the limit of quantification (LOQ or method detection limit) for each of the constituents detected which will then be added to the table. The estimated quantitation limits (EQLs) from SW-846 will also be added to the revised table at that time.

Item 14.c. See Item 5 for the resolution to this item.

ITEM 15

Section and Comment

"Section 4.0, Proposed Risk Evaluation, page 4-1, paragraph 3.

The provided equation fails to include the absorption factor equal to one. Make the appropriate changes in the text of the Proposed Risk Evaluation."

Response

It is agreed that the governing equation for calculation of health-based action levels, as presented, does not include the absorption factor. Therefore, it is proposed to revise the equation and add a definition for the absorption factor as follows:

$$C=(RfD*W)/(I*A*CF)$$

where:

A = absorption factor (dimensionless and assumed equal to 1).

ITEM 16

Section and Comment

"Section 4.0, Proposed Risk Evaluation, page 4-2, paragraph 2. **'Aggregate hazard and risk indices are normally calculated for a site by summing these individual hazard quotients and risks, respectively, over the major constituents that are observed at a given site.'**

Explain what is meant by the term 'major constituents' as used in the above statement."

Response

The term "major constituents" was meant to refer to suspected or detected constituents which were identified as contaminants of concern. The text will be modified to indicate that the risk assessment will include constituents detected in the sample analysis, including J-flags and tentatively identified components (TICs), and those constituents suspected of being present. PCBs will not be included in the risk assessment unless resampling detects PCBs at equal to or greater than the 10 ppm cleanup level (see response to Item 8, above).

ITEM 17

Section and Comment

"Section 4.0, Proposed Risk Evaluation, page 4-3, number 1. **'If a constituent is detected above the LOQ in all samples, the 95 percent upper confidence limit of the arithmetic average will be used (per RAGS).'**

Explain what is meant by the phrase 'all samples' from the above statement. In order to be appropriate, a risk assessment must be performed when any constituent is detected either by J-flag, TIC or quantity."

Response

The subject sentence is part of a discussion relating to how and when calculation of hazard and/or risk for a given constituent will be performed. Three situations are given which would result in this calculation for a given constituent. The first situation involves the detection of the constituent above the LOQ in all of the samples collected. The second situation involves detection of the constituent above the LOQ in only some of the samples, and the third situation involves additional considerations for the remaining constituents if any sample-specific LOQs exceed the calculated health-based action level. It is proposed that the last sentence in the paragraph above the subject sentence be revised as follows:

"Three situations which will result in calculation of hazard and/or risk for a given constituent are possible:"

ITEM 18

Section and Comment

"Section 4.0, Proposed Risk Evaluation, page 4-5, paragraph 1. **'If the aggregate hazard index is greater than or equal to 1, or the aggregate risk exceeds 1X10E-6, risk assessment using a site-specific, realistic exposure assessment will be performed.'**

Response to NOD
TA-35, TSL-85
Page 14

The above statement being the case, LANL must consider all exposure pathways."

Response

It is agreed that all exposure pathways must be considered. It is proposed to revise the subject sentence as follows:

"If the aggregate hazard index is greater than or equal to 1, or the aggregate risk exceeds 1×10^{-6} , risk assessment using a site-specific, realistic exposure assessment will be performed including a qualitative consideration of all exposure pathways, and a quantitative evaluation of those pathways deemed appropriate".