KELLY AFB
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 3300

KELLY AIR FORCE BASE TECHNICAL REVIEW SUBCOMMITTEE

MEETING AGENDA

December 1, 1997 @ 6:30 P.M.
Building 217, Graniti Hall, St. Mary's University

Topic	Time	Presenter
I. Introduction	6:30 - 6:45	Damian Sandoval
→ II. Summary of Reports	6:45 - 7:30	Kelly AFB Personnel
1592 Air Sampling		Richard Black
Zone 5 Health Assessment		John Coffey CH2MHill
III. Break	7:30 - 7:45	All Personnel
IV. Discuss/Provide Comments on each report	7:45 - 9:00	Damian Sandoval
V. Action Items/Summary	9:00 - 9:15	Damian Sandoval
VI. Approve TRS Minutes	9:15 - 9:25	Damian Sandoval
VII. Adjournment	9:25 - 9:30	Damian Sandoval

ATCH 2

MEMORANDUM FOR Kelly RAB Technical Review Subcommittee 19 Dec 97

FROM: Captain Tom de Venoge

SUBJECT: 01 Dec 97 RAB TRS Meeting Notes

I. INTRODUCTION:

The Restoration Advisory Board Technical Review Subcommittee (RAB TRS), met on Monday, 01 Dec 97, from 1830-2130 hours in the Garni Science Hall, St. Mary's University. Members and others present are noted on the sign in sheet, Atch 1. Members absent included Mr. Allan Hagelthorn, the meeting agenda is Atch 2. TRS chairman, Mr. Damian Sandoval opened the meeting with a review of the agenda. One change to the agenda was submitted by Captain de Venoge regarding the presentation of the 1592 Air Sampling Report. This item was moved to the next TRS and will include a discussion of the air sampling plan and results. The Building 1592 Area - Human Health Risk Assessment of Surface Soil (Jul 97 - - Final) will also be reviewed.

TRS members briefly discussed disposition of the meeting minutes which will now be provided to the RAB following a comment period by TRS members. The TNRCC and EPA will also be given copies. Captain de Venoge volunteered to serve as the meeting secretary; a rotating duty.

Mr. Sandoval passed around a draft copy of the RAB TRS presentation for the 02 Dec 97 RAB for members to review and edit.

Mr. Sandoval also made available a report by TXDOT regarding investigative work along the New Laredo Highway and clarified the purpose of the TXDOT work was different from that of Kelly AFB, which characterizes much more extensively.

II. SUMMARY OF REPORTS:

1592 Air Sampling: postponed until next TRS

Zone 5 Health Assessment: Mr. John Coffey, CH2MHILL provided a review of the risk assessment results performed as part of the Zone 5 Remedial Investigation. A copy of the presentation is included as Atch 3. The following is a summary of some of the questions by TRS members and answers by Mr. Coffey.

Mr. David Johnson inquired about the dermal exposure calculations, what references were used and what was the geographic area considered for calculations. Mr. Coffey noted that for soils, on base soils were used. For the off base scenario, an average result from the three highest concentrations in off base wells was used. The references used by Mr. Coffey included an exposure factor handbook and TNRCC regulations.

Mr. George Rice inquired about risk from volatilization via soils and whether actual soil gas measurements or calculated values were used. Mr. Coffey replied that estimated values from calculations were used and not results from soil gas surveys. Mr. Arriaga added that soil gas surveys were only performed on base. Mr. Rice further inquired as to whether

conservative estimates and site specific soil parameters were used if available. Mr. Coffey noted that RBCA (Risk-Based Corrective Action) calculations were used and are very conservative and generally overestimate concentrations. Actual soil parameters were used where available, for the calculations. This data is available in the appendices to the Zone 5 RI.

Mr. Hoffman asked if any illnesses had been reported. This lead to a side discussion regarding the community health survey performed in the North Kelly Gardens area by Dr. Yana Bland. Mr. David Johnson agreed to bring a copy of the amended report to the next TRS.

Mr. Damian Sandoval inquired if all sources had been addressed in the Zone 5 area. Mr. Ed Shorey, CH2M Hill, responded that site S-1 is the only known source area but an effort is underway to further investigate and find additional sources. Sewer lines in particular are suspect. Mr. Sandoval asked if concentrations could possibly increase, to which Mr. Shorey replied that such an occurrence would be unlikely. Further questions by Mr. Sandoval regarded TPH (Total Petroleum Hydrocarbon) as a consideration in the risk assessment, how the new risk reduction rules (program) would impact the present document, the contaminants of concern, particularly vinyl chloride, and future land use scenarios. Mr. Coffey noted that a specific fraction of TPH (e.g. benzene) is used for risk assessment versus a wide range of hydrocarbons. Mr. Beyer noted that the new risk reduction program should not impact the present risk assessment. Cleanup must still be performed to either standard 1,2, or 3. Mr. Coffey noted that vinyl chloride is not the biggest risk driver because the concentration of the parent compound is usually the critical factor. Vinyl chloride concentrations are so low that they do not drive the risk. Regarding the future land use scenario (a hypothetical case of an occasional recreational user frequenting an industrial property setting was mentioned), Mr. Coffey noted that the on-base worker scenario presents the greatest risk. This is based on duration of exposure and activity. Because this is the most conservative case presenting the greatest risk, it obviates the need for consideration of less exposed scenarios - - the most sensitive and protective case has been considered. Mr. Sandoval noted that this point should be clearly stated in the risk assessment.

Mr. Sandoval noted that he would prepare a summary of specific questions on the presentation. This is included as atch 4.

Mr. Rice inquired as to the status of the Zone 5 Groundwater Cleanup. Mr. Shorey noted that the Zone 5 Feasibility Study is underway and will address cleanup levels, evaluation of technologies and alternatives. The draft Feasibility Study should be completed in Spring 1998.

III. ACTION ITEMS SUMMARY:

Mr. Sandoval summarized the action items:

- Bring in a copy of the Yana Bland report (Opr: Mr. Johnson)

- Draft TRS Minutes (Opr: Capt. de Venoge)

MEMORANDUM

TO: KAFB Technical Review Subcommittee (TRS) Members **DATE:** December 19, 1997

FROM: M. Damian Sandoval
KAFB TRS Chairperson

SUBJECT: Formal TRS Comments on the Zone 5 Remedial Investigation Report, Final Draft, Jan 97.

The KAFB Technical Review Subcommittee conducted a meeting on December 1, 1997 to review, discuss and provide formal comments on the aforementioned document. The following comments will be submitted to the KAFB Restoration Advisory Board (RAB) for submission to the Air Force with a copy of the comments provided to both the Environmental Protection Agency, Attention: Ms. Camille Hueni, and the Texas Natural Resource Conservation Commission (TNRCC), Attention: Mr. Gary Beyer.

1. Did KAFB collect soil gas survey data from outside the north area of Zone 5 (North Kelly Gardens Area) for the human health risk assessment for the north area of Zone 5?

2. Have all the sources contributing to soil and groundwater contamination in Zone 5 been identified, removed and/or controlled? If not, describe approach or methods of investigation to determine the sources.

3. Identify which regulatory regulations will take precedence at during site closures and property transfers. For example, indicate if EPA regulations for the human health risk assessment or the regulations under TNRCC's Risk Reduction Rules will take precedence at KAFB?

4. Present a section within the RI document that describes how the toxicity of TPH will be considered during the human health risk assessment? Indicate if TPH as a fuel or individual fuel constituents (e.g. Benzene) will be assessed for toxicity in the human health risk assessment?

5. Describe how the implementation of the new TNRCC's Risk Reduction Standards will impact this human health risk assessment. Describe the concept of "grandfathering in" KAFB sites assessed under the current TNRCC regulations ?

6. Discuss how the presence and concentrations of PCE and TCE presently found in the groundwater will be evaluated in regards to the future presence of the daughter chemical, vinyl chloride? As was discussed, PCE and TCE are not very volatile, hence, are not expected to easily escape as vapor from the dissolved phase, therefore, do not have an increased potential for risk of inhalation? As an unstable molecule with a tendency to transform into the vapor phase, vinyl chloride in the future may drive the risk for inhalation.

7. Even though the occasional, trespasser exposure pathway is not as protective as the residential exposure scenario, this document should discuss this scenario? This exposure scenario should be discussed and referenced that the residential exposure scenario is more protective and more conservative

cc: Camille Hueni, EPA
Gary Beyer, TNRCC

ATCH 4

Kelly AFB
Zone 5 Human Health Risk Assessment

Restoration Advisory Board
Technical Review Subcommittee Meeting
December 1, 1997
St. Mary's University

Zone 5 Risk Assessment

Agenda

- Objectives of the risk assessment
- Overall approach to the risk assessment
- Zone 5 Study Areas
- Selection of contaminants of concern
- Development of exposure scenarios
- Target Risk Ranges
- Risk assessment results by study area

Risk Assessment Objectives

- Summarize/interpret analytical data to identify chemicals of potential concern (COPC)
- Identify migration pathways and human receptors
- Identify appropriate toxicity criteria
- Estimate risks and assess actual/potential adverse effects to human health

Risk Assessment Approach

- Risk Assessment Guidance for Superfund (U.S. EPA, 1989)
- Texas Risk Reduction Standards (1993)

Zone 5 Study Areas

- Zone 5 sub-divided into Study Areas identified based on groundwater flow patterns, potential presence of chemicals of concern and land use.
  - North Study Area
  - South Study Area
  - West Study Area
  - East Study Area

Selection of Chemicals of Potential Concern - Metals

- **Evaluation of presence of field sampling and/or laboratory contamination (data evaluation)**
- **Comparison of maximum detected metal concentrations in soils to Kelly AFB background levels (Halliburton NUS, 1994)**
- **Comparison of maximum detected concentrations in soil and groundwater to essential nutrient levels**

ITCH 3

Selection of Chemicals of Potential Concern - Organics

- Evaluation of presence of field sampling and/or laboratory contamination (data evaluation)
- Evaluation of frequency of detection (only those chemicals detected in greater than 5 % of samples retained as COPCs)
- Background levels for organic chemicals in soil and groundwater not established

Development of Exposure Scenarios

- On base residential exposures:
  - Ingestion, inhalation, and dermal exposures to surface soils
  - Hypothetical domestic use of shallow groundwater (for drinking water and bathing)
- On base worker exposures:
  - Ingestion, inhalation, and dermal exposures to surface and subsurface soils
  - Inhalation of volatile constituents from shallow groundwater

Development of Exposure Scenarios Cont'd

- Off base residential exposures
  - Volatilization of chemicals from groundwater into indoor air
  - Use of shallow groundwater for gardening or washing the car
  - Hypothetical domestic use of groundwater (for drinking water and bathing)

Development of Exposure Scenarios Cont'd

- On base residential exposures
  - North and East Study Areas
- On base worker exposures
  - All Study Areas
- Off base residential exposures
  - North Study Area

Agency-Established Target Risk Ranges

- Carcinogenic risk of 1 in 10,000 to 1 in 1,000,000
- Noncarcinogenic Hazard Index less than 1.0

Risk Assessment Results - North Study Area

- **On Base Exposures**
  - Exposures to soils for on base residents and workers:
    - 2 in 100,000 or less
    - Hazard Index less than 1
  - Hypothetical use of shallow groundwater for bathing:
    - 1 in 10,000
    - Hazard Index of 24
  - Hypothetical use of shallow groundwater for drinking:
    - 3 in 10,000
    - Hazard Index of 7

Risk Assessment Results - North Study Area Cont'd

- **Exposures for Off Base residents:**
  - Use of shallow groundwater for gardening or washing cars:
    - Less than 1 in 1,000,000
    - Hazard Index less than 0.1
  - Volatilization to indoor air:
    - 1 in 1,000,000 or less
    - Hazard Index less than 0.1

Risk Assessment Results - North Study Area Cont'd

- **Exposure for Off Base residents cont'd:**
  - Hypothetical use of shallow groundwater as drinking water:
    - Cancer risks up to 1 in 1000
    - Hazard Index of 16

Risk Assessment Results - North Study Area Cont'd

- Chemicals contributing to On Base Risks
  - Chlorinated solvents: TCE, PCE, DCE
  - Fuel-related chemicals: Benzene
  - Metals: Arsenic
- Chemicals contributing to Off Base Risks
  - Chlorinated solvents: TCE, PCE, Chlorobenzene
  - Metals: Arsenic

Risk Assessment Results - South Study Area

- Exposures to soils for on base workers:
  - 4 in 1,000,000 or less
  - Hazard Index less than 0.01
- Risk by inhalation of chemicals volatilized from the shallow groundwater:
  - Less than 2 in 10,000,000
  - Hazard Index of less than 1.0

Risk Assessment Results - West Study Area

- Exposures to soils for on base workers:
  - 2 in 1,000,000 or less
  - Hazard Index less than 0.001
- Risk by inhalation of chemicals volatilized from the shallow groundwater:
  - Less than 5 in 10,000,000
  - Hazard Index of less than 0.001

Risk Assessment Results - East Study Area

- **Exposures to soils for on base residents and workers:**
  - **3 in 100,000 or less**
  - **Hazard Index less than 0.4**
- **Hypothetical use of shallow groundwater for bathing:**
  - **4 in 10,000**
  - **Hazard Index of 40**
- **Hypothetical use of shallow groundwater for drinking:**
  - **2 in 1000**
  - **Hazard Index of 10**

Risk Assessment Results - East Study Area Cont'd

- Chemicals contributing to On Base Risks
  - Chlorinated solvents: TCE, PCE, DCE
  - Fuel-related chemicals: Benzene
  - Metals: Arsenic
  - Others: Benzo(a)pyrene

Conclusions

- **Current and potential future exposure to on base soils not at levels that would present health risks**
- **Current exposure to groundwater not at levels that would present health risks. Future domestic use of groundwater would pose unaccepatably high risks.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 14 1994

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive # 9355.4-12

MEMORANDUM

SUBJECT: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities

FROM: Elliott P. Laws
Assistant Administrator

TO: Regional Administrators I-X

PURPOSE

As part of the Superfund Administrative Improvements Initiative, this interim directive establishes a streamlined approach for determining protective levels for lead in soil at CERCLA sites and RCRA facilities that are subject to corrective action under RCRA section 3004(u) or 3008(h) as follows:

- It recommends screening levels for lead in soil for residential land use (400 ppm);[1]
- It describes how to develop site-specific preliminary remediation goals (PRGs) at CERCLA sites and media cleanup standards (MCSs) at RCRA Corrective Action facilities for residential land use; and,
- It describes a plan for soil lead cleanup at CERCLA sites and RCRA Corrective Action facilities that have multiple sources of lead.

This interim directive replaces all previous directives on soil lead cleanup for CERCLA and RCRA programs (see the Background section, 1989-1991).

KEY MESSAGES

Screening levels are not cleanup goals. Rather, these screening levels may be used as a tool to determine which sites

[1]The residential screening level is the same concept as the action level proposed in the RCRA Corrective Action Subpart S rule (July 27, 1990, 55 *Federal Register* 30798).

or portions of sites do not require further study and to encourage voluntary cleanup. Screening levels are defined as a level of contamination above which there may be enough concern to warrant site-specific study of risks. Levels of contamination above the screening level would NOT automatically require a removal action, nor designate a site as "contaminated."

The residential screening level for lead described in this directive has been calculated with the Agency's new Integrated Exposure Uptake Biokinetic Model (IEUBK) model (Pub. # 9285.7-15-2, PB93-963511), using default parameters. As outlined in the Guidance Manual for the IEUBK Model for Lead in Children (Pub. # 9285.7-15-1, PB93-963510, February 1994), this model was developed to: recognize the multimedia nature of lead exposures; incorporate important absorption and pharmacokinetic information; and allow the risk manager to consider the potential distributions of exposure and risk likely to occur at a site (the model goes beyond providing a single point estimate output). For these reasons, this approach is judged to be superior to the more common method for assessing risks of non-cancer health effects which utilizes the reference dose (RfD) methodology. Both the Guidance Manual and the model are available to Superfund staff through the Superfund Document Center (703-603-8917) and to the public through the National Technical Information Service (703-487-4650).

Residential preliminary remediation goals (PRGs) for CERCLA remediations and media cleanup standards (MCSs) for RCRA corrective actions can be developed using the IEUBK model on a site-specific basis, where site data support modification of model default parameters. At some Superfund sites, using the IEUBK model with site-specific soil and dust characteristics, PRGs of more than twice the screening level have been identified. However, it is important to note that the model alone does not determine the cleanup levels required at a site. After considering other factors such as costs of remedial options, reliability of institutional controls, technical feasibility, and/or community acceptance, still higher cleanup levels may be selected.

The implementation of this guidance is expected to provide for more consistent decisions across the country and improve the use of site-specific information for RCRA and CERCLA sites contaminated with lead. The implementation of this guidance will aid in determining when evaluation with the IEUBK model is appropriate and in assessing the likelihood that environmental lead poses a threat to the public. Use of the IEUBK model in the context of this guidance will allow risk managers to assess the

ATSDR/TP-88/17

TOXICOLOGICAL PROFILE FOR LEAD

Date Published — June 1990

Prepared by:

Syracuse Research Corporation
under Contract No. 68-C8-0004

for

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Public Health Service

in collaboration with

U.S. Environmental Protection Agency (EPA)

Technical editing/document preparation by:

Oak Ridge National Laboratory
under
DOE Interagency Agreement No. 1857-B026-A1

Lead levels ranging between 0.01 mg/L and 0.03 mg/L on average can be found in households, schools, and office building drinking water due to plumbing corrosion and subsequent leaching of lead. The combination of corrosive water and lead pipes or lead soldered joints in the distribution system or houses can create localized zones of high lead concentrations >0.50 mg/L (EPA 1989b).

7.2.3 Soil

The lead content of soil derived from crustal rock typically ranges from <10 to 30 µg Pb/g soil. However, the concentration of lead in the top layers of soil varies widely due to deposition and accumulation of atmospheric dust from anthropogenic sources. The concentration of soil lead generally decreases as distance from contaminating sources increases. Next to roadways it is estimated that the levels of lead in soil are typically 30-2,000 µg/g higher than natural levels, while soils adjacent to roads that been traveled since 1930 have been enriched by as much as 10,000 µg/g (EPA 1986a). Soils adjacent to houses with exterior lead-based paints may have lead levels of >10,000 µg/g (EPA 1986a). In urban areas and in sites adjacent to smelters, lead levels ranging from 10 to 60,000 µg/g soil have been measured in the upper layer of soil (EPA 1986a).

Results of studies carried out in Baltimore, Maryland, and in Minnesota indicate that within large light-industrial urban settings, the highest soil lead levels generally occur in inner-city areas, especially where high traffic flows have long prevailed (Mielke et al. 1983, 1984, 1985, in press 1989). Median soil lead levels found during the Minnesota study ranged from 20 to 700 µg/g soil. Levels varied depending upon the location (foundation, yard, street side) where the soil samples were collected (Mielke et al. in press 1989).

7.2.4 Other

Typical concentrations of lead in various foods are: dairy products, 0.003 to 0.083 µg/g; meat, fish, and poultry, 0.002 to 0.159 µg/g; grain and cereal products, 0.002 to 0.136 µg/g; leafy vegetables, 0.011 to 0.649 µg/g; fruits, 0.006 to 0.223 µg/g; oils, fats, and shortenings, 0.002 to 0.028 µg/g; sugar and adjuncts, 0.006 to 0.073 µg/g; beverages, 0.002 to 0.041 µg/L (EPA 1986a). Canning foods in lead-soldered cans can increase levels of lead eight- to tenfold; however, the impact of canning appears to be decreasing since there has been a decrease in the use of lead-soldered cans. Based on recently published data provided by the Food and Drug Administration (FDA), the following are the baseline values for average daily intake of lead by consumption of food, water, and beverages: 25.1 µg/day for 2-year-old children; 32.0 µg/day for adult males; and 45.2 µg/day for adult females (see Tables 7.1 and 7.2). As a result of the decrease in the use of lead-soldered food cans, the current baseline intake of lead by consumption of food, water, and beverages is probably lower than these estimates. Additional exposure to lead through dietary intake by people living in an urban environment is estimated to be ~28 µg/day for adults and 91 µg/day for children, all of which can be attributed to atmospheric lead (dust). Atmospheric lead may be added to food crops in the field or garden (through uptake from soil and from direct deposition

Also EPA Lead Information Center, 1-800-LEADFYI may have additional information.

EPA (Environmental Protection Agency). 1985c. Notification requirements; reportable quantity adjustments; final rule and proposed rule. 40 CFR Parts 117 and 302. Fed Regist 50(65):13456-13475, 13489-13490.

EPA (Environmental Protection Agency). 1985d. Regulation of fuels and fuel additions; gasoline lead content. Final rule. 40 CFR Part 80. Fed Regist 50:9386-9399.

* EPA (Environmental Protection Agency). 1986a. Air Quality Criteria for Lead. June 1986 and Addendum, September 1986. Research Triangle Park, N.C.: Office of Research and Development, Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, EPA. EPA 600/8-83-018F.

EPA (Environmental Protection Agency). 1986b. Reference Values for Risk Assessment. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, Ohio, for the Office of Solid Waste, Washington, D.C. (Table 1-2).

EPA. 1986c. Reportable quantity adjustments; final rule. 40 CFR Parts 117 and 302. Fed Regist 51(118):34534-34549.

EPA. 1988a. Integrated Risk Information System (IRIS). Carcinogenicity Assessment for Lifetime Exposure for Lead and Compounds (inorganic). On-line. (Verification date: May 4, 1988.) Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, Ohio.

EPA. 1988b. Drinking water regulations; maximum contaminant level goals and national primary drinking water regulations for lead and copper. Proposed rule. 40 CFR Parts 141 and 142. Fed Regist 53(160):31515-31578.

EPA. 1988c. Analysis of Clean Water Act Effluent Guidelines Pollutants. Summary of the Chemicals Regulated by Industrial Point Source Category. 40 CFR Parts 400 - 475. (Draft) Prepared by the Industrial Technology Division (WH 552), Office of Water Regulations and Standards, Division of Water, EPA, Washington, D.C.

EPA. 1989a. Evaluation of the Potential Carcinogenicity of Lead Compounds: In Support of Reportable Quantity Adjustments Pursuant to CERCLA Section 102, External Review Draft. March 1989 EPA/600/8-89/045A. Available from NTIS, PB89-181366/AS.

EPA. 1989b. Review of the National Ambient Air Quality Standard for Lead: Exposure analysis, methodology and validation. OAQPS staff report, EPA, Office of Air Quality Planning and Standards. Research Triangle Park, N.C. EPA-450/2-89-011, June 1989.

Erenberg G, Rinsler SS, Fish BG. 1974. Lead neuropathy and sickle cell disease. Pediatrics 54:438-441.

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