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...
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...ber 16, 1988

...d Bradley

...ie Kerlman

23

... Pages

[illegible]
[illegible] RECEIPT RE[illegible]

[illegible]ector
[illegible]te Management [illegible]
[illegible], Region V
[illegible] Mr. Brad Br[illegible]
[illegible] South Dearborn
[illegible], Illinois

Director
Illinois Environ[illegible]
[illegible]: Mr. [illegible]
[illegible]00 Churchill [illegible]
Springfield, Illi[illegible]

RE: [illegible]

[illegible]r Gentlemen:

We [illegible]
[illegible] November [illegible]
[illegible]istrative [illegible]
[illegible] Report for [illegible]
[illegible] to [illegible]
[illegible]itative risk [illegible]
[illegible] and substi[illegible]
[illegible]ort "Preventing [illegible]
[illegible] meeting with [illegible]
December 8, [illegible]
[illegible] Assessme[illegible]
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[illegible]te. [illegible]
[illegible]

RECEIVED DEC 1 6 1988

O'BRIEN & GERE

December 13, 198

Mr. Stephen W. [illegible]
NL Industries, Inc.
P.O. Box 1090
Wyckoff Mills Road
Hightstown, NJ 0[illegible]

Re: Granite City

File: [illegible]12.306

Dear Steve:

[illegible] Mr. Bradley's [illegible] dated September 7, 1988 and [illegible] September 7, 1988 letter was [illegible] during [illegible] of the Final Remedial Investigation Report [illegible] to the [illegible] September 26, 1988. O'Brien & Gere [illegible] in accordance with technically [illegible] approved [illegible] this position, we are responding [illegible] comments presented in the September 7, 1988 and November 4, 198[illegible] following [illegible] the September 7 EPA letter [illegible] order of [illegible]

I. [illegible] Health Blood Lead [illegible]

a. [illegible] The survey [illegible] Illinois Department of Public [illegible] incorporated [illegible] of the Granite City [illegible] provides [illegible] of lead exposure [illegible] population upon [illegible] the potential public [illegible] present in [illegible] of potential [illegible] below), we feel the [illegible] far too [illegible] from the assessment. [illegible] site make the [illegible] be available from [illegible]

[illegible] by EPA and [illegible]

b. "The [illegible] of the [illegible] small sample size and therefore [illegible] used to support [illegible] the levels of exposure [illegible] lead residues [illegible] soils." This [illegible] the extent [illegible] size [illegible] adults and [illegible] years of [illegible] to detect a very small [illegible] the [illegible] range, who through [illegible] personal [illegible] greater exposure to lead [illegible] majority of the residents.

O'Brien & Gere Engineers [illegible] O'Brien & Gere [illegible]
Box 4873 [illegible] Buckley [illegible] Syracuse NY 13221 [illegible] FAX [illegible]
Blue Bell PA Boston MA [illegible] OR Edison NJ Landover MD New York NY Pittsburgh PA
Pittsfield MA St. Louis [illegible] NY Virginia Beach VA Watertown NY

However [illegible] in no way destroys the value of this study because:

1. [illegible] are not used in isolation but rather in conjunction [illegible] approaches to assess health risks at the site.

2. [illegible] were detected where elevated blood lead levels were [illegible] with elevated free erythrocyte protoporphyrin. [illegible] parameters should be considered together to assess [illegible]. As IDPH points out in its report, one or two such [illegible] be expected to be found in a sample of 46 urban [illegible].

3. [illegible] sources of lead in the study area – active smelting [illegible] use of leaded auto fuels – were present at the time [illegible] study, but [illegible] present now. These would have [illegible] lead [illegible] relative to contributions from [illegible] and therefore serve to increase the likelihood of the [illegible] individuals who were being exposed to lead at [illegible] measurable increases in blood lead levels.

[illegible] Survey." The IDPH blood lead survey was also [illegible] that it was conducted in late fall and thus frequency of [illegible] was reduced. It was therefore concluded [illegible] are [illegible] than occurring during [illegible] This conclusion is not [illegible] for the following reasons:

It is [illegible] the reduced [illegible] would lead to some level of [illegible] blood lead by late November. However, assuming that this [illegible] lead is not justified because [illegible] lead come from the diet [illegible] the [illegible] Lead, 1988), as opposed to [illegible] activity. In addition, although the half life of lead in adult [illegible] 28 to 76 days, it is about 10 months in 2-year-old children [illegible] in ATSDR draft, 1988). Thus, for the exposure group [illegible] concern for [illegible] exposure (young children), the results of the [illegible] lead survey [illegible] be said to be biased due to time of sampling.

Moreover [illegible] play in an area of a temperate climate as Granite City [illegible] as substantial in late November. High soil contact activities [illegible] football, as well as other outdoor activities, would be pr[illegible] during this time of year. Thus, the data are not likely to be [illegible] as suggested by USEPA and IEPA.

For these reasons, [illegible] specific lead exposure survey should be retained in the risk assessment.

[illegible] EPA and IEPA have accepted the current risk assessment, [illegible] these comments for the administrative record, to [illegible] the concerns addressed in your November 4, 1988 letter [illegible] September [illegible], 1988 letter, which was referenced [illegible].

N[illegible] [illegible] the November 4, 1988 request to delete the site sp[illegible] risk assessment is unjustified and contrary to the term[illegible] the Consent Order, EPA's RI guidance, and EPA's proposed re[illegible] to the National Contingency Plan. A site-specif[illegible] assessment is a necessary component of an RI Report, and [illegible] attached comments from O'Brien & Gere substantiat[illegible] techniques used in the September, 1988, submission [illegible] in accordance with accepted practice an[illegible] the risk as[illegible] [illegible]t is scientifically valid.

F[illegible] the Remedial Investigation Scope of Work, whi[illegible] is ex[illegible] incorporated into the Consent Order, clear[illegible] con[illegible]plate[illegible] a site-specific risk assessment be performe[illegible] as part of [illegible] process and be included in the RI Report. The Scope o[illegible] states that

> [illegible] should be placed on describing t[illegible] [illegible]ent or potential threat to public h[illegible], including threat to the public from i[illegible]tion of airborne particulates from the e[illegible] plant site and the waste storage p[illegible] and other open areas. Available p[illegible] sampling, blood testing, and health s[illegible] should be used in this evaluation.

Id. at 5. [illegible]ition, Task 5 requires the exposure assessme[illegible] to analyze [illegible] contribution of discrete sources of exposure the overall [illegible]ment so as to provide an accountability analysis of [illegible] different sources." Id. at 11. The arbitrar[illegible] deletion of [illegible]-specific risk assessment and utilization o[illegible] the CRC rep[illegible] [illegible] inconsistent with this requirement.

S[illegible] EPA's request is inconsistent with its Guidance fo[illegible] [illegible]ing Remedial Investigations and Feasibili[illegible] Studies und[illegible] CERCLA ("Guidance"), published in March, 1988. Generally, [illegible] Guidance requires that the process be "tailore[illegible] to meet site[illegible] specific needs." Id. at 1-1. Thus, the baselin[illegible] risk assess[illegible] must be based on "expected exposure scenarios." Id. at 1-11, [illegible] the data generated must be evaluated in the context of [illegible] individual nature of the site and the characte[illegible] of the popul[illegible] affected:

> These data are then assessed [illegible] value that represents the [illegible] contaminated media contacted [illegible] analysis should include not [illegible] identification of currently [illegible] populations but also exposure [illegible] occur in the future if no act[illegible] the site. Because the frequ[illegible] exposures will vary based on [illegible] primary use of the site is [illegible] industrial, or recreational, [illegible] land use should be evaluated.

Id. at 3-41.

The guidance also requires [illegible] ARA are unavailable [illegible] the toxicity assessment [illegible] on reference doses and provides that the [illegible] associated with the toxicity information [illegible] element of the risk characterization at a particular site. Id. at 3-42. Overall, the assessment "provides a basis for determining whether or not remedial action is necessary and the justification for performing remedial actions." Id. at 3-35. Therefore, a site-specific risk assessment of the type submitted by [illegible] is expressly authorized by EPA's own Guidance and is an integral component of the RI Report.

Third, EPA's proposed revisions to the National Contingency [illegible] expressly require a site-specific risk assessment. 40 C.F.R. § 300.430(d)(4), as proposed, states as follows:

> [illegible] the lead agency [or responsible party] shall conduct a site-specific baseline risk assessment to characterize the current and potential threats to human health and the environment that may be posed by contaminants migrating to ground water or surface water, releasing into the air, leaking through soil, remaining in the soil, and bioaccumulating in the food chain. The results of the baseline risk assessment will help establish acceptable exposure levels for use in developing remedial alternatives ...

Eschewing a [illegible] specific risk assessment in favor of a generic, non[illegible]-specific value is therefore inconsistent wi[illegible] proposed rev[illegible]s to the NCP.

[illegible], there is no logical or scientifically sou[illegible] weight the assessment prepared by NL. The [illegible]ity value for lead in soil does not render [illegible] assessment impossible. As noted above, in [illegible]dance recommends an analysis of reference [illegible]on of the weight of evidence with respec[illegible] is precisely what was undertaken here. [illegible], 1988, EPA submitted comments to NL whic[illegible] deficiencies in the assessment, in no we[illegible] deletion from the RI Report.

[illegible] comments from O'Brien & Gere as well a[illegible] from an independent consultant retained b[illegible] risk assessment, establish that the [illegible] valid and accurate, based on a thorough [illegible]logical information on lead and accepted [illegible] therefore in accordance with EPA Guidan[illegible] basis to establish response objectives [illegible] protect human health. By contrast, the CDC [illegible] to meet the requirements of the authorit[illegible] and is singularly inappropriate for use in [illegible] particular site.

Sincerely,

Bonni Fine Kaufman

Bonni Fine Kaufman
Counsel for NL Industries

cc: Deputy [illegible], Environmental
Con[illegible] Division
Illin[illegible] Attorney General's Office

Steve [illegible]
Frank [illegible]
Rodge[illegible]

WE[illegible] DEC 18 [illegible]

IT INTERNATIONAL TECHNOLOGY CORPORATION

December 15, 1[illegible]8 Project No. 303605

NL Industries, I
P.O. Box 1090
Hightstown, NJ 0[illegible]

Attention: Mr [illegible] en W. Holt, P.E.
Pr[illegible] [illegible]ordinator

Subject: Revi[illegible] [illegible]he Risk Assessment and EPA Comments
for [illegible] Taracorp Site
Gran[illegible] [illegible]y, Illinois

Dear Mr. Holt:
At your requ[illegible] [illegible]e have reviewed and evaluated the following documents rela[illegible] [illegible] O'Brien and Gere (OBG) risk assessment of the NL/Tara[illegible] [illegible]anite City Site:

- Remedi[illegible] [illegible]stigation (RI) Report (OBG) for the NL/Taraco[illegible] [illegible] Granite City, Illinois

- Correspondence:
  - S. [illegible]lt to USEPA and IEPA of 9/26/88
  - F. [illegible]le (OBG) to USEPA and IEPA of 8/18/88
  - US[illegible] ([illegible]. Bradley, SPC) to F. D. Hale of 9/7/88
  - US[illegible] ([illegible]. Bradley, SPC) to S. W. Holt of 11/4/88
  - F. [illegible]le (OBG) to S. W. Holt of 11/15/88

After completi[illegible] [illegible] a critical review of the above documents, we have concluded [illegible] the Risk Assessment (RA) was performed in accordance wi[illegible] [illegible] of the Agency's guidance documents and applied scienti[illegible] [illegible]ly sound methods using data from the accepted toxicology inf[illegible] [illegible]ion base developed by the Agency, and is considered to [illegible] [illegible]e-specific and appropriate.

The following [illegible] [illegible]s support our conclusions regarding the risk assessment sub[illegible] [illegible] in the RI Report (Section 8-Risk Assesment)

1. In order to [illegible]ate and corroborate the methods used in the RA, we have [illegible]cterized the health risks associated with exposure to [illegible] [illegible] lead in soils. The lifetime Health Advisory (EPA, [illegible] of [illegible]0 ug/day was used to evaluate the health risks associate[illegible] [illegible] lead in groundwater for the Pristine Site in southwestern [illegible]io. This was included in a Public Health Evaluation perf[illegible] [illegible] by the Agency's contractor (ICF-Clement) We have used th[illegible] [illegible]alth protective parameter to perform an

II. Acceptable I a ake Approach and Other Issues

a. Risk a s for chronic toxicants at Superfund sites are typically conduc e comparing chronic exposure estimates for various populatic d scenarios to acceptable (i.e., safe) intake levels (a.k.a. e doses or Rfd's). If long-term daily exposure exceeds the Rfd, ential chronic health risk is indicated. In the case of lead, t l Rfd presented in the SPHEM (Superfund Public Health Evalua l nual) (1.4 µg/kg/day) in 1986 was withdrawn for reevalu a n lieu of a verified reference dose for lead, a modified Rfd w s oped by O'Brien & Gere by reducing the 1.4 µg/kg/day Rfd by s cent to 0.8 µg/kg/day, in consideration of a 40 percent drop i blished CDC blood lead level of concern from 25 µg/dL to 15 g This approach was presented to Dr. Michael Dourson of ECAO, a phone conversation shortly after our Chicago meeting in Aug Dourson agreed that although various pharmacokinetic consid r might dictate against a strictly proportional relationship betwe fe and blood lead, he thought the approach had merit as an n procedure, one which had been used in other EPA offices in the x epartment of the above considerations, further justification for a the range of 0.80 µg/kg/day can be derived from docum prepared by USEPA in support of the lead Acceptable Daily a 0.5 µg/kg/day set by the USEPA Drinking Water Office (Marcus ed in the RI/FS).

b. ATSD Lead Position. The view has been stated by ATSDR, in its 19 ment, "Preventing Lead Poisoning in Young Children," that e of 500 to 1000 ppm is a range above which increases in blood e els have been observed. This observation appears to date from analysis of several studies as presented in the 1977 air quality a documentation for lead. These studies correlated increa e percent to 6 percent in blood lead for each doubling of soil le d ntrations above the 500 ppm to 1000 ppm range.*

The n t t a direct correlation exists between soil lead levels and blood e ues, with uptake into the body exclusively related to and driven ingestion of soil residues, cannot be supported on the basis of formation provided in the air quality criteria document. The d relation implied by ATSDR between soil lead levels and blood le els presented does not take into account the inhalation [illegible] Our interpretation of the studies cited in the air quality

smelting [illegible] in the areas studied to be the major route of lead exposure [illegible] soil lead levels are indicative of the deposition of airborne lead or [illegible] as a function of distance from the smelter, as opposed to being [illegible] source of lead to humans in the area. The studies were [illegible] in areas conducive to frequent thermal inversions, resulting [illegible] periods of sustained airborne exposure. Contributions to blood [illegible] levels from occupational exposures by smelter employees and exp[illegible] by their children from work clothes and housekeeping practice[illegible] also be considered. In contrast, the Granite City site does not [illegible] significant sources of lead exposure by the airborne route, [illegible] by the results of recent and continuing IEPA air monitor[illegible] therefore, it is inappropriate to apply the ATSDR correlation for so[illegible] site-specific case without verifying the contribution of airb[illegible] to the correlation advanced by ATSDR.

The r[illegible] soil concentrations of lead is not derived from a risk assess[illegible] is an interpretation of empirical analytical data, with no con[illegible] of the degree of blood lead elevation which constitutes a conc[illegible] health. The opinion has been put forth by USEPA and IE[illegible] scientists during their review of the RI/FS and subsequent meeting [illegible] any incremental exposure to lead above background is [illegible] of recent studies (as reviewed in ATSDR, 1988) suggest[illegible] exposure levels to lead producing blood lead levels of [illegible] and perhaps less, are associated with neurological impair[illegible] children and subtle biochemical changes in the blood. The s[illegible] in the ATSDR toxicological profile for lead used to support [illegible] conclusion are not unequivocal. The conclusions drawn are not [illegible] by the design or results of the studies. Nevertheless, these [illegible] and others, have been used to attempt to suggest that lead i[illegible] toxicant for which there is no exposure level without adverse [illegible] effect.

The r[illegible] policy position that any biochemically measurable effect related [illegible] particular exposure is unacceptable is inconsistent with current [illegible] policy and is premature for at least two reasons. First, [illegible] of lead or any non-carcinogen as a non-threshold chronic toxic[illegible] one which has not been applied to any existing public health [illegible]. The regulatory position cites observations of subtle effects [illegible] lowest exposures/blood lead concentrations contained in the [illegible] and leaves open the possibility of effects at lower exposure levels [illegible] concept has not yet undergone the scrutiny or general accept[illegible] the public scientific community through public meetings and [illegible] such as Federal Register notices which USEPA typically employ [illegible] its risk assessment policies.

Second, [illegible] position that any risk is unacceptable for non-carcinogenic, non-t[illegible] toxicants is contrary to the position the Agency has taken for c[illegible] s, which the Agency also views as non-threshold toxicants. Histo[illegible] the Agency has viewed risks in the range of one per ten thous[illegible] persons to one per million exposed persons, or less, as a [illegible] level for regulatory purposes, rather than taking the positi[illegible] any risk of carcinogenic effect is unacceptable. Thus,

in orde[illegible] [illegible]onsistent, the Agency must develop a method for defining toxicol[illegible] [illegible]dpoints and probabilistic risk levels of lead impacts. should [illegible] [illegible]h scientific inquiry reveal it to be a non-threshold chronic toxicant [illegible] [illegible]lition, the Agency should define that level of risk which it con[illegible] [illegible] acceptable. The Agency has defined risk levels for a non-re[illegible] [illegible] and life-threatening condition (cancer), and should do so for [illegible] [illegible] and possibly reversible effects it has focused on for lead, a [illegible]

c. [illegible] [illegible]osure and Absorbed Dose (i.e., use of absorption factors). An ab[illegible] [illegible] factor of 0.5 was utilized in the exposure assessment in [illegible] [illegible] of the fact that weathered inorganic lead residues are [illegible] [illegible]luble oxides and sulfides or are complexed with insoluble organi[illegible] [illegible] of soil. In contrast, most toxicological test data on lea[illegible] [illegible]ated using [illegible] more water soluble and absorbable lead sa[illegible] [illegible] water or [illegible] (Marcus (1984) assumed a 100 percent absorp[illegible] [illegible] for a drinking water exposure study used to develop an a[illegible] [illegible] daily intake for drinking water. This value of 0.[illegible] [illegible] similar to 0.[illegible] ng/kg/day employed in the RI/FS risk a[illegible] [illegible] [illegible]DR (1988) presents data indicating an approximate absorp[illegible] [illegible] of 50 percent in children for dietary lead (food, beverag[illegible] [illegible] compared with [illegible] to 15 percent for adults. Absorption is con[illegible] [illegible] for soil lead in children - approximately 30 percent. Thus, [illegible] [illegible] absorption factor of 50 percent, as used in the RI/FS, is appr[illegible] [illegible] lead residues as it reflects the lower bioavailability of lea[illegible] [illegible] relative to aqueous residues. It is also conservative as it [illegible] [illegible] nearly two-fold from actual estimates for children, and by [illegible] [illegible] more for adults. This conservativity is protective of ind[illegible] [illegible] may be physiologically predisposed to more efficiently absorb[illegible] [illegible] residues compared to the general population.

d. Home g[illegible] [illegible]ables. In its 1983 study of lead in Granite City, IDPH [illegible] [illegible] vegetables from home gardens for lead analysis. Based on thi[illegible] [illegible] concluded that dietary exposure to lead via home-grown vegeta[illegible] [illegible] not a public health issue. In addition, the RI/FS (pages 74-77) [illegible] [illegible] an upperbound worst case exposure scenario which entends [illegible] [illegible] to lead-bearing soils through adulthood through activi[illegible] [illegible] as recreational gardening.

e. Soil In[illegible] [illegible]. Soil ingestion rates were taken from peer-reviewed journa[illegible] [illegible] the USEPA Superfund Exposure Manual. Exposure freque[illegible] [illegible] established in consideration of climatic/meteorological consid[illegible] [illegible] and are conservative in the assumptions of lifetime exposu[illegible] [illegible] based on a low probability event.

In summary, the [illegible] fic risk assessment presented in the RI Report included a thorough revie[illegible] literature, solution of exposure situations which are consistent with the [illegible] ure and toxicological criterion which represents current knowledge on the e[illegible] of lead in human health. Blood lead analyses conducted by the Illinois Dep[illegible] of Health during 1983 included in the RI Report support the conclusion of [illegible] Report. Based on the data available at this time, no changes to the risk assessme[illegible] justified.

Very truly yours,

O'BRIEN & GERE [illegible], INC.

Frank Hale

Frank D. Hale
Project Manager

Swiatoslav W. Ka[illegible] [illegible], C.I.H.
Manager, Environm[illegible] Toxicology

HTA/F[illegible]H/SWKijen

cc: Janet Smith [illegible]
Bonnie Kaufman [illegible]

JOSEPH BER[illegible]

Professional Qualif[illegible]

Dr. Bern [illegible] experience in the fields of public he[illegible] regulatory practices, and proje[illegible] capable of working with a multidisci[illegible] civil engineers, chemical engineers, [illegible] health and environmental risk assessment[illegible] Federal CERCLA (Superfund), SARA, RCR[illegible] assent with various state programs [illegible] New Jersey, New York, and Massachuse[illegible]ts).

He has [illegible] and qualitative health risk and [illegible] waste processing and dispo[illegible] plants, primary steel production, pap[illegible] pesticide formulation, and chemi[illegible] include hazard evaluation (to[illegible] of contaminants and potential [illegible] of chemical contaminants in air, water, and soils.

Dr. Bern [illegible] to approximately 30 Superf[illegible] for 20 additional sites during th[illegible] detailed studies of polychlor[illegible] contaminated facilities.

[illegible] approaches for determining [illegible] requirements) and [illegible] of latest technology [illegible] has also performed [illegible] liability evaluations.

As [illegible] engineer, Dr. Bern can assist in the [illegible] of investigations including scien[illegible] based on his experience in [illegible] and as a hearing examiner and officer of an [illegible]

Dr. Bern [illegible] following Risk Assessments and [illegible]

[illegible]isk Ass[illegible]

[illegible] (SRP):

[illegible]
[illegible]
Fields [illegible]
Vine [illegible]

alternative m[illegible] of characterizing the risks for the NL/Taracorp Site.

Using the lifet[illegible] [illegible]lth Advisory (HA) for drinking water for children and a[illegible] (mainly to protect the fetus), the following Reference Doses [illegible] are developed: (A lifetime HA of 20 ug/day was der[illegible] [illegible] using a proportionality constant of 0.16 [blood level/da[illegible] [illegible]ake], an Uncertainty Factor of 5, and an NOAFL of 15 ug [illegible] [illegible]lood)

For a 10 kg [illegible] RfD = 2.0e-03 mg/kg/day
For a 63 kg [illegible] RfD = 3.2E-04 mg/kg/day
(Assumes a [illegible] [illegible]ood level/fetus blood level)

Based on an ex[illegible] [illegible] scenario of a 10kg child ingesting 100mg of contaminated so[illegible] [illegible] day for 150 days per year with a 30 percent ingestion absor[illegible] factor, a soil concentration of 1,626 mg/kg [illegible] result in [illegible] Daily Intake (CDI) equal to the RfD.

The Uni[illegible] CDI in [illegible]/day (CDI at 1mg Pb/kg soils) is:

UCDI = [illegible]g Pb/kg [illegible] X 100mg soil/day X 1kg soil/1Mmg soil X

150 days/[illegible] X [illegible]year/365 days X 1/10kg bw X 0.3

$$= \frac{1 \times [illegible]}{1 \times [illegible]} \quad \frac{[illegible] \times 1 \times 150 \times 1 \times 1 \times 0.3}{[illegible],000,000 \times 1 \times 365 \times 10}$$

= 1.23E-05 [illegible]/kg/day

Allow. [illegible] conc. (mg/kg)= 2.0E-03 / 1.23E06

ASC (mg/[illegible] = 1,626

For a 63kg woma[illegible] [illegible]rotect the fetus):

Assumptions [illegible] the exposure scenario include a 63kg pregnant w[illegible] [illegible]ing 25 mg of soil per day for 150 days per year wi[illegible] [illegible] absorption rate of 15 percent.

UCDI [illegible] 1mg P[illegible] [illegible] X 1kg soil/1 Mmg soil X 25 mg soil/day X

150 day[illegible] [illegible] X 1 year/365 days X 1/63 kg bw X 0.15

$$= \frac{1 \times 1 \times [illegible]}{1 \times 1 \times [illegible]} \quad \frac{[illegible]50 \times 1 \times 1 \times 0.15}{[illegible],000 \times 1 \times 365 \times 63} = 2.5E-08 \text{ mg/kg/day}$$

ASC (mg/kg) = [illegible] / 3.5E-08 = 12,800 mg/kg

Note: [illegible] pregn[illegible] would not be exposed for more than the pregnancy period [illegible] do not ingest soils unless there is a combination of [illegible] and smoking habits.

Thus, the appr[illegible] levels are 1,625 mg/kg soil lead to protect the child less [illegible] and 12,800 mg/kg to protect the fetus of a pre[illegible] woman.

3. The Blood [illegible] used in the OBG risk assessment is site-specific [illegible] that provides needed perspective to the RA to characterize p[illegible] to lead in air particulates and soils. Admittedly, th[illegible] of any blood level survey cannot be completely def[illegible] due to the small sample of the population measured and [illegible] of information to describe the measured population in [illegible] actual exposure. The results of this survey are hig[illegible] indicative of an absence of unusual exposure to lead, however [illegible] site-specific information that should be considered whe[illegible] cleanup levels.

4. The site ma[illegible] the source of all of the lead found in the offsite locati[illegible] The RA did not emphasize that background soil lead levels co[illegible] due to the past use of unleaded gasolines. Some observed [illegible] lead concentrations in urban locations adjacent to we[illegible] roads exceeded the 1000 mg/kg soil lead levels cited b[illegible].

In summary, we [illegible] the following recommendations:

- the R[illegible] (8 - RI Report) was performed as required by the Ag[illegible] guidance documents, using sound scientific methods w[illegible] and toxicological information appearing in the Agenc[illegible] published literature.

- We do [illegible] with the Agency that the critical lead level in [illegible] soils have to be below a value that will potential[illegible] cause blood level above background. There is some bloo[illegible] that may be above background and have an associate[illegible] probable health risk. The situation is similar t[illegible] most carcinogens that have no threshold, but the clean[illegible] is not a zero concentration.

- We do [illegible] believe that the original RA should be arbitrari[illegible] revised. Total deletion of the methods used by OBG to ch[illegible] the risks will tend to exaggerate the

Stephen Sol... 4 December 15, 1988

... impacts due to exposure to lead in ... this site.

Sincerely yours,

Joseph ...
Senior ...
IT CORPORATION

1977 - 1981 [illegible] ylvania Dept. [illegible] of Environmental Resources [illegible] urface Mine [illegible], Harrisburg, Pennsylvania. [illegible] the above [illegible], acted as a hearing [illegible] public hearings [illegible] required for permit issuance or surface [illegible] rations. [illegible] findings and recommendations or PennD [illegible]

1973 - 1977 [illegible] Services, [illegible]ville, Pennsylvania. [illegible] technical projects and operations. This in[illegible] of [illegible] operation of four power plant [illegible] and [illegible] landfills. Marketed, [illegible] mini-dredging [illegible] refuse and fly ash [illegible] marketing [illegible] for processing of has[illegible] determined [illegible] and procedures regarding [illegible] Worked closely with the [illegible] litigation, although on an infrequent basis.

1970 - 1973 [illegible] Division of Solid and Hazardous [illegible] Harrisburg, Pennsylvania. Provided technical [illegible] ations [illegible] treatment and disposal [illegible] over 200 permit applications and made recom[illegible] or denial [illegible] a development pro[illegible] of power plant sulfur [illegible] other [illegible] streams. Reviewed [illegible] plant [illegible] technical assistance [illegible] geologists, and soil scientists.

1950 - 1968 [illegible] Line Administrator, Westinghouse Electric [illegible] Division, Blairton, Pennsylvania. Pro[illegible] ation and technical supervision for chemical [illegible] power [illegible] and feedwater con[illegible] administration for the naval industry and naval [illegible] for all west coast proj[illegible] design, [illegible] and installation of controls [illegible] power stations, [illegible] naval vessels, four steel [illegible] chemical plants ([illegible] manufacturing, etc.).

Registrati[illegible]a/Certi[illegible]

[illegible] Commonwealth of Pennsylvania

Profession[illegible] Affili[illegible]

[illegible] University of [illegible], Graduate School [illegible] Department of [illegible] and Environmental Health [illegible]

[illegible] Environmental Engineers

[illegible] Association

[illegible] Engineers (ASCE)

[illegible] Society [illegible]

[illegible] Honorary

[illegible] Honorary

Joseph Be[illegible] 7

Publicati[illegible]

[illegible], J. [illegible] Lopment of [illegible] Levels for Hazardous [illegible]aterials [illegible] [illegible]nmental Media, presented at the New Jersey [illegible] [illegible] Federation Meeting, Atlantic City, [illegible]ew Jerse[illegible]

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[illegible], J. [illegible], and M. [illegible], 1979, Management of [illegible] Wastes [illegible] Pittsburgh Energy Technology [illegible], T[illegible] [illegible]-43 [illegible], U.S. DOE.

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[illegible], J. [illegible] [illegible] of Waste Materials: Residues from [illegible] [illegible] and Disposal, Soil Conser[illegible]tion So[illegible]

arn, J. ... Governmental Influences in the Siting of ... Solid Waste Management Topics, Engineering ... oundatio...

arn, J. ... Abuse Lecturers," Technical Aspects of Solid ... ional Solid Waste Management Association, ...S. EPA.

arn, J., ... Environmental Impacts from the Disposal of ... Generated by the Slaked-Lime Wet Scrubber ... Environment, National Coal Association.

arn, J. ... mental Impacts from Mine-Mouth Power Sta- ... ions, M... , University of Pittsburgh.

arn, J., ... 9, Morris, 1970. The Economic Feasibility ... Industry in Northern West Virginia, Technical ... Pittsburgh, Graduate School of Public and ... ntrol.

Firestone [illegible] bar (CA)
Kroger [illegible]
Volney L[illegible]
Fulton T[illegible]
Clothier [illegible]
GBF La[illegible]
IWC (R[illegible]
Americ[illegible] (Westlake) (OH)
LTV Ste[illegible]
Union [illegible] (NJ)
Pernal [illegible] Housing [illegible]
Conroe [illegible]
Sliwo[illegible]
[illegible] Chemical
Cingo [illegible]

[illegible] Feasibility
[illegible] by others:

Millcre[illegible] - Volney Landfill
Cleve[illegible] - [illegible] Terminals
Vertac [illegible] - Clothier Site
Fields [illegible] - Sand Springs (OK)
Amphen[illegible] (NY) - [illegible] Site (OH)
Amphen[illegible]

[illegible] (U.S. EPA):

[illegible] Organics: NJ)
[illegible] MA)
[illegible] Ophthalmine: PA)
Americ[illegible] Company (PNAs: FL)
[illegible] Organics: NJ)
[illegible] & Oil [illegible] (PCBs in Oil: NJ)
New Bed[illegible] (PCBs in [illegible], sediments and
ambient [illegible]
Lake [illegible] Volatile Organics: [illegible])
Tyb[illegible] DE)
[illegible] Bendidius: NJ)
Rockaw[illegible] Public Water Supply: NJ)
Maidco [illegible] Incinerator [illegible] Mines: PA)
Project [illegible]
Hudson [illegible] (PCBs-River Envir: NY)
Swope [illegible] Volatiles: NJ)
Charles [illegible] (Large [illegible]-Ketones: MA)

[illegible] U.S. [illegible] Protection Agency:

Baird [illegible] Formulation Operation: MA)
Cannon [illegible] Phosphorus Contamination: MA)
Nyanza [illegible] (Lead Contamination: MA)
Tinkham [illegible] (PAH, Volatile Organics, PCBs: NH)

[illegible]	[illegible] (CE Cont. of Ground Water: NJ)
[illegible]	[illegible] (Aftermath of Fire: NJ)
[illegible]	[illegible] Volatile Organic Cont. of GW: NJ)
[illegible]	(Review only)
[illegible]	[illegible] Site (Buried Drums-Vol. Org. in Soils: DE)
[illegible]	[illegible] Review: PA) Proj. Mgr. RI/FS
[illegible]	[illegible] Recycling (Oil Recycling-PNAs: PA)
[illegible]	FS
[illegible]	[illegible] GW Contamination: PA)
[illegible]	[illegible] Org. Contam. of GW: PA)
[illegible]	[illegible]
[illegible]	[illegible] (Pesticides in Soils: VA)

He has [illegible] [illegible] committees during the critical reviews of the RI/FS [illegible] also appeared as an expert witness before environmental [illegible] in court.

Education

[illegible]	[illegible] in [illegible] and Systems Analysis, [illegible] Pittsburgh, Pennsylvania; 1982
[illegible]	[illegible] of Pittsburgh, Pittsburgh, Pennsylvania; 1970
[illegible]	[illegible] Administration, University of Pittsburgh, Pittsburgh, [illegible]; 1970
[illegible]	[illegible] Engineering, Purdue University, West Lafayette, Indiana

Experience and Backgr[illegible]

1985 - Present [illegible] [illegible], IT Corporation, Pittsburgh, Pennsylvania. [illegible] [illegible] endangerment assessments, conducts human and environmental [illegible] evaluations, and designs environmental media [illegible] analysis programs. Responsibilities include:

Implement [illegible] comprehensive risk assessment program to [illegible] studies, exposure assessment information, [illegible] environmental fate of pollutants, hazard evaluation, [illegible] protocol development.

[illegible] health and environmental regulatory agencies at local, [illegible] federal levels.

Provide [illegible] support for routine and emergency hazardous [illegible] response, abandoned waste site remedial investigation [illegible] feasibility studies, and Resource Conservation and Re[illegible] (RCRA) permitting procedures (exposure assessment in [illegible])

Investigation, evaluation, and recommendation of environmental health [illegible] relating to design and operation of proposed new and mod[illegible] [illegible] facilities and disposal sites.

- Technic[illegible] in the field of hazardous wastes to in-house [illegible].

1983 - 1983 Supervisor [illegible] and Risk Assessment, NUS Corporation, Pittsburgh, Pa. [illegible] Provided technical assistance, guidance, and management [illegible] assessment activities for over 50 Comprehensive Environmental [illegible], Compensation, and Liability Act (CERCLA) Superfund [illegible] the prime [illegible] to the U.S. Environmental Protection [illegible]. Developed and authored approximately 20 health risk [illegible]. Provided technical support and assistance to the [illegible] implementation of specialized air monitoring programs and [illegible] analysis plans. Acted as the project manager for the [illegible] investigation of [illegible] CERCLA sites. Trained new personnel [illegible] and perspectives of health risks associated with environmental [illegible] to the levels of hazardous materials and determining [illegible] environmental fate in the environmental multimedia. [illegible] assistance to the health and safety division.

[illegible] the principal participant on the following projects [illegible] Corporation:

[illegible] assessments [illegible] to define the extent of contamination [illegible] potential, and health risks associated with [illegible] in the [illegible] United States, including:

- [illegible] manufacturing [illegible] plants where pesticide [illegible] herbicides [illegible] found in soils and ground water [illegible] and investigation of the inactive buildings to [illegible] used for demolition.

- A PCB [illegible] estuary where the chemical was found in high concentration [illegible] fish and shellfish and accompanied by heavy metals [illegible] of the sediments. Another PCB project involved [illegible] assessment of PCB contamination of the upper reaches [illegible] Hudson River.

- A [illegible] manufacturing plant, where sludges were disposed [illegible] burial for 75 years. The plant was located [illegible] Gulf of Mexico. This project required an [illegible] relating to impacts on marine biota and tidal [illegible] environmental transport mechanisms.

- Many [illegible] where spent solvents were released into a variety [illegible] underlain by some major aquifers used for drinking [illegible].

- An [illegible] plant where dyes and herbicides were produced [illegible] from the process were impounded in surface [illegible]. Contaminants included beta-naphthylamine and [illegible]. A detailed study of the environmental fate [illegible] other pollutants in a complicated hydrogeologic [illegible] required.

- This [illegible] detailed study of abandoned hazardous waste [illegible] located in strip-mined areas which were further comp[illegible] by underlying deep mines.

- Acted [illegible] manager for three Superfund sites. Directed field [illegible] subsurface investigations in conjunction with the [illegible]. Provided technical assistance for test pit [illegible] ed as the site safety officer. One project [illegible] deep mine workings, [illegible] whole TV investigation of [illegible] entry shaft, and an extensive magnetometer [illegible] a field screening technique using the Organic [illegible] to characterize the contamination patterns in the [illegible] soils.

- [illegible] of indoor pollution of a new computer [illegible] a local university where formaldehyde was [illegible] minant. Worked closely with an occupational health [illegible] respond to worker complaints.

- [illegible] and technical assistance to project manage- [illegible] of health risks, hazard characteristics, [illegible] ia, and regulatory requirements of residuals [illegible] es generated [illegible] U.S. Department of Energy [illegible] Facility.

- Perform[illegible] analysis for a DOE contractor of proposed [illegible] ral gasoline [illegible] in service stations and [illegible] ties. This included an evaluation of the [illegible] posure characterization where air dispersion models [illegible] determine the receptor population.

1977 - 1982 [illegible] resident [illegible] tes, Pittsburgh, Pennsylvania. Provided con- [illegible] solid waste and hazardous waste industries. [illegible] construction of three sanitary landfills and [illegible] (pickling liquor neutralization) facility. [illegible] the client and environmental enforcement [illegible] applications coordinating with geotech- [illegible] the lead consultant). At the same time, [illegible] in the Civil Engineering Department, [illegible] University [illegible].

[illegible] relevant projects as follows:

- An [illegible] and inventory of the Pittsburgh Energy [illegible] includes developing a residuals management plan [illegible] with all existing regulatory requirements.

- Perform[illegible] study of the health implications and the environ[illegible] ering aspects of coal conversion residuals.

- Analyzi[illegible] of short-term mutagenicity test systems as they [illegible] chemicals with special emphasis on the test sa[illegible] on methods.