

Review, Comments and Questions

on the

PALMERTON ZINC SUPERFUND SITE

Operable Unit #3, Final Feasibility Study and Proposed Plan

Proposed by:

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION III**

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July 28, 2000

for:

The Palmerton Citizens For A Clean Environment

In Response to PCCE Task Schedule #32
Dated: June 6, 2000

OVERVIEW

The following memorandum has been prepared in response to PCCE Task Schedule #32, which requests that MKA Project Manager Robert H. Hosking, Jr., review and comment on the Final Feasibility Study and Proposed Plan for OU#3 of the Palmerton Superfund Site. The PCCE requests that preliminary comments be prepared by Wednesday June 21, 2000, with formal comments suitable for submission to EPA, delivered to the PCCE and EPA, by July 20, 2000. This deadline has been extended to July 28, 2000 to take advantage of the longer EPA comment period which ends August 3, 2000. PCCE Task Schedule #32 also requests that MKA Project Manager Robert H. Hosking, Jr. attend the Wednesday June 28, 2000 public meeting with U.S. EPA at 7:00 P.M. in the Palmerton West End Fire Company building.

REVIEW

The EPA document titled **Superfund Program Proposed Plan, Palmerton Zinc Site, Operable Unit #3, Community Soils**, Palmerton, Pennsylvania, dated June 2000, is a public information document, ..."issued as part of EPA's public participation requirements under Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA")".... which describes the current status of Operable Unit #3 and provides some background on EPA's selection of a Preferred Alternative. It is stated in the first paragraph of the introductory section titled: **EPA ANNOUNCES PROPOSED PLAN**, that the "...Proposed Plan summarizes information obtained from the ***CDM Field Trip Report, Risk Assessment, Feasibility Study, and Interim Action On-Scene Coordinator's Report***, and the remedial alternatives being considered for the cleanup of Operable Unit #3." The same list of documents is referenced in the last paragraph of the first section, but appended with the words "...and other documents contained in the ***Administrative Record*** file for the site." The second paragraph states: **"This is the final remedy EPA anticipates for Operable Unit #3. EPA expects that to the extent possible this remedy will address all of the media impacted by the contamination at the Site relating to Operable Unit #3."**

The second section of the **Proposed Plan** provides information on the **Background and History** of Operable Unit #3. In the first paragraph of section II the site is defined as "...the Borough of Palmerton, the Village of Aquashicola and other residential areas of Lower Towamensing township exhibiting elevated levels of hazardous substances from the zinc processing activities in Palmerton." The ongoing electric arc furnace ("EAF") dust processing operation at the East Plant is recognized in the third paragraph, but not otherwise addressed.

The fifth paragraph of the second section delineates and provides a status update of the four (4) operable units. OU#1 is defined as revegetation of the north face of Blue Mountain. The status of OU#1 is described as establishment of grass cover "... on approximately 1,000 acres of Blue Mountain, with approximately 1,000 acres remaining to be revegetated". OU#2 is defined as "... remediation of the Cinder Bank" The status of OU#2 is described as follows: "No significant work has been completed on the Cinder Bank, however, one of the ***potentially responsible parties ("PRPs")*** for the Site is in the process of implementing a remediation plan for the leachate generated by the Cinder Bank." OU#3 is identified as "... the subject of this Proposed Remedial Action Plan."; and OU#4 is defined as "...an area-wide investigation of contamination in the ground and surface waters and includes the Site-wide ecological risk assessment." No status information is reported for OU#4.

The sixth, seventh and eighth paragraphs of Section II provide background information about OU3# activities between 1985 and initiation of the interim action. In September of 1985 an Administrative Order on Consent was established between EPA, Horsehead Industries Incorporated (HII), and Gulf and Western Industries, Inc. Under the terms of the 1985 Administrative Order on Consent, HII agreed to conduct the remedial investigation and feasibility study (RI/FS) for OU#2, and Gulf and Western, Inc., agreed to conduct the RI/FS for OU#3. A draft RI/FS for OU#3 was completed and submitted to EPA in 1988. In February 1991, PaDER (now PaDEP) sampled dusts in two houses and found elevated levels of lead, cadmium and zinc. At PaDEP's request, EPA sampled an additional 24 homes, which confirmed PaDEP's earlier conclusion that elevated metals levels are present in Palmerton residences. Consequently, EPA amended the 1985 Administrative Order on Consent with HII to conduct an interior cleanup of the homes, which HII completed in the Spring of 1992. In addition, EPA issued a Unilateral Order to Paramount Communications, Inc. (the successor of Gulf and Western Industries, Inc., now known as Viacom International, Inc.), to undertake an extent-of-contamination study and determine if additional households are contaminated. According to the narrative of the Proposed Plan, the activities EPA required of Paramount were satisfied, but EPA was not satisfied that the environmental contamination of residential communities was fully defined.

To better define the extent of contamination in Palmerton residences, EPA conducted a comprehensive environmental sampling program in conjunction with the Agency for Toxic Substances and Disease Registry (ATSDR) health testing program in October 1991. The analytical results received by EPA in October 1992 showed elevated levels of lead, cadmium and zinc in surface soils and household dusts. These analytical results combined with information regarding the make-up of the receptor population impelled the EPA Remedial Project Manager to request EPA removal assistance to mitigate immediate threats to human health, welfare, and the environment. The EPA On Scene Coordinator ("OSC") determined that removal activities were necessary to mitigate threats to public health posed by the site. Consequently, the EPA interim action was initiated in April 1994.

Between April 1994 and 1997 a total of 438 homes were sampled as part of the EPA interim action program. Cleanup activities were conducted at a total of 202 residential properties, with 116 cleanups involving home interiors, and 195 cleanups involving exterior areas. Seven (7) houses were cleaned on the interior only and 86 houses were cleaned on the exterior only. The interim action also involved distribution of one instant lead detection kit and informational brochures regarding lead poisoning, blood lead testing and lead paint abatement to each household that participated in the program.

Section II of the Proposed Plan also provides a summary description of the Neighbor Helping Neighbor Program ("NHN") initiated by Zinc Corporation of America in 1991. The objective of the NHN program is to assist Palmerton residents with establishing and/or maintaining vegetation on their properties. This is accomplished by first testing the soil and then adding soil amendments such as mushroom compost, limestone, fertilizer and grass seed. The Proposed Plan narrative states that over 1,100 residential landowners have participated in the NHN program since its inception. The PRP's consultants at the University of Cincinnati claim that the NHN program has resulted in some reduction in soil lead concentrations in residential yards (U of C, 1996). EPA's interim action and individual homeowner actions (exclusive of NHN) have also either reduced soil lead concentrations or increased vegetative cover at the site.

Section II of the Proposed Plan includes a summary of the EPA Risk Assessment for Operable Unit #3. The goal of the baseline risk assessment was to determine if further remedial action is required, and to serve as the basis for assessing cleanup goals. The OU#3 baseline risk assessment included data collected during past field investigations, PaDEP air monitoring data, data from an exposure study developed by the PRP's consultants at the University of Cincinnati (U of C), and data provided by Oak Ridge National Laboratory (ORNL) regarding past storage of uranium at the site. One of the field investigations cited is the CDM Federal Field Trip which collected samples from both Palmerton (193 residences sampled) and Jim Thorpe (125 residences sampled) during the fall of 1991. The Proposed Plan states that more than 2,400 environmental samples were collected as part of this effort. Based on the ratio of residences sampled, this would mean that approximately 1,460 environmental samples were collected from Palmerton. The September 30, 1996 EPA document "**FINAL TECHNICAL APPROACH FOR RISK ASSESSMENT**", states that 557 surface soil samples (including QA samples) were collected by CDM in 1991 from various locations in the yards of Palmerton residences.

The baseline risk assessment also included data provided by the 1994 University of Cincinnati (U of C) health study (aka. the Lead Exposure Study), sponsored by the Palmerton Environmental Task Force ("PETF") with funding from the PRP's. EPA recognizes this PRP funded study as the most recent environmental data available to describe exposure conditions within OU#3. In addition, the U of C collected and analyzed soil samples to establish if the elevated metals levels are or are not related to activities associated with historic smelter emissions. EPA applied the results of this "Multi-Metals Analysis" in the selection of contaminants of potential concern for the site. In May 1998, EPA completed the baseline risk assessment for Operable Unit #3, the results of which are summarized in Section IV of the Proposed Plan, titled **SUMMARY OF SITE RISKS**.

The final topic addressed in Section II of the Proposed Plan is the Feasibility Study. The purpose of the Feasibility Study is to identify and evaluate alternatives that could be implemented to reduce the human health risks identified in the baseline risk assessment. The Draft Feasibility Study was released for public comment in April 1999, and the Final Feasibility Study Report (dated May 2000) was released for review and public comment with the Proposed Plan, in early June 2000.

Section III of the Proposed Plan is titled **SCOPE AND ROLE OF RESPONSE ACTION**. This section identifies the hazardous substances that will be addressed (lead, cadmium and arsenic), and identifies the geographical extent of Operable Unit #3 (the Borough of Palmerton, the Village of Aquashicola and other residential areas of Lower Towamensing Township exhibiting elevated levels of hazardous substances from zinc processing activities in Palmerton). For cost estimating purposes, the Proposed Plan delineates OU#3 as extending from the Bowmanstown municipal boundary to the west, the ridge line north of stony ridge, the Lehigh River and Aquashicola Creek to the south, the electric power line right-of-way to the northeast, and the area between Stony Ridge and Aquashicola Creek east to the fork in Little Gap Road. A graphic depiction of the OU#3 boundaries is included as Figure 2. The focus of EPA's remedial actions for OU#3 will be to "... prevent ingestion of contaminated soil and/or indoor dust by reducing contaminant concentrations in these media and/or creating a vegetative barrier to the soils to reduce risk at each residence to acceptable levels. ...preference will be given toward utilizing permanent remedial alternatives which will provide the greatest long term protectiveness, whenever practicable, thereby avoiding institutional controls as much as possible."

It is important to remember that homeowner/resident participation in the OU#3 cleanup is voluntary. EPA plans to solicit and encourage all residential property owners within the OU#3 Feasibility Study boundaries to participate in cleanup eligibility sampling. EPA has established a goal that a minimum of 80% of the residences eligible for remedial action participate in the cleanup. If this goal is not met, then EPA in consultation with PaDEP may decide to reevaluate the protectiveness of the remedy. EPA plans to take the sampling and remediation performed under the interim action into consideration when evaluating its participation goals.

Section IV is titled **SUMMARY OF SITE RISKS**, and includes a substantial body of information regarding the baseline risk assessment and how EPA calculates human health risks resulting from environmental contamination. For the record, the PCCE and their technical assistants raised several serious issues regarding the validity of the assumptions and conclusions stated in both the final and baseline risk assessment reports, which were not adequately addressed, even through EPA's responsiveness summary.

EPA's position is that significant health risks to Palmerton area residents are the result of ingesting lead and arsenic from exterior soil and interior dust. The basic assumptions are that ingestion is the only exposure pathway that is significant, lead contaminated soils from exterior residential areas are tracked inside residences resulting in lead contaminated interior dusts, and that elevated arsenic levels are found only where there are elevated levels of lead. The potential contribution of airborne particulate deposition to indoor dust is recognized in the Summary Of Site Risks section, but EPA asserts that the screening analysis conducted during the risk assessment concludes that inhalation is not a significant exposure pathway. Several analyses of air quality monitoring programs in the Palmerton Valley, including the analysis conducted by EPA's National Enforcement Investigations Center (NEIC), question the adequacy of air quality monitoring in the Palmerton Valley. EPA's assumption that remediation of lead contamination will also adequately reduce arsenic contamination is questionable. The authors of the Proposed Plan and the Final Risk Assessment Report contradict themselves with the following two highlighted statements (emphasis mine):

- About 16 percent of HQs for arsenic exposure exceed the target of 1. Possible remediation goals for arsenic based on noncancer effects may be about 79 and 32 ppm for soil and dust, respectively. **Areas in the Borough where these concentrations may be exceeded are limited, and overlap those where possible lead remediation goals are exceeded.**
- Neighborhood risk estimates are not very informative, primarily because of the complex pattern of contamination within the Borough and surrounding areas. It is difficult to define neighborhoods of reasonable size without including some very high concentrations. **Moreover, the patterns of contamination do not completely overlap for the four COPCs indicating that neighborhoods defined for one chemical may not be appropriate for others. Because of difficulties in interpretation, neighborhood risks are not used in the interpretation of risks for the Borough and surrounding areas.**

Section IV of the Proposed Plan ends with an explanation as to why EPA's alternatives, including the preferred alternative, cannot address the potential for human health risks resulting from exposure to lead based paint. Exposure to lead based paint is not within the scope of Superfund, because it is not the result of past industrial activities. The remedial alternative proposed by the PRPs, Alternative 7, addresses the need for remediation of lead based paint, so it is unacceptable for that and other reasons that will be addressed later. To address the potential hazards of lead based paint, EPA plans to distribute educational literature to every resident during the remedial action participation solicitation process, as well as during any action taken at a residence. EPA asserts that they have "...determined through significant investigative and analytical efforts that the vast majority of lead in interior dust in residences within Operable Unit #3 is present as a result of the track-in of exterior soils contaminated by industrial activities in Palmerton."

Section V of the Proposed Plan is titled **COMMON COMPONENTS OF ACTION ALTERNATIVES**. The titles of the subsections under this heading are equally self explanatory and include: **ELIGIBILITY FOR REMEDIAL ACTION, SEQUENCE OF SAMPLING,** and **MAJOR ARARS**. The title of Section V suggests that **ELIGIBILITY FOR REMEDIAL ACTION** will be the same for all of EPA's proposed remedial action alternatives (actually the word **similar** is used), which specifically excepts the PRP's proposal (Alternative 7). For all of EPA's proposed remedial action alternatives, "...Residences within Operable Unit #3 found to contain exterior soil with lead levels at or above the site specific risk-based standard of 650 ppm will be eligible for remediation, the extent of which will be based on residence specific conditions determined through the sampling." The language "site specific risk-based standard" recognizes the fact that EPA's remedial action contaminant concentration threshold (650 ppm) is not consistent with other scientifically established remedial thresholds, most notably PaDEP's statewide health standard for lead contaminated soil (established under Act 2), which is 500 ppm. The list of property types eligible for remedial action includes: "...single and multi-family dwellings, apartment complexes, vacant lots in residential areas, schools, daycare centers and playgrounds, parks and green ways." Areas excluded from eligibility include "... large undeveloped properties zoned residential, whether subdivided or not...". Remediation of these types of properties will be the responsibility of the developer "...at such time in the future that the property is developed and must be completed in compliance with all applicable federal and state laws and regulations at that time."

EPA personnel will "**participate significantly**" in soliciting resident participation in sampling to determine remedial action eligibility, "**Regardless of whether EPA, or a potentially responsible party is conducting the remedial action.**" EPA plans to appeal to Palmerton residents "...through local media outlets and letters, as well as personal door to door visits, whenever possible." There will be a limited time-span for soliciting resident participation, determined by EPA through consultation with PaDEP, after which residents will be responsible for conducting their own remedial actions if necessary or warranted.

The subsection titled **SEQUENCE OF SAMPLING** outlines how eligibility sampling will be conducted. Because EPA's site-specific risk-based standard assumes that exterior soils are the primary source of interior dust contamination, exterior soil sampling will be conducted first. Exterior soil samples will be composites including representative sub-samples collected from the front and back yards at a minimum, but may also include side yard and play area samples where appropriate. Residential properties with exterior soils containing soil lead levels at or above 650 ppm will be eligible for remediation,..."the extent of which will be based on residence specific conditions determined through sampling". There will be no age or income eligibility requirements. Sampling results will be provided to each resident. The owners of residences that qualify will have the option to choose whether or not they participate in the remedial action. If they qualify and choose not to participate in the remedial action, EPA will implement some type of institutional control to insure that future buyers of the property are aware of the sampling results.

Residents that qualify and participate in the exterior soil remedial action will then be eligible for interior dust sampling. Interior dust sampling is optional, and will not be conducted until after vegetative cover has been established "...in an attempt to prevent any possibility of recontamination from the exterior". Interior samples will be collected by vacuuming living areas with hand held HEPA units until the cartridge is full of dust. Residences with interior dust samples that exceed 650 ppm will be eligible for indoor dust remediation.

The last paragraph of the **SEQUENCE OF SAMPLING** subsection states: "**All of the alternatives are designed such that implementing the lead-based remedy will also meet the arsenic goals identified in the FRAR.** Although not explicitly stated as such, this statement seems to suggest that arsenic samples will not be collected and/or analyzed either before or after remedial activities are conducted at Operable Unit #3 of the Palmerton Zinc Superfund Site.

The subsection titled **MAJOR ARARS** is EPA's attempt to demonstrate that the remedial alternatives proposed, especially the preferred alternative, will be consistent with all Applicable or Relevant and Appropriate Requirements ("ARARS"). Much of the discussion in this subsection involves Land Disposal Restrictions ("LDR's") for listed hazardous wastes, and EPA's determination as to whether or not material removed from the site will have to be disposed of as hazardous waste. Predictably, EPA has determined that if the material (dust and soil) removed during remediation of OU#3 passes the Toxic Characteristics Leaching Procedure (TCLP) for lead, cadmium and arsenic, disposal at a Subtitle C hazardous landfill will not be required.

Regarding compliance with state and federal cleanup standards, EPA recognizes that Pennsylvania has promulgated standards for soil cleanup under Act 2, but argues that they have established a site specific cleanup standard at the Palmerton Zinc Superfund Site through the baseline risk assessment, which is consistent with State law and regulations. It is not stated in the Proposed Plan subsection on **MAJOR ARARS** that Pennsylvania's Statewide Health Standard for lead in soil is 500 ppm. Further, the feasibility of complying with Pennsylvania's Statewide Health Standard was never addressed in either the Proposed Plan or the Final Feasibility Study Report for OU#3. This is a major shortfall of these documents.

Other ARARs that EPA claims to have adequately addressed in the Feasibility Study include: "...minimization of any effects of remediation on historic properties, or landmarks; consideration of flood plain hazards and flood plain management; avoiding adverse impact to wetlands; proper transportation of hazardous materials; remedial action worker safety; and best practices to prevent fugitive dust emissions during any remedial activity.

Section VI is the **SUMMARY OF REMEDIAL ACTION ALTERNATIVES**. These have been numerically segregated into seven (7) distinct categories, 3 categories that address both exterior and interior contamination (alternatives 1, 2 and 7); two (2) categories that address only indoor dust (alternatives 3 and 3A); and three (3), maybe four (4) categories that address only contaminated soil (alternatives 4, 5A&5B, and 6). PRP proposed Alternative 7 replaces indoor dust sampling with indoor lead-based paint sampling. In a sense the way the remedial alternatives are segregated and categorized gives the impression that a broader range of alternatives were proposed and evaluated, when in fact the range of remedial alternatives addressed in the Proposed Plan is quite limited. A broader range of alternatives were evaluated in the feasibility study, but some obvious options that could and should have been considered were disregarded. For example, the potential for meeting Pennsylvania's Statewide health standard for lead in soil was never seriously evaluated because of strict adherence to the site-specific risk-based remedial objective of 650 ppm.

Soil and Dust Alternative 1 is the **No Action** alternative, which EPA states "...is presented for comparison against other alternatives." Omission of the word only from this statement, as in "...is **only** presented for comparison against other alternatives", is noted and not very reassuring. Obviously the No Action alternative involves doing nothing to remediate residential soil or indoor dust, and the estimated cost of this alternative is listed as \$0. Apparently EPA has only estimated what the out of pocket "construction" costs for remedial activities would be from implementing this alternative, and has not considered what the true cost (or the cost benefit) of this alternative would be to the communities within and adjacent to Operable Unit #3.

Soil and Dust Alternative 2 is implementation of **Institutional Controls and Monitoring**. Similar to Soil and Dust Alternative 1, above, this alternative would not result in removal or remediation of contaminated residential soil and indoor dust, but would instead rely on "institutional controls" such as deed notices, local permitting and public education to prevent human exposure to contamination above cleanup standards. Monitoring would be necessary to determine where institutional controls are necessary (where contamination is above cleanup standards) and to ensure that the institutional controls are effective for preventing exposure to contaminants. The estimated cost of implementing Soil and Dust Alternative 2 in the Proposed Plan is \$657,000, the cost estimate for this alternative quoted in the Feasibility Study is \$733,000.

Dust Alternative 3: Specialized Cleaning. This alternative only addresses remediation of indoor dust through the use of High Efficiency Particulate Air ("HEPA") vacuuming, wet wiping of hard surfaces, and then a second HEPA vacuuming. After the remedial activity is completed, "Clearance Testing" of hard surfaces following the protocol used in the Borough's "Lead-Safe" Home Grant Program would be implemented, and educational literature about the general dust hazard would be distributed. The estimated cost of implementing this alternative is \$1,436,000.

Dust Alternative 3A: Specialized Cleaning with Carpet Removal. This alternative is essentially the same as Alternative 3 above, except that it includes the option of replacing indoor carpeting if EPA determines through consultation with PaDEP that carpet removal and reimbursement is more effective at removing contaminants, and more cost effective, than HEPA vacuuming. No cost estimate is provided for this alternative. Dust alternative 3(A) has been identified by EPA in the Proposed Plan as the preferred indoor dust remediation alternative.

Soil Alternative 4: Removal/Revegetation. This alternative involved removing all soil with lead levels above 650 ppm. EPA's cost estimates were generated by assuming that an average four-inch depth of excavation over 80 percent of the area of remediation, and an average six-inch depth of excavation over the remaining area. Vegetation would be removed and replaced, and post remedial sampling would be conducted to confirm that remedial objectives were met. The estimated cost of this alternative is quoted as \$26,349,000. It is worth noting that the actual area that would be remediated through implementation of this alternative is not defined in either the feasibility study or the proposed plan. It is unlikely that EPA has sufficient extent of contamination data to estimate how much of OU#3 has soil lead levels greater than or equal to 650 ppm.

Soil Alternative 5A & 5 B: Removal/Insitu Treatment/Revegetation. Essentially this alternative involves removal and replacement of soils in hot spots and targeted areas where lead levels are significantly above the risk based goal of 650 ppm or where there are bare spots, treating less contaminated soils with agricultural soil or added soil amendments (5A) or chemical substances to make the metal contaminants insoluble (5B), and then establishing new vegetation. Since revegetation is described as hydroseeding, mixing grass seed with soil amendments, or in certain cases placement of sod, it is assumed that woody vegetation would be avoided during the remedial activity. Alternative 5(A) is described as essentially the same procedures that were used during the interim action soil cleanups. The estimated cost of alternative 5(A) is quoted as \$11,121,000. Alternative 5(B) involves pozzolonic treatment, or treatment with other chemicals. Implementation of this alternative would involve conducting treatability studies first to determine the appropriate chemical mix, and to ensure effectiveness. The estimated cost of alternative 5(B) is quoted as \$11,786,00 (sic - should be \$11,786,000). Both alternatives 5(A) and 5(B) would include two weeks of watering for successful establishment of vegetative cover, a public education program aimed at reducing lead exposure risks and improving lawn maintenance practices, and post remedial sampling and vegetative cover observation to confirm the achievement of remedial objectives. Soil alternative 5(A) has been selected by EPA in the Proposed Plan as the preferred soil remediation alternative.

Soil Alternative 6: Soil Amendment and Revegetation. As stated in the Proposed Plan narrative, this alternative is similar to the Neighbor Helping Neighbor program already in existence, except that it would be performed by a contractor and would provide for pre- and post-remediation sampling and observation. Two weeks of watering and a public information and maintenance program would be provided to assure establishment of the newly grown vegetative cover. The estimated cost of this alternative is quoted as \$11,255,000.

PRP Alternative 7: Public/Private Partnership. Similar to alternatives 1 and 2 described previously, this alternative addressed both exterior and interior areas (but focuses on lead based paint instead of interior dust). According to an introductory comment provided in the Proposed Plan, the information provided "...is a brief description of the Alternative using verbatim excerpts from the Viacom submittal. The complete submittal along with followup information provided by Viacom on May 12, 2000 to clarify the Alternative can be found in the Administrative Record." The description provided of this alternative is by far the longest and most detailed description of any alternative in the Proposed Plan. Possibly this is because the other alternatives are described in more detail in the feasibility study. It is somewhat disappointing that the entire proposal, including clarifications, was available to EPA when the Proposed Plan was written, but was not included for comparison purposes. Instead, EPA directs the reader to the Administrative Record, which may or may not be complete and in order at EPA's Philadelphia offices and/or the Palmerton Library. In any event, my personal experience is that the Palmerton Superfund Site Administrative Record file at Palmerton Library is voluminous and sometimes difficult to negotiate efficiently.

PRP Alternative 7 is described by EPA as a combination of several technologies already utilized in Palmerton through the EPA Interim Action, "Neighbor Helping Neighbor", and the Borough of Palmerton "Lead Safe" Home Grant Program. Much like EPA's proposed alternatives, eligibility for cleanup will begin with exterior sampling and analysis of composite samples. Only residences where exterior soil samples have overall composite or arithmetic average values that exceed the 650 ppm action level will be eligible for remedial consideration. The first divergence of PRP Alternative 7 from all of the EPA alternatives is that prior to any exterior remediation, homes eligible for remedial consideration will undergo an analysis for indoor lead-based paint. Lead-based paint analysis will be conducted in accordance with HUD guidelines. The description of PRP Alternative 7 states "Because lead-based paint abatement falls outside the scope of Superfund authority, interior remedial action will be undertaken with the assistance of the Potentially Responsible Parties ("PRPs") at the site as part of a Public/Private Partnership. Note that the statement "...with the assistance of the Potentially Responsible Parties ("PRPs") at the site as part of a Public/Private Partnership" does not explicitly state who will pay for remediation and eligibility/confirmation sampling. The next unacceptable element of PRP Alternative 7 is introduced with the statement "First, determination of the overall mix of remedial activity will be made based on home eligibility, homeowner consent and factors in EPA's Palmerton Risk Assessment. This statement seems to suggest that the PRPs will determine both eligibility and the appropriate remedial action for each residence. The most significant unacceptable element of PRP Alternative 7 is stated in the very next sentence "In the event that a home qualifies for indoor lead-based paint abatement and the homeowner denies access, or in the event the indoor lead-based paint assessment demonstrates no need for such abatement, then the *exterior soil* remedial action lead level will be modified to 1050 ppm." This statement disqualifies PRP Alternative 7 from further consideration, since it would not meet the remedial action objective of addressing all soil areas with lead concentrations at or above 650 ppm. However, the PRPs appear to contradict themselves at the beginning of the next paragraph with the statement "In the event that indoor lead-based paint abatement is not conducted on a home that qualifies for such, because the home owner did not consent to lead-based paint abatement, then the exterior soil remediation will be conducted based on a 650 ppm lead cleanup level." These statements require clarification, or no further consideration.

In addition to lead-based paint, PRP Alternative 7 seems to emphasize the benefits of achieving vegetative cover, which may be part of their justification for suggesting that the 1050 ppm soil lead level is acceptable. For example, the statement is made: "If an existing and satisfactory vegetative cover barrier is maintained indefinitely, there is little potential for lead to be mobilized through mechanisms such as wind and water erosion or soil tracking into households (and thereby into the indoor dust exposure pathway). In other words, the existing vegetative cover may already be sufficient to meet the remedial objectives." As a long term remedial objective, the establishment and maintenance of lush, healthy vegetative cover in Palmerton is certainly a worthy goal. However, the belief that a continuous cover of turf grass can or will be maintained indefinitely, sufficient to form a permanent barrier between metals contaminated soil and the at-risk population, is probably unrealistic. Turf grasses are not shade tolerant species. As recently planted arborescent vegetation matures, and the canopy grows increasingly dense, there are likely to be many places where maintenance of a continuous cover of turf grasses is unattainable. In addition, as residential properties are further developed and re-developed, the common practice of stripping and stockpiling the topsoil increases the risk of exposure to unacceptable levels of contaminated soil. Consequently, increasing the remedial action objective of 650 ppm any further beyond the Pennsylvania Statewide health standard of 500 ppm is completely unacceptable.

PRP Alternative 7 includes many of the accessory elements of EPA's proposed soil alternatives including tilling in uncontaminated soil and/or soil amendments, placement of grass seed, two weeks of watering to stimulate healthy turf grass establishment, and post remedial sampling and observation. In addition, the inside of residences that participate in the lead-based paint abatement program will be HEPA-vacuumed after abatement and receive HUD level clearance testing. The estimated cost of PRP Alternative 7 quoted in the Proposed Plan is \$13,656,000.

Section VII, titled **EVALUATION OF REMEDIAL ALTERNATIVES** provides a comparison of the various remedial alternatives with nine (9) criteria. These are divided into three (3) primary categories as outlined below:

Threshold Criteria. All feasible alternatives must first satisfy the threshold criteria which includes:

- Overall protection of human health and the environment
- compliance with ARARs (Applicable or Relevant and Appropriate Requirements)

Primary Balancing Criteria are used to weigh the advantages and disadvantages of the various alternatives which satisfy the Threshold Criteria, these include:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility or volume
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria are criteria that are considered after public comment has been obtained and considered, these include:

- State Acceptance
- Community Acceptance

The nine (9) criteria described above are then applied to each of the proposed alternatives. Obviously soil alternatives 1 and 2 do not satisfy the threshold criteria of protecting human health and the environment and compliance with ARARs. EPA claims that Alternatives 4, 5 and 6 would all provide some degree of human health protection by reducing residential exposure to contaminated soil, with Alternative 4 providing the best long term protection, Alternative 5 providing the next best level of protection, and Alternative 6 would provide some measure of protection, but would not remove any contaminants. EPA claims that PRP Alternative 7 would provide a similar measure of protectiveness to Alternative 5, where the 650 ppm cleanup standard is applied, but would be less protective where the 1050 ppm soil cleanup level is implemented. Also, PRP Alternative 7 relies more heavily on existing vegetative cover, increasing the importance of long term lawn maintenance for protection in the future. Regarding Compliance with ARARs, EPA claims that Alternatives 4, 5, 6 and PRP Alternative 7 would meet Federal and State of Pennsylvania ARARs and TCBs. This statement appears to be incorrect because PRP Alternative 7, as described in the Proposed Plan, is not designed to meet the 650 ppm site-specific risk-based standard, and consequently is not as protective of human health or the environment.

Regarding the dust alternatives, EPA states that Alternative 3 (presumably including both 3 and 3A), would be protective of human health and thereby meet remedial action objectives. EPA does not state whether or not PRP Alternative 7 would meet the threshold criteria of protecting human health and the environment, because it does not provide for evaluation of lead dust tracked in from exterior soils. EPA does recognize though that PRP Alternative 7 provides for HEPA vacuuming after lead-based paint remediation has been completed. This appears to be an inadequacy in EPA's evaluation, since failure to remediate soils to the 650 ppm lead level will allow more highly contaminated soil to be tracked into homes resulting in recontamination of indoor dust. Regarding compliance with ARARs, EPA claims that Alternatives 3 and 3(A) as well as PRP Alternative 7 would all comply with ARARs. Again, this appears to be an inadequacy in EPA's evaluation, since failure to remediate soils to the 650 ppm lead level will allow more highly contaminated soil to be tracked into homes resulting in recontamination of indoor dust. EPA's analysis of PRP Alternative 7 for compliance with the threshold criteria is unacceptable and should be challenged.

COMMENTS

EPA's evaluation of alternatives, and selection of a preferred alternative as outlined in the Proposed Plan is an attempt at achieving an easy political solution to a technically difficult problem. Heavy metal contamination at the Palmerton Superfund Site is widespread and concentrated to the level in most places that it continues to present a significant threat to human health and the environment. Heavy metals are conservative substances, which is to say they are not easily destroyed, degraded or dispersed. Further, the physiological effects of chronic exposure to lead contamination at the levels present in Palmerton and vicinity are difficult to demonstrate because they include maladies which are poorly defined and understood, such as neuro-developmental disorders and hypertension.

Because the extent of contamination and risk assessment studies conducted to date at the Palmerton Zinc Superfund site are questionable, the adequacy of the Feasibility Study and Proposed Plan are also questionable. From the very beginning, EPA's approach to the Palmerton site has been to strategically reduce the cost of cleanup. EPA realized early on that they could substantially reduce cleanup costs by restricting the geographical extent of required removal actions. This has been done by ignoring ecological impacts and focusing the potential for impacts to human health to only those sections of the Palmerton Valley that **currently** have residential land uses. Consequently, eligibility for remediation of contaminated property is being restricted through eligibility sampling protocols outlined in the Proposed Plan for OU#3. As EPA has stated in the Proposed Plan (Section V. first paragraph), "...Residential property eligible for sampling includes single and multi family dwellings, apartment complexes, vacant lots in residential areas, schools, daycare centers and playgrounds, parks and green ways. Large undeveloped properties zoned residential, whether subdivided or not, will not be eligible for remediation. Any necessary remediation will be the responsibility of the developer at such time in the future that the property is developed and must be completed in compliance with all applicable federal and state laws at that time." The Proposed Plan does not define how large a vacant lot in a residential area needs to be before it is ineligible for sampling, and/or how small a "large undeveloped property zoned residential" needs to be, to be eligible for sampling. EPA's stated intention to limit the time-span during which residential properties are eligible for remediation provides an additional mechanism for reducing the cost of cleaning up OU#3. Is it fair to require a residential land owner or developer to pay for a cleanup of their property when they are not responsible for the contamination? Should private property owners be required to meet more stringent cleanup standards, such as Pennsylvania's Statewide Health Standard of 500 ppm lead in residential soils, than the 650 ppm site-specific standard EPA has established for the rest of Operable Unit #3?

During the June 28, 2000 Proposed Plan Public Meeting held at the Palmerton West End Fire Company Building, Remedial Project Manager Charlie Root stated that EPA would not address large undeveloped properties zoned residential because doing so would unfairly benefit the developers. Is it an unfair benefit to land owners or developers to remediate land, otherwise suitable for residential development, that is contaminated by industrial activities? The Joint and Several Liability provisions established under CERCLA were intended to make those who profited from industrial pollution pay for the cost of cleanup. Is it not an unfair advantage to the PRP's, some of whom profited immensely from decades of uncontrolled industrial emissions, to require the owners of private property or land held in public trust, to remediate contamination that resulted from the PRP's industrial activities?

EPA's common practice of dividing large contaminated sites into numerous operable units is typically explained as an attempt to better organize and facilitate or expedite cleanup activities because each operable unit can have its own record of decision. While commendable as an attempt to organize large complex sites to facilitate cleanup, the delineation of operable units in Palmerton has contributed to the mistaken impression that distinct geographical boundaries, used to define operable units, also separate the potential for environmental impacts. Consequentially, EPA stated in section 5.16 of the Final Responsiveness Summary that the geographical area included in Operable Unit #3 will not be investigated as part of the Ecological Risk Assessment (conducted under Operable Unit #4). During our 11/10/1994 review of the proposed human health risk assessment work plan, the PCCE and their Technical Assistants commented: "A comprehensive risk assessment needs to evaluate the risks to ecological endpoints within the populated sections of the Palmerton Valley." To this EPA responded: "The focus of the risk assessment for the Borough of Palmerton will be the potential for impacts to human health. Extensive evaluation of ecological impacts will, however, be the focus of risk assessment for Operable Unit 4, which includes Blue Mountain and **surrounding rural and undeveloped areas** (emphasis mine). In addition, the risk assessment for Operable Unit 4 will address ecological concerns for Aquashicola Creek and aquatic habitats downstream." Clearly EPA is using the geographical boundaries of these operable units to separate their mandate to protect human health from their mandate to also protect the environment. As we stated in our November 10, 1994 correspondence to Mr. Fred Mac Millan (Page 7, paragraph 8):

"Because it was suggested by an EPA representative at the Palmerton Scientific Symposium that a separate ecological risk assessment would be conducted at some future date, as part of the remedial investigation for OU-4, we did not feel it was appropriate to dwell on ecological risk assessment issues at this time. However, it cannot be said that a comprehensive risk assessment was conducted for OU-3, until the risks to ecological endpoints within the populated sections of the Palmerton valley are adequately evaluated. As the number and size of natural areas in eastern Pennsylvania has diminished, the suitability of residential areas for plant and wildlife habitat has become increasingly important. This is especially true of Palmerton, since the more intensively managed environment of the Palmerton community may be more ecologically productive than the adjacent tracts of unpopulated land on Blue Mountain and Stony Ridge."

For these reasons, it is our position that the feasibility study and Proposed Plan are incomplete if they only addresses human health risks, without consideration of ecological risks and the need for ecological restoration within the area occupied by OU#3.

Recall that the justification for establishing 650 ppm as the site-specific risk-based remedial objective was the assumption that the IEUBK default parameters over estimate the quantity of soil an at risk child would consume. The lead bioavailability study (aka the "Pig Study") validated the bioavailability input parameters of the IEUBK model, so the only remaining variable that could be adjusted to justify the site-specific risk-based remedial objective EPA was aiming for is the ingestion rate. The basis for EPA's adjustment of the ingestion rate is very questionable, so the justification for deviating from PaDEP's state-wide health standard for lead in soil is also very questionable. A primary deficiency of the Feasibility Study is that it does not accurately quantify the difference in cost (or cost benefit) between meeting PaDEP's state-wide health standard of 500 ppm and EPA's site-specific risk-based standard of 650 ppm.

The technical or scientific basis for EPA's decisions to favor one alternative over another are generally weak because the evaluation of criteria are mostly qualitative and/or speculative. With the exception of Soil Alternative 4, which involves removal of all soil contaminated with lead at or above the remedial action level of 650 ppm, EPA does not really know if any of their other proposed remedial alternatives will be effective over the long term. Soil Alternative 5A should be effective, provided that hot spots are adequately identified and removed, and that clean soil and lime are tilled in at sufficient quantities to dilute and bind up the lead to acceptable concentrations. The use of organic matter (mushroom soil) as a soil amendment may be effective for reducing contaminant concentrations over the short term, and helping to maintain good continuous turf grass cover, but mulches eventually oxidize or are otherwise mineralized to such minute quantities that they are not suitable for diluting contaminated soils much above the threshold concentration over the long-term. The main problem with Soil Alternative 6 is that it does not propose to remove highly contaminated soil at all, but instead relies on tilling in clean soil for dilution, and adding other supplements to establish a continuous barrier of turf grasses.

By EPA's own admission, none of the interior dust alternatives will be effective if remediation of contaminated soil is not effective, and the PRP's position is that lead-based paint abatement will also be required to lower interior lead dust levels and eliminate the potential for recontamination. Both of these positions fail to recognize that much more of the Palmerton Valley is highly contaminated with heavy metals than the geographic area covered by OU#3, and that there will continue to be a potential for recontamination until most of the contaminated areas within the Palmerton Valley are addressed. Given the lack of certainty regarding long-term remedial effectiveness, it is reassuring that post remedial sampling and observation are included with most of the alternatives that are likely to be part of the ROD.

In several instances EPA has subordinated its own studies which are applicable for conducting the risk assessment and feasibility study, to data provided by the PRP's and their consultants. For example, EPA gave substantial credibility to and placed great emphasis on the University of Cincinnati Lead Exposure Study in the baseline risk assessment. This point is supported by the fifth paragraph under the subheading **SUMMARY OF EPA RISK ASSESSMENT**, of section II of the Proposed Plan (page 5) which states:

"A second health study was undertaken in 1994, sponsored by the Palmerton Environmental Task Force ("PETF") with funding from the PRPs (U of C 1996). Soil and dust samples were collected at homes of 140 children less than 72 months old as part of an examination of blood lead concentrations in children living in the Borough. These data are the most recent environmental data available to describe exposure conditions within OU#3.

The June 1994 Hazardous Substances Source Identification Study conducted by EPA's National Enforcement Investigations Center (NEIC) includes a substantial data base regarding the location, concentration and origin of hazardous substances at OU#3 of the Palmerton Zinc Superfund Site. A list of documents which were "summarized" in the Proposed Plan are identified in the first and last paragraphs of the introductory section, but both lists fail to mention the June 1994 NEIC report. Further, the list of references (Section 8) in the May 2000 Feasibility Study Report **does not** include the June 1994 Hazardous Substances Source Identification Study conducted by EPA's National Enforcement Investigations Center (NEIC). Instead, EPA substituted the U of C Multi-Metal Analysis of Residential Samples (U of C 1995) for selecting the contaminants of potential concern for the site (sixth paragraph under the subheading **SUMMARY OF EPA RISK ASSESSMENT**, of section II of the Proposed Plan (page 5)).

The PCCE, through their Technical Assistants, specifically referenced important information presented in the June 1994 NEIC report during various reviews and comments submitted to EPA. In addition, the presentations provided by the authors of the Hazardous Substances Source Identification Study, Michael E. Ketterer, Ph.D., and Joe H. Lowry, Ph.D., at the July 29, 1994 Palmerton Symposium, provided confident and straight-forward characterizations of environmental conditions within residential sections of the Palmerton Zinc Superfund site that are consistent with observations reported by numerous concerned citizens, especially regarding the contribution of current operations to cumulative human health risks. The ongoing electric arc furnace ("EAF") dust processing operation at the East Plant is recognized in the third paragraph of the Proposed Plan, but not otherwise addressed. The PCCE and their Technical Assistants expressed to EPA on several occasions that they believed the information presented in the June 1994 NEIC report was important for an accurate characterization of human health risks. However EPA chose to ignore their own data when preparing the risk assessment, and instead emphasized data provided by the PRP's consultants at the University of Cincinnati. In the September 30, 1996 Palmerton Zinc Site Final Responsiveness Summary, section 6.1, EPA responded:

"EPA agrees that the NEIC study is important, but believes that the issues addressed in the study are best considered as part of the Feasibility Study. Larger data sets exist for characterizing total contaminant levels within the Borough (see responses to Comments 1.2.1, 1.2.2, and 1.2.3). These data will be used in the risk assessment to estimate total exposures and risks for the population in Palmerton.

The NEIC Study will assist in incorporating the results of the risk assessment with decisions on remediation. **The study will be used as appropriate to help delineate contaminant sources as part of the Feasibility Study.** This will allow focus on sources of contamination and associated uncertainties in those areas where total contamination exceeds acceptable levels.

The remaining issues addressed by McTish, Kunkel & Associates focus on details of the NEIC report. Brief responses to these comments are provided. However, since the source identification will not be incorporated into the risk assessment, the responses provide only general information. **A more complete analysis of the NEIC report will be carried out for the Feasibility Study."**

It is interesting that ZCA commented on EPA's response (to MKA's comment) by stating that: "ZCA believes strongly that the NEIC data base should not be used in the Risk Assessment. Detailed Horsehead comments will be submitted shortly to refute the many inaccuracies and mistakes in the NEIC report." Since the PCCE and their Technical Assistants were never provided with the opportunity to review Horsehead's comments on the accuracy of the NEIC report, EPA should provide a thorough and detailed explanation as to why the NEIC study was not given further consideration, especially in the Feasibility Study. EPA has an obligation to either apply the findings of the June 1994 NEIC report to the Feasibility Study, as promised in the Final Responsiveness Summary, or justify why the findings of such a thorough and detailed study are being ignored.

Institutional versus Engineering Controls - Pennsylvania's Land Recycling and Environmental Remediation Standards Act, Act 2 of 1995, defines and differentiates between Institutional and Engineering Controls. An institutional control is a measure taken to limit or prohibit certain activities that may interfere with the integrity of a remedial action or result in exposure to regulated substances at a site. These include, but are not limited to, fencing or restrictions on the future use of the site. An engineering control is a remedial action directed exclusively toward containing or controlling the migration of regulated substances through the environment. These include, but are not limited to, slurry walls, liner systems, caps, leachate collection systems and groundwater collection trenches. Engineering controls are remedial activities suitable for demonstrating attainment, institutional controls are not; however, institutional controls can be used for maintaining attainment after a standard has been met. Consequently, Soil Alternative 2 as outlined in the Proposed Plan (institutional controls and monitoring) should not be a feasible option, because by definition it cannot be used to demonstrate attainment with applicable ARAR's.

As a long term remedial objective, the establishment and maintenance of lush, healthy vegetative cover in Palmerton is certainly a worthy goal. However, the belief that vegetative cover can or will be maintained indefinitely, sufficient to form a permanent barrier between lead contaminated soil and the at-risk population, is probably unrealistic. As vegetation matures, and the arborescent canopy grows increasingly dense, there are likely to be many places where maintenance of a continuous cover of turf grasses is unattainable. In addition, as residential properties are further developed and re-developed, the common practice of stripping and stockpiling the topsoil increases the risk of exposure to highly contaminated soil not removed during remediation of OU#3. Consequently, efforts to reduce exposure to contaminated soil through the use of continuous turf grass cover do not really meet the Primary Balancing Criteria of Long-term effectiveness and permanence at each residential property.

Overall it is somewhat disappointing that the alternatives analysis in the feasibility study is not both more creative and aggressive in attempting to remediate the extensive heavy metal contamination that threatens both human health and the environment in the Palmerton Valley. While it is specifically stated that several of the alternatives described will be protective of human health, EPA's mandate to protect both human health and the environment is not adequately addressed. Furthermore it is never considered that, without protecting ecological endpoints in terms of productivity and the myriad of free services provided by ecological systems, human health is also compromised. This tunnel vision approach to environmental cleanup is an artifact of EPA's dividing a valley-wide problem into four (4) discrete operable units, and public/institutional acceptance of ecological triage. Psychologically it separates human interests from those of the ecosystem that sustains us, and discourages public participation in productive community based environmental renewal. For these reasons it is inappropriate for EPA to propose a Record Of Decision for OU#3 before the ecological risk assessment for OU#4 has been presented to the public for review and comment.

It is encouraging to see progress toward completion of the Feasibility Study and Proposed Plan in that hopefully additional removal actions will occur in the near future. For the removal action to be effective on a comprehensive level, every property needs to be investigated, even property that is not yet developed, but has the potential for future residential land use. For EPA to fulfill their mandate, while simultaneously keeping participation in the clean-up of OU-3 completely voluntary, maintaining confidentiality, provide for long-term effectiveness and permanence, limit clean-up eligibility to a specified time-span, and progress toward delisting of the site; it is appropriate, and probably necessary for EPA to enter into a negotiated ROD which establishes an adequate escrow account to address current residential and potential residential properties not addressed in the removal action before de-listing.

QUESTIONS

The PROPOSED PLAN is comprehensive in scope and the Feasibility Study is an impressively voluminous document, yet there are still many specifics that need to be ironed-out and many answers that need to be addressed before OU#3 is ready for a Record Of Decision. For example:

1. On page 21 of the PROPOSED PLAN in the section titled VIII. PREFERRED ALTERNATIVE, the statement is made: "Initially, approximately two inches of sod/soil vegetative cover in targeted hot spots or bare areas would be excavated and disposed of off-site." Does this statement mean that sod as well as soil is sufficiently contaminated to require removal? Does EPA plan to include vegetation in composite samples used for pre-remediation eligibility screening? Is the co-occurrence of lead with zinc in smelter emissions evidence that healthy vegetation is predictive of lower lead levels? To what depths will soil samples be collected?

2. Also on page 21, in the same section the statement is made "Surface revegetation would be in the form of hydroseeding with native grasses, mixing grass seed into the soil amendments, or in certain situations, sod could be used." Where, under what conditions, and specifically which species of native grasses are proposed? While some turf forming grass species may be native to our region, for the most part, turf grasses are not characteristic of the native flora in the eastern North American temperate forest biome. A similar statement is made on page 22, in the *Revegetation* section wherein it is stated: "Native grasses require less maintenance and are more tolerant of the local climatic conditions." While the use of native species is commendable and consistent with Executive Order 13112, it is not necessarily true or scientifically accurate to state that native grasses require less maintenance and are more tolerant of the local climatic conditions. To the contrary, the complex composition and distribution of native vegetation in natural ecosystems is the result of environmental resistance in balance with biotic potential. Environmental resistance includes edaphic, climatic and biological factors which control an organisms (in this case a grass species) ability to grow and reproduce. Many non-native species frequently become invasive because they are introduced into an ecosystem which lacks the natural environmental resistance factors that control their populations in their native habitat. Consequently, as the U.S.D.A. has known for many years, when it comes to maintaining monocultural plant communities, it is often easier to use species introduced from other ecosystems. In their native habitat, that is as a **component** of the natural composition and distribution of the native flora, native vegetation is clearly superior. But as an unnatural monocultural turf grass species, domesticated hybridized varieties specially bred for resiliency to drought and physical damage will provide the best barrier between contaminated soil and the at risk population. The fact that the authors and reviewers of the Proposed Plan do not know these basic ecological principles is serious cause for concern.

3. On page 22 of the PROPOSED PLAN, in Section VIII. PREFERRED ALTERNATIVE, the statement is made "Appropriate air monitoring would be conducted to identify the possible occurrence of contaminant migration during remedial activities." Since it appears that the potential for contaminant migration to occur as a result of air-borne soil and dust can be predicted, what kind of air monitoring is appropriate, and why is this not specified in the proposed plan? Will background air monitoring be conducted so that EPA can distinguish between airborne residential soils (generated through remedial activities), ambient contaminated soil blowing off the surrounding mountainsides, and possibly contaminated air emissions generated from current operations?

4. EPA plans to use composite sampling to determine eligibility for remedial action, yet they recognize that the distribution of contamination within the Borough is not uniform as communicated in the statement "**Exposure conditions that may result in unacceptable lead exposure are found throughout the Borough. The lack of exact correlation among geographic distributions of lead exposure, lead in soils and lead in dust underscores the variability in environmental lead concentrations within the Borough. All homes and properties within these areas will not necessarily have such elevated exposure potential or concentrations. Remediation will have to be determined on a house-by-house basis.**" If the geographic distribution of lead within the Borough is not uniform, doesn't the use of composite sampling increase the possibility of introducing a false negative where hot spots occur in otherwise less contaminated areas?

Consider, for example, a residence where, for aesthetic reasons, the front yard was revegetated by replacing the soil or adding soil amendments, but the back and side yards were not treated. If the soil lead level is 50 ppm in the front yard and 1000 ppm in the back yard, a well mixed and split composite sample would yield a composite lead concentration of 525 ppm. Consequently, this property would not be eligible for remediation, yet children playing in the backyard would be exposed to lead levels twice the concentration of Pennsylvania's Statewide health standard.

The way in which samples are collected is also important for determining eligibility for remediation. Will there be a bias for collecting bare soil area samples first, or will vegetated soil areas be equally represented. Will all samples be taken within the top two inches of soil, and be reasonably free of living vegetation? Will perimeter soil samples be collected from the drip line of buildings. There is evidence that drip line samples contain higher concentrations of lead than other residential soil areas. While the PRP's claim that this observed phenomena is proof of the contribution of lead based paint, a more plausible explanation is that it is due to atmospheric deposition being washed from the roofs of buildings.

The NEIC Hazardous Substances Source Identification Study stated that some of the highest levels of metals contamination in the Palmerton Valley were found in the litter horizons. Will the litter horizons and/or partially decomposed leaf litter be included in the eligibility samples? Will soil samples be composited vertically (at various depths) as well as spatially (at various locations)? Will individual discrete samples be used to validate the ability of composite samples to represent the actual distribution of contaminant concentrations? Will post-remediation sampling also involve the use of composites? EPA has the responsibility of assuring that no hot spots are overlooked, or it has not met its mandate of protecting human health.

5. The criteria for soil remediation eligibility is clearly stated as 650 ppm lead. Post-remedial sampling and observation are indicated for most soil remediation alternatives, and the remedial objective is still stated as 650 ppm. EPA has stated that the remediation outlined in the Proposed Plan is the final remedy EPA expects to implement for OU#3. Surely at a site so vast some areas will be missed, and remediation of other areas will prove ineffective. This is the reason why it is prudent to conduct confirmation sampling. At what soil lead concentration level will EPA decide to re-remediate residential soils that do not meet the original remedial objective?

6. It is stated in Section III of the PROPOSED PLAN that: "EPA will solicit and encourage participation of all residential property owners in the Operable Unit #3 Feasibility Study boundaries with regard to eligibility sampling." The OU#3 Feasibility Study boundary is defined as: "the Borough of Palmerton, the Village of Aquashicola and other residential areas of Lower Towamensing township exhibiting elevated levels of hazardous substances from zinc processing activities in Palmerton." Figure 2 in the Proposed Plan, which is essentially the same as Figure 1-2 of the Feasibility Study is unnecessarily vague in that it is not possible to accurately locate the northern and eastern site boundaries of OU#3 due to a lack of topographic features and a scale. The eastern and northern boundaries of OU#3, delineated in these figures, appear almost arbitrary. It even appears as if the eastern boundary of OU#3 has been cut-off because the entire site would not fit on an 8½ by 11 inch piece of paper. EPA should either better define the geographic scope of OU#3 with a more detailed map, or simply open eligibility sampling to any residence within the potential airshed of the Palmerton Zinc Superfund site.

7. Within the introductory section of the PROPOSED PLAN it is stated "EPA will establish a goal of a minimum of 80% participation in remedial action of those found to be eligible for remediation." What is EPA's goal for community participation in eligibility sampling?

8. Within the Section titled **SEQUENCE OF SAMPLING** it is stated that "If eligibility sampling finds that a property is eligible for remedial action and the property owner(s) chooses not to participate in the remedial action some type of institutional control will need to be implemented to insure that future buyers of the property are aware of the sampling results." EPA needs to define what types of institutional controls would be implemented, and present the various options to the public for review and comment. If residents do not participate in eligibility sampling, how will EPA adequately characterize the extent of contamination sufficiently to know when it's mandate to protect human health and the environment has been met?

9. Within Section V EPA states that areas excluded from eligibility include "... large undeveloped properties zoned residential, whether subdivided or not...". Remediation of these types of properties will be the responsibility of the developer "...at such time in the future that the property is developed and must be completed in compliance with all applicable federal and state laws and regulations at that time." Do these statements mean that residential properties excluded from the OU#3 remedial action will be required to meet PaDEP's 500 ppm Statewide Health Standard established under Act 2?

10. The last paragraph of the **SEQUENCE OF SAMPLING** subsection states: "**All of the alternatives are designed such that implementing the lead-based remedy will also meet the arsenic goals identified in the FRAR.** Although not explicitly stated as such, this statement seems to suggest that arsenic samples will not be collected and/or analyzed either before or after remedial activities are conducted at Operable Unit #3 of the Palmerton Zinc Superfund Site. Will soil samples collected during the eligibility sampling and post remedial monitoring be analyzed for arsenic? If not how will the validity of this assumption be confirmed?

11. Since the decision to participate in an exterior remedial action is the decision of the property owner, how will EPA handle multi-family dwellings, like apartment houses, where the property is eligible, but the owner of the property chooses not to participate in the remedial action. Eligibility and participation in the exterior soil remedial action is required for interior dust sampling. Are the tenants of the multi-family dwelling then ineligible for interior dust sampling and analysis?

12. Regarding compliance with state and federal cleanup standards, EPA recognizes that Pennsylvania has promulgated standards for soil cleanup under Act 2, but argues that they have established a site specific cleanup standard at the Palmerton Zinc Superfund Site through the baseline risk assessment, which is consistent with State law and regulations. While there are provisions under Act 2 for establishing site specific cleanup standards by performing a baseline risk assessment at the subject property, it is my understanding that the statewide health standards were established to provide the appropriate level of protection at residential sites. Deviation from the statewide health standard is only acceptable at non-residential sites where controlling access or exposure to the contamination can be assured through the use of pavement, fencing or other institutional controls. Although Act 2 has no authority at Federal Superfund sites, for a site to be delisted, it must have state acceptance. Has PaDEP agreed to accept EPA's site specific cleanup standard of 650 ppm when Pennsylvania State Law has established a Statewide Health Standard for lead in soil at 500 ppm? Who at PaDEP has decided that EPA's site-specific risk-based standard for residential soils is sufficiently protective of human health and the environment?

13. In the **SUMMARY OF REMEDIAL ACTION ALTERNATIVES**, EPA provides estimated costs for the various remedial action alternatives. The costs presented apparently only represent what the out of pocket "construction" costs for remedial activities would be from implementing these alternatives. No consideration is ever given to the actual costs or the cost benefits of the various remedial alternatives, and their economic impact upon the communities within and adjacent to Operable Unit #3. The cost estimates in the feasibility study and **PROPOSED PLAN** should include a cost benefit component to demonstrate that the alternative selected is cost effective.

14. The potential importance of the NEIC study was briefly addressed again during the Wednesday, June 28, 2000 EPA public meeting on the Proposed Plan, and again representatives from ZCA strenuously protested to the use of what appears to be a significant data base for characterizing hazardous contamination at the Palmerton Zinc Superfund Site. EPA should provide a thorough and detailed explanation as to why the NEIC study was not given further consideration, especially in the Feasibility Study. EPA has an obligation to either apply the findings of the June 1994 NEIC report to the Feasibility Study as promised in the Final Responsiveness Summary, or justify why the findings of such a thorough and detailed study are being ignored. Is EPA's refusal to apply the NEIC data base to the risk assessment and feasibility study due to pressure from the PRP's? Because the joint and several liability provisions of CERCLA will eventually require EPA and/or the U.S. Department of Justice to petition the PRP's for cost recovery, isn't there a serious conflict of interest in allowing the PRP's to regulate EPA's data base?

15. In the section of the Proposed Plan that discusses the Evaluation of Remedial Alternatives EPA suggests that PRP Alternative 7 would meet Federal and State of Pennsylvania ARAR's and TCB's for soil and dust. How can EPA make this statement when the PRP's propose a much less protective cleanup level for soil in many instances (1050 ppm vs. 650 ppm), and the focus of the PRP's indoor remediation is lead based paint, which is not even allowed under CERCLA because it is not the result of past industrial activities?

16. In the context of our modern scientific understanding, it is unacceptable to separate human health from protection of the environment, especially with regard to ecological endpoints. However, EPA has clearly expressed their intention to do so through strict definition of the geographical limits of each operable unit. Will the ecological risk assessment conducted under OU#4 include the geographical area covered by OU#3? If not why? Will the public have the opportunity to review and comment on the ecological risk assessment before EPA proposes a Record Of Decision for OU#3? If not why? These and the many questions stated in the previous pages require an answer before EPA approves the Proposed Plan, or any attempt is made to propose a Record of Decision for OU#3.