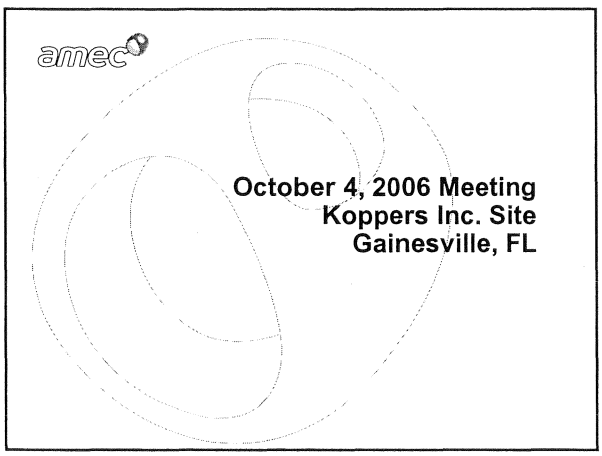

October 4, 2006 Meeting
Koppers Inc. Site
Gainesville, FL

Meeting Agenda

- History of Soil Cleanup Goal Activities at the Site
  - 1990 ROD
  - 1997 Supplemental Feasibility Study (SFS) and Proposed Risk Assessment
  - Post 1997 SFS Negotiations
  - 1999 Value Engineering Study
  - 2001 EPA Proposed Plan
- Proposed Approach to On-Site Soils Risk Assessment (RA)
  - Review of Historical Sampling Data
  - Development of Sampling Work Plan
  - Human Health Risk Assessment
- Regulatory and Other Issues Affecting Soils RA at the Site
  - Target Risk Level
  - Dioxin Cleanup Goal
  - Application of Goals Based on Leaching to Groundwater
  - Soil Depth
  - Use of Historical Data

History of Activities At Site

- 1990 ROD
- 1997 Supplemental Feasibility Study
- Post 1997 Negotiations Among Beazer, EPA and FDEP
- 1999 Value Engineering Study
- 2001 EPA Proposed Plan
- More Recent Activities

today's focus soil clean-up standards

1990 ROD

- Feasibility Study completed May 1990
  - Risks due to direct contact by on-site workers and general public acceptable
  - Risks due to daily ingestion of shallow groundwater (GW) exceeded acceptable risk range
- Record of Decision 1990 soil remediation goals
  - Calculated soil concentrations based on protection of GW assuming daily GW ingestion
  - Calculated soil concentrations that were protective of potential future residential direct contact exposures
  - Selected more stringent of the two values
  - Not necessary to develop remediation goals for current workers because they are assumed to be protected under OSHA and FIFRA standards and regulations

- FDEP did not agree on direct contact for regular workers was covered by OSHA
- EPA says must include direct contact

found that contamination was deeper

1990 ROD
Soil Remediation Goals

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Constituent	Remediation Goal based on GW Protection (mg/kg)	Final ROD Remediation Goal (mg/kg)
Anthracene	7,700	7,700
Phenanthrene	770	770
Acenaphthylene	72.3	72.3
Acenaphthene	389	389
Fluorene	323	323
Pyrene	2,360	**673**
Naphthalene	1,320	**211**
pcPAH (BAPTE)	0.59	0.59
Phenol	4.28	4.28
Pentachlorophenol	2.92	2.92
Arsenic	27	27
Chromium	579	**92.7**

used residential standards for direct contact when they are used Naphthalene + Bpyr

1997 SFS
Beazer Risk Assessment

amec

- Re-calculated soil remediation goals based on direct contact by construction worker and trespasser
  - Relied on ROD statement that OSHA/FIFRA protect workers
  - Ingestion and inhalation routes only
- Only arsenic and benzo(a)pyrene toxic equivalents (BAPTE) exceeded target risks
- Calculated residual concentration and risk assuming removal of arsenic and benzo(a)pyrene (BAPTE)
  - >25 ppm, >50 ppm, >100 ppm, 150 ppm, 250 ppm, 400 ppm

at the time Dioxin was <20ppb due to EPA guidance

1997 SFS
Beazer Proposed Remedy

amec

- Engineered Control Area (i.e., soil cover) to eliminate direct contact at several portions of site:
  - North Lagoon
  - South Lagoon
  - Process Area
  - Drip Track
- Surface soil remedy based on GW protection not practical
  - DNAPL below groundwater table will be a continuing source
- Additional risk work not needed because — this was different than 1990
  - Future use = current use
  - Workers protected by OSHA/FIFRA
  - Post-remedy concentrations will be below remedial goals
  - EPA recommended dioxin preliminary remediation goal (PRG) of 5 ppb

did not include GW risk because it was assumed below w table was contaminated.

– FDEP not satisfied at that time

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Post 1997 SFS Negotiations
EPA/FDEP Comments and Beazer Responses

Comments	Responses
• Add dermal pathways	• Added dermal pathway
• Add evaluation of onsite worker	• After much discussion, included evaluation of onsite worker
• Dioxin concentrations not fully delineated	• Additional dioxin characterization in soil

Rogers said it will stay industrial + consistent with zoning

Post 1997 SFS Negotiations
Beazer Revised RA Approach

- Estimate concentrations inside and outside engineered control areas
- Estimate potential risks for onsite worker outside engineered control areas, compare to target risk range of $1x10^{-6}$ to $1x10^{-4}$
- Boundaries of Engineered Control Areas (presented in the 1997 SFS) altered slightly to optimize coverage of high concentrations
- Use EPA's Industrial Site PRG for dioxin of 5 ppb

Post 1997 SFS Negotiations
Beazer Revised RA Approach

- If residual concentration <ROD clean-up goal (CUG), then engineered controls are protective
  - Pentachlorophenol and arsenic pass this test
  - Residual concentration of BAPTE > ROD CUG (0.59 mg/kg based on target risk $1x10^{-6}$)
- For BAPTE
  - Estimate potential risk using residual concentration and residential exposure assumptions from ROD
  - Potential risk of $2x10^{-5}$; near midpoint of EPA target risk range (10^{-4} to 10^{-6})
  - Risks to workers would be near the low end of risk range
  - Engineered controls are protective

Post 1997 SFS Negotiations
EPA Response to Beazer's Revised RA Approach

- Calculate BAPTE mean and UCL using half DL for non-detects
- Use industrial exposure assumptions from Region IX Preliminary Remediation Goals
- Include dioxin in risk estimates for the Site
- Target risk = $1x10^{-6}$
- If remediation goal is background, then background must be site-specific

Post 1997 SFS Negotiations
Final 1999 EPA Recommended RA Approach

- Dioxin remediation goal = EPA Industrial site goal (5 ppb) (June 9, 1998 letter from J. Blanchard to M. Brourman)
- Arsenic CUG = 30 ppm (approx. $1x10^{-5}$) (August 17, 1999 email from J. Blanchard to M. Brourman)
- Other compounds (PAH): estimate risk-based concentration for onsite worker using Region IX PRG assumptions and target risk of $1x10^{-6}$
- Conduct Value Engineering Study
  - Evaluate residual risks under differing cover options
  - EPA will consider a target risk of $1x10^{-5}$ if Value Engineering Study shows that achieving a target risk of $1x10^{-6}$ is prohibitively costly

1999 Value Engineering Study Assessment of Residual Risks

- Consider five engineered control area alternatives
  - As depicted in 1997 SFS
  - ...plus Historically Disturbed Area
  - .....plus most of active treatment and storage areas
  - .....plus 200 foot buffer
  - Entire site
- Calculate site-wide BAPTE concentrations for each alternative
  - Include areas inside and outside the control areas
  - Use both mean and 95% upper confidence limit (UCL) on the mean
  - Two alternatives approaches for non-detect (ND) BAPTE in cover materials
    - Assume ND equals zero
    - Assume ND equals 0.4 ppm (half the detection limit)

1999 Value Engineering Study Conclusions

- Alternative 1 (1997 SFS engineered control areas) achieves remediation goals for arsenic and dioxin
- Alternative 1 results in BAPTE risk of $2x10^{-6}$ to $3.5x10^{-6}$
  - Risk is at bottom of target risk range
  - Range of values due to different assumptions for NDs and use of the mean concentration vs the UCL
- Increasing area of engineered controls (as in Alternatives 2, 3, 4, and 5) does not appear necessary
  - Alternative 2 would achieve modest additional risk reduction
  - Alternatives 3, 4, and 5 would achieve minimal additional risk reduction and would be very costly

2001 EPA Proposed Plan Review of ROD Remediation Goals

Soil CUGs revised based on changes to MCLs, risk-based GW protection levels, and residential exposures

Constituent	Revised Goal (mg/kg)	1990 ROD Goal (mg/kg)
Anthracene	40.7	7,700
Phenanthrene	55.5	770
Acenaphthylene	3	72.3
Acenaphthene	68.4	389
Fluorene	85.4	323
Pyrene	159	673
Naphthalene	0.4	211
BAPTE	2.3	0.59
Benzene	0.007	--
Pentachlorophenol	0.03	2.92
Phenol	2.26	4.28
Arsenic	4.5	27
Chromium	199	92.7
Dioxin	0.001	0.005

2001 EPA Proposed Plan Beazer Response

- Disagreement with proposed CUGs
  - Inconsistent with previous decisions, directions and approvals from EPA;
  - Inappropriately applied residential standards
    - KI currently owns and plans to continue to own the facility
    - KI assurance that property will remain industrial in the future
  - Incorrectly calculated and inappropriately applied proposed Site CUGs
  - Inadequate consideration of practical implications of the proposed goals

2001 EPA Proposed Plan
Beazer Response (cont.)

- Some CUGs (benzene, pentachlorophenol) impractical
  - Detection limits very close to CUG
  - Difficult to demonstrate compliance
- Application of MCLs not relevant for on-Site groundwater
- Meeting leachability based CUGs impracticable
  - DNAPL in subsurface will remain source of constituents to groundwater
  - Remediation of surface soils will not achieve goal of reducing concentrations to residential drinking water standards
- Beazer-derived CUGs based on assumptions used to derive Region IX preliminary remedial goals for industrial sites and more current dermal absorption factors

??

2001 EPA Proposed Plan
Beazer Response - Proposed CUGs (mg/kg)

Constituent	Beazer CUG	EPA 2001 Plan	1990 ROD
Arsenic	3.6	4.5	27
Chromium III	>1,000,000	199	92.7
Benzene	1.4	0.007	--
Anthracene	283,527	40.7	7700
Fluorene	26,740	85.4	323
Phenanthrene	35,635	55.5	770
Acenaphthylene	36,635	3	72.3
Acenaphthene	32,384	68.4	389
Pyrene	35,635	159	673
BAPTE	1.5	2.3	0.59
Naphthalene	188	0.4	211
Phenol	528,551	2.26	4.28
Pentachlorophenol	42	0.03	2.92
Dioxin	0.005	0.001	0.005

Based on direct contact except for dioxin, which is lower end of range of EPA's PRG for industrial sites

Stopped here

Now

Development of Proposed RA Approach

Proposed Approach to On-Site Risk Assessment (RA)

- Review of Historical Data to Identify Data Needs
- Development of Sampling Work Plan to Collect Additional Data
- Risk Assessment Scenarios

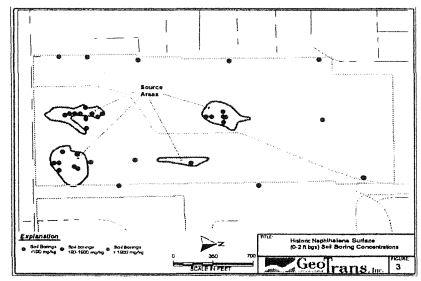
* No source

Proposed On-Site RA Approach
Review of Historical Data

- Review of Historical Data
  - Majority of previously collected data from source areas
  - Limited surface soil data (0 to 1 foot depth increment)
  - Numerous samples collected prior to 1990
  - Limited analytical data for dioxins and furans
- Identification of Data Needs
  - Better characterization outside of source areas and along Site boundary
  - Additional surface samples to evaluate potential worker exposures
  - More data on spatial distribution of dioxins/furans
  - Current data on sediment/surface water in on-Site ditch
  - Confirm previous subsurface soil sampling results
  - Provide adequate data for HHRA and spatial averaging
  - Provide more information for evaluation of potential off-Site transport

Proposed On-Site RA Approach
Review of Historical Data

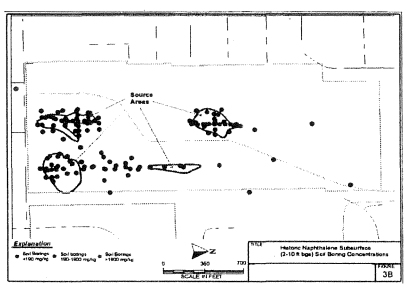
Example – Historical 0 - 2 ft samples for naphthalene



HAZ index 1 Black dots conc < Region IX PRL (10⁻⁶ risk basis)
10 Blue dot PRG to 10 X PRG (10⁻⁵
> 10 Red dot > 10⁻⁵ risk

Proposed On-Site RA Approach
Review of Historical Data

Example – Historical subsurface samples for naphthalene

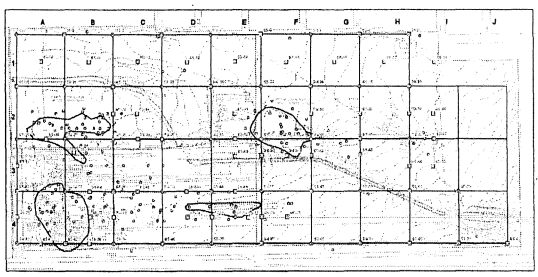


Proposed RA Approach
Development of Sampling Work Plan

- Fill Identified Data Needs
  - Characterize surface soils outside of historic source areas
  - Collect additional data on dioxins and furans
  - Collect data on sediment/surface water in drainage ditch
  - Confirm historical subsurface samples

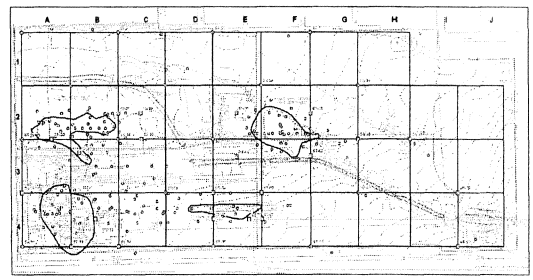
Proposed On-Site RA Approach
Development of Sampling Work Plan

Proposed 0 to 0.25 ft and 0.25 to 0.5 ft sampling locations



Proposed On-Site RA Approach
Development of Sampling Work Plan

Proposed 0.5 to 2 ft and 2 to 6 ft soil sampling locations



Proposed On-Site RA Approach
Risk Assessment Scenarios

- Current Use
  - KI Workers – direct contact with surface soils
  - Trespasser – direct contact with surface soils
  - Utility Worker – direct contact with deeper soil
  - Construction Worker – direct contact with deeper soil
- Future Use – same as current use
  - Property owned by KI
  - Will be maintained as industrial property

Regulatory and Other Issues

- Target Risk Level
- Dioxin Cleanup Goal
- Application of Cleanup Goals Based on Leaching to Groundwater
- Soil Depths
- Use of Historical Data

Contractual idemnification from Kya to Koppers if it stays industrial

- Koppers agrees to place deed restriction comment on 2001 plan

if Koppers does not share any further cleanup is on their $ (Thurs pg)

Regulatory and Other Issues
Target Risk Level

- EPA vs FDEP Target Risk Ranges
  - ° EPA Acceptable Risk Range is $1x10^{-4}$ to $1x10^{-6}$
  - ° FDEP Target Risk is $1x10^{-6}$
- Use of a $1x10^{-6}$ Risk Benchmark
  - ° Inconsistent with other industrial sites
  - ° Inconsistent with RCRA
  - ° Not practical

Florida statute requires

vs Region 4

Regulatory and Other Issues
Target Risk Level

- Precedents at Other Region IV Sites
  - ° American Creosote Works in Jackson, Tennessee
    - Allowable risk level of $1x10^{-4}$
  - ° KI Site, Grenada, Mississippi
    - Potential risks above $1x10^{-6}$ but below $1x10^{-4}$ allowable
  - ° Former KI Site, Charleston, South Carolina
    - Potential risks above $1x10^{-6}$ allowable

EPA allows this

FDEP says only $1x10^{-6}$ risk level is acceptable by state law

industrial best use 30 ppt residential best use 7 ppt

FDEP says they have established 2 ft of cover over 18 acre site

Regulatory and Other Issues
Dioxin Cleanup Goals

- EPA vs FDEP Cleanup Goals for Dioxin
  - ° EPA Preliminary Remediation Goals
    - 0.001 mg/kg for residential soils
    - 0.005 to 0.020 for industrial soils
  - ° FDEP Cleanup Target Levels
    - 0.000007 mg/kg for residential soils
    - 0.00003 mg/kg for industrial soils

Regulatory and Other Issues
Dioxin Cleanup Goals

- EPA Preliminary Remediation Goal (OSWER Directive 9200.4-26)
  - ° 0.001 to 0.020 mg/kg for surface soils
  - ° Used as a cleanup goal at many industrial sites
    - Former KI Site, Charleston, SC = 0.0015 mg/kg
    - Woolfork Chemical Works, Woolfork, GA = 0.001 mg/kg
    - St Regis Paper, Cass Lake, MN = 0.001 mg/kg
    - KI Site, Denver, CO = 0.003 mg/kg
    - Brunswick Wood Preserving, Brunswick, GA = 0.001 mg/kg
    - American Creosote Works, Jackson, TN = 0.0025 mg/kg

Beaga does not want to develop leachability values FDEP says they have to have values

Bill Osteen –
2001 Numbers most conservative number * onsite residential exposure (may not have)
- options -
* benzene, pentachloroethene (FDEP default)
EPA
* if applied industrial scenario - would go up
- put some cover

Regulatory and Other Issues Leaching Based Cleanup Goals

amec

- Leaching based cleanup goals inappropriate for Site
  - DNAPL below water table provides a continuing source to groundwater
  - Remediation of unsaturated soils will not achieve goal
- Not consistent with approaches used at other similar sites

Regulatory and Other Issues Leaching Based Cleanup Goals

amec

- Approaches used at other similar sites in Region IV
  - KI Sites, Charleston and Florence, SC
    - At both sites groundwater affected by historic releases
    - Wood treating residuals in surface and subsurface soils
    - Groundwater remedies include combinations of:
      - Product recovery
      - Containment
      - Monitored Natural Attenuation
    - Remedies did not include soil to groundwater leaching goals for surface or subsurface soils

Kelsey - FDEP - until they have gone through reasonably studies to look at leaching in all zones still need
- FDEP has a problem when says it cannot be cleaned up in sufficient

FDEP - cannot have source or plume for No further action

Beaze says there is ~~not~~ no technology that will eliminate source in Hawthorne aquifer

Regulatory and Other Issues Soil Depths

amec

- Surface Soil Depths Used in Risk Assessment
  - EPA
    - 0 to 6" or 0 to 12" used for surface soil exposures
    - 0 to 6' or 0 to 8' generally used for subsurface exposures
  - Florida
    - 0 to 24" considered "surface soil"
    - Not representative of soil concentration to which KI worker or trespasser will be exposed
      - Top 6" would be maximum depth of exposure
      - Upper soil layer would be source for dust

Regulatory and Other Issues Use of Historical Data

amec

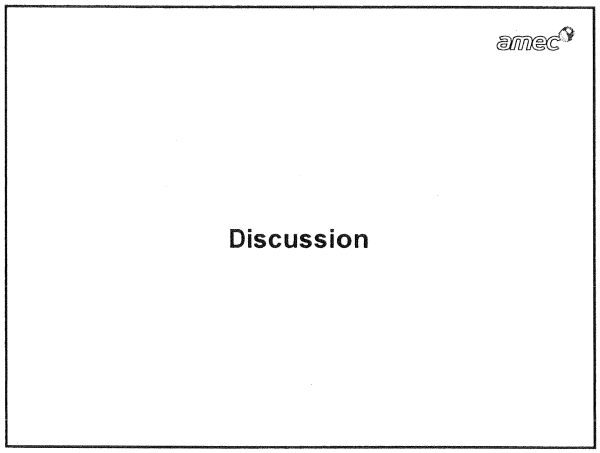
- Pre-1990 Data Should Not Be Used
  - May no longer be relevant in some areas
  - Higher detection limits may result in false negatives and overestimate potential risks
  - Detection limits not reported for many samples
- Post-1990 Data Are Relevant
  - Reasonable detection limits
  - Substantial number of samples at many depth increments
  - No reason to believe that subsurface concentrations of key constituents (arsenic, BAPTE) will have changed
  - Exclusion would result in need to collect substantially more subsurface data for RA
- Post-1990 and Current Data Will Be Combined for RA

(Dioxin Issue)

0.4 – 1.2 ppb avge < 1

5 ppb common
1 ppb risk average below 1 ppb

State stds 7 ppt (residential)
30 ppt (industrial)



*FDEP – not allow filtering sampling

Get data from
0-6" – ⎫ may do seperate risk assessment
6"-2' – ⎭
2-6'

FDEP wants more dense dioxin sampling near western boundary

John Reconcile that deeper sediment samples > 0.5 ft at certain samples in detail.

1) provide pre + post 1990 data plots to decide if can drop pre 1990 data
2) look at density of post 1990 on location + mother boundary to see if need more
3) look at DL's for pentas to see if meet FDEP crit
4) Eliminate surface water collection
5) Add deeper 6-2' samples in the detail
6) Cu, Sb, V + 1,1-biphenyl
7) Add transect location between SS-49 + pole stop – dioxin included pole stop

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