IN RE CYPRUS AMAX MINERALS COMPANY

CERCLA § 106(b) Petition No. 96-2

FINAL DECISION

Decided December 23, 1997

Syllabus

Pursuant to CERCLA section 106(b), 42 U.S.C. § 9606(b), Cyprus Amax Minerals Company ("Cyprus Amax") petitioned for reimbursement of costs associated with its compliance with a unilateral administrative order ("UAO") issued under CERCLA section 106(a), 42 U.S.C. § 9606(a). The UAO, issued by U.S. EPA Region VI on February 2, 1994, required Cyprus Amax to remove soil that had become contaminated with lead and cadmium as a result of various smelting operations in Bartlesville, Oklahoma, between 1907 and 1993. Cyprus Amax is the corporate successor to the parent company of two companies that conducted smelting operations at the facility involved here, the National Zinc Company ("NZC") facility in Bartlesville.

In a series of phases, the concentrations of lead and cadmium in the soil were assessed, as was the extent of lead contamination in the blood of children residing within close proximity to the NZC facility. The second phase involved soil samples from "high access" areas where children tend to congregate. As a result of this phase of the testing, the Region performed a removal action at the "high access" areas by removing the lead- and/or cadmium-contaminated soil from those areas. The third phase of the testing focused on residential areas, and identified approximately 1200 residences near the NZC facility that had elevated lead or cadmium contamination in the soil. Blood lead testing revealed that 13.8% of children tested who lived near the facility had elevated blood lead levels. Based on these results, the Region found an apparent strong correlation between locations of elevated lead concentrations in residential soil and locations of children with elevated blood lead levels.

In September 1993, the Region executed an Action Memorandum ("September 1993 Action Memorandum") providing for a removal action involving the excavation and replacement of the lead and cadmium contaminated soil at the 1200 residences where concentrations of those pollutants were greater than three times the established cleanup levels. The established cleanup level for lead was 500 ppm, based upon then-available Agency guidance. Agency guidance at that time recommended that cleanup levels for lead-contaminated soil be in the range of 500 ppm to 1000 ppm. The established cleanup level for cadmium was 30 ppm, based upon the recommendations of the Agency for Toxic Substances and Disease Registry ("ATSDR").

At the time of the September 1993 Action Memorandum, the site was also the subject of a remedial investigation, and the process of selecting a remedy was under way. In the September 1993 Action Memorandum, the Region explained that it was anticipated, although not certain, that before the soil was excavated and replaced at all 1200 residences, the remedial program would assume responsibility for completing the task.

Ultimately, the removal action required by the UAO was subsumed in the remedial action for the site. The remedial action adopted less stringent soil cleanup levels of 925 ppm for lead and 100 ppm for cadmium.

Before filing the reimbursement petition, Cyprus Amax defended itself in a federal court action brought by other parties potentially responsible for cleaning up contamination at the NZC site. The federal court found Cyprus Amax liable as an operator at the site, and as a generator of the contamination, based upon Cyprus Amax's status as the corporate successor to two companies that conducted smelting operations at the facility. Cyprus Amax did not appeal that decision.

In its petition, Cyprus Amax claims that it is entitled to reimbursement because it is not liable. In addition, Cyprus Amax claims that the Region acted arbitrarily and capriciously in issuing the UAO, because there was no "imminent and substantial endangerment." Further, Cyprus Amax contends that the Region's selection of cleanup levels and the requirement to clean whole yards rather than "hot spots" were arbitrary and capricious.

Held: The petition for reimbursement is denied.

Cyprus Amax's liability claim, made as a protective measure in the event Cyprus Amax appealed the federal court decision, is denied, as Cyprus Amax did not file such an appeal. In its comments on the Preliminary Decision, Cyprus Amax did not contest the Board's finding of liability.

There was an imminent and substantial endangerment justifying the issuance of the UAO. Given the risks posed by lead or cadmium contamination, and the apparent strong correlation between high blood lead levels in children and high levels of soil contamination near the NZC facility, an imminent and substantial endangerment was presented by the elevated levels of soil contamination at the 1200 residences. The fact that the Region had previously removed soil from the high access areas does not negate the endangerment presented by the contaminated soil at the 1200 residences.

Nor does the fact that the site was in the remedy selection process negate the endangerment. There is no merit to Cyprus Amax's contention that the Region should have ordered this cleanup solely through the remedial process, not the removal process. The Region evaluated the risks presented by delaying soil cleanup until the remedy was selected, and decided that in light of those risks it would begin addressing soil contamination immediately, through a removal action, rather than delaying such work until the remedial action commenced. At the time the removal was selected, there was no certainty as to the time of the anticipated remedial activity. Further, it was not certain that the remedial action would address the urgency of the human health threat as did the removal action.

The 500 ppm cleanup level for lead was based upon then-available Agency guidance, and was not arbitrarily selected. The guidance recommended a cleanup level in the range of 500 to 1000 ppm. The Region then considered the Agency guidance indicating that if the UBK model were used without site-specific data, as was the case here, it would produce a cleanup level of 500 ppm. In addition, the Region considered the strong correlation between the locations of elevated soil lead concentrations and children with elevated blood lead levels in deciding to choose the low end of the range recommended by Agency guidance. Particularly in light of that correlation, the Region's selection of 500 ppm was not unreasonable. The fact that a less stringent cleanup level was selected for the remedial action does not demonstrate that the Region acted arbitrarily. The Region did not have the benefit of a completed remedy selection when it selected the removal, and in light of the information available to the Region at the time it selected the removal action, the Region's decision was not arbitrary and capricious.

The 30 ppm cleanup level for cadmium was based upon consultations with the ATSDR. The fact that a less stringent cleanup level was selected for the remedial action does not demonstrate that the Region acted arbitrarily. The Region did not have the benefit of a completed remedy selection when it selected the removal, and in light of the information available to the Region at the time it selected the removal action, the Region's decision was not arbitrary and capricious. A document upon which Cyprus Amax relies to show that the 30 ppm level was arbitrary is not in the administrative record, and in any event, is not persuasive.

The Region did not act arbitrarily in ordering Cyprus Amax to remove the soil from an entire yard rather than just the "hot spots." Given that the soil contamination resulted from air disposition from uncontrolled stack emissions at the smelters, and given the widespread contamination within a close proximity to the NZC facility, the Region acted reasonably, and Cyprus Amax has not pointed to any evidence in the administrative record suggesting that the Region acted arbitrarily.

Before Environmental Appeals Judges Ronald L. McCallum, Edward E. Reich and Kathie A. Stein.

Opinion of the Board by Judge Reich:

Cyprus Amax Minerals Company has filed a petition for reimbursement of response costs under section 106(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9606(b). This petition arises out of a removal action taken to address lead- and cadmium-contaminated soil that resulted from various smelting operations that occurred in Bartlesville, Oklahoma from 1907 to 1993. Cyprus Amax is the corporate successor to the parent company of two companies that conducted smelting operations at the facility involved here. On February 2, 1994, U.S. EPA Region VI issued to Cyprus Amax a unilateral administrative order ("UAO") under CERCLA section 106(a), 42 U.S.C. § 9606(a), directing Cyprus Amax to remove lead- and cadmium-contaminated soil from approximately 1200 residences near the smelting facility.

By this petition, Cyprus Amax seeks to recover $6,274,929.95 it asserts that it spent in complying with the UAO. Cyprus Amax claims it is entitled to reimbursement because it is not liable for cleaning up the contamination and because the Region arbitrarily and capriciously selected the response action ordered by the UAO. The Region responded to the petition. Based on those submissions, the Board issued a Preliminary Decision on September 23, 1997. In the Preliminary Decision, the Board indicated that the claim for reimbursement must be denied in all respects.

Cyprus Amax filed comments on the Preliminary Decision on October 27, 1997, and the Region filed comments on November 17, 1997.[1] After due consideration of the comments received and making such changes as are appropriate, the Board issues this Final Decision

[1] The Region also filed a motion to strike several issues raised in Cyprus Amax's comments on the Preliminary Decision on the ground that those issues were raised for the first time in the comments. Cyprus Amax opposed the motion. The Region's motion is hereby denied. The arguments made by the Region in its motion to strike are more appropriately considered when determining what weight, if any, to give to any such comments by Cyprus Amax.

denying reimbursement. *See Guidance on Procedures for Submitting CERCLA Section 106(b) Reimbursement Petitions and on EPA Review of Those Petitions* ("1996 Guidance") at 9-10 (Oct. 9, 1996).

I. *BACKGROUND*

In 1907, three smelters began operating on the western edge of Bartlesville, a municipality in northeastern Oklahoma with a population of approximately 46,000. Memorandum from Toxicologist, Agency for Toxic Substances and Disease Registry (ATSDR), to Carl R. Hickam, ATSDR Representative, Region VI at 1 (July 16, 1991) ("July 1991 Health Consultation"). One was owned by the National Zinc Company (NZC). The NZC smelter was purchased in 1987 by the Zinc Corporation of America (ZCA). The other two smelting companies, Lanyon-Starr Smelting Company and Bartlesville Zinc Company, ceased operations in the 1920s. July 1991 Health Consultation at 1. Cyprus Amax is the corporate successor to American Metal Company, Limited, which was the parent corporation of Lanyon-Starr Smelting Company and Bartlesville Zinc Company. The areas formerly occupied by the Lanyon-Starr Smelting Company, Bartlesville Zinc Company and NZC smelters are currently part of the facility owned by ZCA, which the parties refer to as the "NZC facility." *Id*.[2]

Since commencing operations in 1907, the primary function of the NZC facility has been the recovery of zinc, cadmium and lead from industrial materials. July 1991 Health Consultation at 1. Originally, the NZC facility used a horizontal retort furnace for its smelting operations. The smelting process generated significant quantities of particulate air emissions, including lead and cadmium. ATSDR Public Health Statement: Lead at 2; ATSDR Public Health Statement: Cadmium at 1-2.[3] Between 1907 and 1969, the NZC facility reportedly emitted an average of approximately 1600 tons per year of particulate matter (or an estimated total of 99,200 tons during those years). Memorandum from Anan I. Tanbouz, Region VI Technical Assistance Team, to Pat Hammack, On-Scene Coordinator, Region VI Emergency Response Branch, at 2 (May 15, 1992) ("Phase II Report"). In 1976, the emissions were reduced by 99%, to a rate of approximately 15 tons per year, by the installation of an electrolytic refinery to replace the

[2] Despite the fact that ZCA is the most recent owner of the smelting facility, the parties have referred to the facility by the initials of the previous owner, National Zinc Company. We will use the same appellation as the parties, and refer to the smelting facility as the "NZC facility."

[3] These undated documents can be found in the administrative record at pp. 000307 and 000313, respectively.

horizontal retort furnace. *Id*.[4] Because of this change, it is likely that most of the lead and cadmium found in the soils in Bartlesville resulted from the uncontrolled emissions of particulate matter, and not from recent operations.[5] Bartlesville Lead/Cadmium Project Phase II Results Summary at 2 ("Phase II Results Summary").[6]

From the late 1970's through the early 1980's, Bartlesville was included in several studies examining the extent of metals contamination in communities near smelters. In 1975, researchers studied lead and cadmium levels in the hair and blood of children living near smelters. Children in Bartlesville had the highest mean blood cadmium, hair cadmium, and blood lead levels encountered in the study. July 1991 Health Consultation at 4-5.

A 1981 EPA Health Effects Research Lab report confirmed elevated levels of blood lead in children in Bartlesville. Memorandum from Pat Hammack, On-Scene Coordinator, Region VI, to Emergency Response Branch, Region VI at 2 (Nov. 14, 1991) ("Nov. 14, 1991 Memorandum").[7] This report showed the tendency for higher levels of lead in blood to correlate to higher levels of lead in the surface soil. *Id*.

The recent history of the efforts to clean up the lead and cadmium contamination in Bartlesville, culminating in the UAO underlying the petition for reimbursement in this matter, begins in 1991. In July 1991, the ATSDR issued a health consultation[8] based upon its review of the

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[4] Between 1969 and 1976, NZC installed a sulfuric acid plant and increased the height of the emission stack. The record is not clear with respect to the effect, if any, of these measures on NZC's emissions.

[5] Smelting produces a by-product called "slag." *See In re A&W Smelters and Refiners, Inc.*, 6 E.A.D. 302, 304 n.2 (EAB 1996). Slag may contain the same hazardous substances that are released into the air from the smelting process. Slag from NZC's smelting operations was often used throughout Bartlesville as fill dirt. Record of Communication from Doug Holy, Region VI, to Mark Coleman, Oklahoma Department of Health (June 27, 1983). Thus, a possible secondary source of lead and cadmium contamination in the soil was the use of slag as fill dirt.

[6] This undated document can be found in the administrative record at p. 000009.

[7] The 1981 report is not in the administrative record. The 1981 study, however, is summarized in the Nov. 14, 1991 Memorandum, which is in the record.

[8] The ATSDR was established by CERCLA section 104(i), 42 U.S.C. § 9604(i). It is charged with effectuating and implementing the health-related authorities of CERCLA. CERCLA § 104(i)(1). As part of its duties, it "shall provide consultations upon request on health issues relating to exposure to hazardous or toxic substances." CERCLA § 104(i)(4). While ATSDR often provides such consultations to EPA upon request, in this case, ATSDR was responding to a request from the State of Oklahoma.

information then available about the contamination in Bartlesville—much of that information being ten years old in 1991. The ATSDR explained that the primary route of human exposure to lead and cadmium in the soil was through inhalation or ingestion, particularly by young children who engage in hand-to-mouth activities. July 1991 Health Consultation at 9. Noting that children are more sensitive to lead than adults, the ATSDR explained the toxic effects of lead, including decreased intelligence scores and slow growth. The ATSDR also noted the risks to pregnant women, including premature birth, low birth rate and miscarriage. Regarding cadmium, the ATSDR referred to studies suggesting that the inhalation of cadmium can result in increased risk of lung cancer. *Id*. at 9-10. The ATSDR concluded that the concentrations of lead and cadmium found at schools and residential areas in the late 1970s and early 1980s were health concerns. If such contamination continued to exist in 1991, it would still be of concern. *Id*. at 11.

The ATSDR concluded, however, that while exposure to metals may still be occurring beyond the boundaries of the NZC facility, there was, in 1991, insufficient information available to evaluate the extent of the current health threat, if any. *Id*. Consequently the ATSDR recommended that biomedical testing be conducted to determine the extent of any human exposure to lead and cadmium, and that environmental testing be done to characterize the extent of any soil contamination. *Id*. at 12.

In November 1991, the Region VI Emergency Response Branch began its assessment of the contamination outside the NZC facility. Nov. 14, 1991 Memorandum at 2. This assessment was conducted in three phases. *Id*. The first phase consisted of sampling within a three-mile radius of the NZC facility[9] for the purpose of establishing background lead concentration levels. The second phase consisted of sampling at "high-access areas," that is, areas where children tend to congregate, such as schools, parks, day care centers, etc. The third phase consisted of sampling at other households and private property (that is, households and private property that were not "high-access areas"). *Id*.

The Phase I sampling was completed in December 1991. Memorandum from Pat Hammack, On-Scene Coordinator, Region VI, to Emergency Response Branch, Region VI (Dec. 5, 1991). During this

[9] It is not clear from the various submissions to this Board if the radius extends from the actual center of the facility or from its boundaries.

phase, the Emergency Response Branch analyzed 44 soil samples. Bartlesville Lead Project Interim Report at 2.[10] Soil from six of the samples contained lead at levels higher than 500 mg/kg. *Id*. at 4. Nine of the samples contained cadmium at levels greater than 30 mg/kg. *Id*. These fifteen samples contained levels of lead and cadmium above the cleanup levels ultimately adopted in this case for lead and cadmium in residential soils. The Phase I data revealed lead concentrations as high as 1800 ppm and cadmium concentrations as high as 198 ppm. Phase II Report at 4.

Following the Phase I sampling results, in March 1992, the Region established cleanup levels[11] for lead and cadmium soil contamination in Bartlesville. Based upon then-current Agency "removal guidelines," the Region established a 500 ppm cleanup level for lead contaminated soil in residential areas.[12] Memorandum from Pat Hammack, On-Scene Coordinator, Region VI, to George Pettigrew, ATSDR (Mar. 1992). Based upon discussions with ATSDR, the Region set the cadmium cleanup level at 30 ppm for soil in residential areas. *Id*. On May 12, 1992, the ATSDR formally indicated its assessment that a cleanup level of 30 ppm for cadmium in residential soils in Bartlesville is adequately protective of human health. ATSDR Record of Activity (May 12, 1992).

Phase II of the soil sampling was completed in March 1992. During this phase, 458 samples were taken from 54 "high-access" areas for children, all of which were within a three-mile radius around the NZC facility. Phase II Results Summary at 1. Twenty-nine of these high-access areas had at least one sample above EPA cleanup levels for lead and/or cadmium. *Id*. The results of this sampling also showed

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[10] This undated document can be found in the administrative record at p. 000266.

[11] We are using the term "cleanup level" here even though the administrative record indicates that the Region established "action levels." Our reasoning is that the UAO underlying this petition for reimbursement requires soil to be removed whenever lead or cadmium contamination exceed levels of 1500 ppm or 90 ppm, respectively, until levels of 500 ppm or 30 ppm, respectively, were reached. The Region agrees with Cyprus Amax that "the 'cleanup level' is the concentration level which the removal response action was to achieve in residential areas where an 'action level' for cadmium or lead was found." Response to Petition at 34 n.11. Using the terminology agreed to by the parties, the 500 ppm and 30 ppm levels for lead and cadmium, respectively, are cleanup, not action, levels.

[12] The Region also based its selection of a 500 ppm cleanup level for lead on actions then being taken at a site in Dallas, Texas. Because the Region later dropped this basis for its selection, *see* Action Memorandum from Russell F. Rhoades, Director, Region VI Environmental Services Division, to Don R. Clay, Assistant Administrator, Office of Solid Waste and Emergency Response at 2 (July 10, 1992), it warrants no discussion here.

that generally, the concentrations of lead and cadmium in the soil decreased as distance from the NZC facility increased. *Id*. at 2.

Based upon the Phase II results, on July 10, 1992, the Region executed an action memorandum memorializing its selection of a removal action it would conduct with respect to the high-access areas tested in Phase II.[13] Action Memorandum from Russell F. Rhoades, Director, Region VI Environmental Services Division, to Don R. Clay, Assistant Administrator, Office of Solid Waste and Emergency Response at 2 (July 10, 1992) ("July 1992 Action Memorandum"). In particular, the July 1992 Action Memorandum indicated that the removal action would focus on the 29 high-access areas where at least one soil sample indicated cadmium or lead concentrations above the cleanup levels of 30 ppm and 500 ppm, respectively. July 1992 Action Memorandum at 3. The action memorandum provided that the removal action would use the same cleanup levels for lead and cadmium adopted by the Region at the end of Phase I. The Region stated that the 500 ppm lead cleanup level was derived from "current removal guidance" and the 30 ppm cadmium cleanup level was derived from an ATSDR health consultation. *Id*. at 2. Noting that lead is a highly toxic metal,[14] and that cadmium is a "probable carcinogen,"[15] the Region explained that the soil contaminated in excess of the cleanup levels threatened pub-

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[13] Removal actions are defined at CERCLA section 101(23), 42 U.S.C. § 9601(23). "The removal program is intended to address releases that pose a relatively near-term threat," 53 Fed. Reg. 51,394, 51,405 (Dec. 21, 1988), and the authority to conduct removal actions "is mainly used to respond to emergency and time-critical situations where long deliberation prior to response is not feasible." 55 Fed. Reg. 8,666, 8,695 (Mar. 8, 1990). "[R]emovals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively address all threats at a site." *Id*. CERCLA defines a "remedial action" as an action "consistent with [a] permanent remedy taken instead of or in addition to removal actions." 42 U.S.C. § 9601(24). *See also In re T H Agriculture & Nutrition Company, Inc.*, 6 E.A.D. 555, 558 (EAB 1996). Consequently, the selection of the response action for a remedial action usually takes longer than for a removal action, and involves more Agency deliberation and public participation. *Id*. at 558-59 (citing 53 Fed. Reg. 51,394, 51,463 (Dec. 21, 1988)).

[14] In particular, the Region explained that:

> Lead is a highly toxic metal, producing a range of adverse human health and environmental effects, particularly in children and fetuses. These adverse effects include reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and increased blood pressure.

July 1992 Action Memorandum at 5.

[15] *See* July 1991 Health Consultation at 10 ("Studies in humans also suggest that long-term inhalation of cadmium can result in an increased risk of lung cancer.").

lic health and welfare in that children who frequented these high-access areas could be exposed to lead and cadmium through inhalation or ingestion of the soil. *Id*. at 4. To eliminate this threat, the July 1992 Action Memorandum selected a removal action requiring the excavation and restoration of contaminated soil in the 29 high-access areas where sampling showed lead contamination in excess of 500 ppm or cadmium contamination greater than 30 ppm. *Id*. at 6.

The July 1992 Action Memorandum also identified a "second area of concern" that was not addressed by the removal action selected in that memorandum. The "second area of concern" was described as residences where "there is demonstrated elevation of blood lead, and where leaded paint is not a significant influence." *Id*. at 7. Because the data for those residential soils were incomplete at that time, the July 1992 Action Memorandum contemplated a follow-up removal action for those residences at a later date. *Id*.[16]

As noted previously, the Region conducted the removal action for the 29 high-access areas with lead in soil levels in excess of 500 ppm or cadmium in soil levels in excess of 30 ppm. It also appears that the Region conducted a removal action with respect to the "second area of concern," that is, the residences where children with elevated blood levels resided and where surface soils contained elevated lead or cadmium levels, although the administrative record is quite sparse with respect to this action.[17]

While the removal actions were in progress, Phase III of the soil sampling proceeded. Memorandum from Anan Hammad, Region VI Technical Assistance Team, to Pat Hammack, On-Scene Coordinator,

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[16] Under section 104(c) of CERCLA, federal removal actions cannot exceed $2 million or take more than one year to complete unless the removal action is "otherwise appropriate and consistent with the remedial action to be taken." The cost of the removal contemplated in the July 10 Action Memorandum was in excess of $5 million. Accordingly, the Region asked EPA headquarters for, and received, a waiver from the $2 million limit on the ground that the removal action was appropriate and consistent with potential remedial action. July 1992 Action Memorandum at 6. The Region also asked for, and received, an exception to the one-year time limitation. Action Memorandum from Pat Hammack, On-Scene Coordinator, Region VI, to Joe Winkle, Acting Regional Administrator at 1 (Sept. 10, 1993) ("September 1993 Action Memorandum").

[17] There is no action memorandum in the administrative record specific to the removal action for the "second area of concern." The Region appears to have conducted the removal under the July 1992 Action Memorandum, even though that memorandum stated that "[b]ecause sufficient information is unavailable, [the second area of concern] is currently outside the scope of the proposed removal action," and "[s]hould this 'area of concern' develop significantly, additional requests reflecting the change in scope of the proposal will be submitted for approval." July 1992 Action Memorandum at 7.

Region VI at 3 (May 17, 1993) ("Phase III Report"). The Phase III sampling was conducted at residences near the NZC facility. During this phase, 2335 soil samples were obtained. *Id*. at 4. In May 1993, a report on Phase III was issued. Although the report does not contain a narrative summary of the results, the Region represents here that the Phase III sampling revealed approximately 1200 residences within a three-kilometer (approximately 1.86 mile) radius of the NZC facility that had soil samples containing lead and/or cadmium contamination at levels three times greater than the established cleanup levels — that is, lead contamination greater than 1500 ppm or cadmium contamination greater than 90 ppm. Action Memorandum from Pat Hammack, On-Scene Coordinator, Region VI, to Joe Winkle, Acting Regional Administrator at 4 (Sept. 10, 1993) ("September 1993 Action Memorandum"). Cyprus Amax has not challenged this conclusion in these proceedings.

While each phase of the soil sampling was in progress, the State of Oklahoma, in conjunction with the ATSDR, conducted biomedical testing, that is, blood testing, on children in Bartlesville. The results of these tests are summarized in the administrative record, and in particular in the September 1993 Action Memorandum. A total of 365 children between the ages of six months and six years were tested. Of these, 246 children lived within three kilometers of the NZC facility. And of these, 34 children, or 13.8%, had blood lead levels greater than 10 μg/dl.[18] Of the 119 children tested who lived more than three kilometers away from the NZC facility, none had blood lead levels greater than 10 μg/dl. September 1993 Action Memorandum at 7.

The results from the Phase III soil sampling and the biomedical testing led the Region to conclude that further removal action was warranted. Referencing the harmful health effects from exposure to lead and/or cadmium, the Region determined that lead- and cadmium-contaminated soil should be removed from the approximately 1200 residences located within a three-kilometer radius of the NZC facility, where Phase III sampling indicated soil concentrations of lead greater than 1500 ppm or of cadmium greater than 90 ppm. September 1993 Action Memorandum at 1, 2 (hereinafter, the area encompassing these residences shall be referred to as "the Site"). The Region noted that the area encompassed by this planned removal action was "the general location of elevated blood lead levels in

[18] Since 1991, the Centers for Disease Control has considered 10 μg/dl to be the lowest level of lead contamination in blood at which adverse health effects can be identified. According to the CDC, blood lead levels greater than 10 μg/dl may warrant community intervention, including environmental measures.

approximately 14% of the test population of children aged 6 to 72 months." *Id*. at 2. Citing recent soil and biomedical testing, the Region concluded that "[i]t appears that there is a very strong correlation between the locations of elevated surface soil lead concentrations and the locations of the residences of children with elevated blood levels." *Id*. at 8. According to the Region, this planned removal action "addresses the area which presents the greatest potential heavy metal exposure to the residents." *Id*. at 3.

According to the Region, this planned removal would be an extension of the removal selected by the July 1992 Action Memorandum, and therefore it requested a further extension of the statutory limits applicable to removal actions.[19] In order to obtain this extension, the selected removal action needed to be consistent with the long-term remedial action anticipated for the Site.[20] In September 1993, the Region "anticipated that the work described in this memorandum would be similar to that which would be conducted by the remedial program" for the Site. September 1993 Action Memorandum at 10. Indeed, it was anticipated, although not certain, that before the removal action was complete, *i.e.*, before the soil was excavated and replaced at all of the 1200 residences, the remedial program would assume responsibility for completing the job. *Id*. at 10, 13. In September 1993, the process of selecting a remedy for the Site was under way, under the direction of the State of Oklahoma.[21]

Five months after the September 1993 Action Memorandum was signed, the Region issued a UAO on February 2, 1994, directing Cyprus Amax and others to conduct the removal action selected in the September 1993 Action Memorandum. In particular, the order required the removal of soil contaminated with lead in excess of 1500 ppm or cadmium in excess of 90 ppm at residences within a three-mile radius of the NZC facility.[22] The order states that "[e]xcavation

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[19] *See* n. 16 *supra* (because CERCLA § 104(c) limits federal removal actions to $2 million in cost and one year in time, the activities recommended by the July 1992 Action Memorandum required an exception from those limitations).

[20] *See* n. 16 *supra*.

[21] The Agency and the State of Oklahoma executed an agreement for the State's Department of Environmental Quality to conduct a pilot project to complete a "CERCLA-quality" investigation and remediation of the Site under State authority. Record of Decision for Operable Unit One of the National Zinc Site at 2 (Oklahoma Department of Environmental Quality, Dec. 13, 1994).

[22] The Phase III testing and the September 1993 Action Memorandum detail the need for a removal within a three-*kilometer* radius of the NZC site, which is roughly a 1.86-mile radius. Although the UAO uses a three-mile radius, this discrepancy appears not to be an issue.

will continue until the metal concentration of the surface soil is reduced below 500 ppm lead and 30 ppm cadmium, but only to a maximum depth of two feet." UAO at 16. The recipients of the UAO were ordered to backfill excavated areas with clean soil. The UAO provided that the removal action "shall be conducted * * * for a total of two years unless the scope of the Removal Action is completed in less than two years, or the activities required by this Order are being conducted as part of the Remedial Action" ultimately ordered by the State of Oklahoma. UAO at 17.

Cyprus Amax complied with the UAO. Final Removal Response Action Report at 2 (Mintech, Inc., Oct. 1995) ("Final Report"). Cyprus Amax began the removal action on March 1, 1994, and continued removal activities until August 7, 1995, at which time a remedial action was formally adopted in a consent agreement and final order signed by the State of Oklahoma, the City of Bartlesville, and Cyprus Amax. During the removal action, 389 residences underwent soil removal and restoration at an approximate cost of $7.5 million, exclusive of the Agency's oversight costs. Final Report at 6, 7 and Executive Summary. According to Cyprus Amax, 62,796 cubic yards of contaminated soil were removed. Final Report at 6.

The removal action progressed until it was subsumed in the remedial action for the Site. According to the record of decision (ROD),[23] the selected remedial action for the Site required soil remediation at industrial, commercial and residential properties throughout the Site. For residential and recreational lands, contaminated soils were to be cleaned up to 925 ppm for lead and 100 ppm for cadmium. Record of Decision for Operable Unit One of the National Zinc Site at 15 (Oklahoma Department of Environmental Quality, Dec. 13, 1994).

On October 23, 1995, Cyprus Amax filed a petition with the EPA for reimbursement of its costs of complying with the UAO, believing that it had completed the work required by the UAO. However, because Cyprus Amax had not in fact completed the work, the petition was dismissed by this Board on January 24, 1996, without prejudice to Cyprus Amax's ability to refile the petition once it had completed the work. After it completed the required action,[24] Cyprus Amax refiled its petition for reimbursement on March 18, 1996, seek-

[23] A record of decision is the document formally selecting the remedial action to be taken at a site. 40 C.F.R. § 300.430(f)(1)(iii).

[24] The Region agrees that Cyprus Amax has completed the action required by the UAO. Response to Petition at 15.

ing to recover $6,274,929.95 it allegedly spent to comply with the UAO. It is this refiled petition that we currently address.

Cyprus Amax's petition raises several arguments to support the claim for reimbursement. First, Cyprus Amax contends that it is not liable for cleaning up the Site. Acknowledging that a federal district court has ruled against it on this issue, Cyprus Amax nevertheless makes the argument here to preserve its right to pursue reimbursement on this basis in the event the federal district court ruling is overturned on appeal. Second, Cyprus Amax contends that portions of the removal action selected by the Region were "arbitrary and capricious." In particular, Cyprus Amax asserts that the UAO was not based upon an "imminent and substantial endangerment to the public health or welfare or the environment" as required by CERCLA section 106(a). Further, Cyprus Amax argues that the Region's selection of 500 ppm and 30 ppm cleanup levels for lead and cadmium, respectively, was arbitrary and capricious, especially in light of the cleanup levels selected for the remedial action for the Site. Lastly, Cyprus Amax contends that the Region arbitrarily and capriciously required that all of the soil at a residence be removed if any single sample exceeded either the 1500 ppm lead or 90 ppm cadmium action levels, rather than requiring only the "hot spots" of contamination to be removed. The Region has filed a response addressing each of these contentions. We have examined each of Cyprus Amax's claims, and for the reasons that follow, conclude that they lack merit.

II. *ANALYSIS*

Where there is an imminent and substantial endangerment to the public health or welfare, or to the environment, from a release or threatened release of a hazardous substance from a facility, the Agency may, under CERCLA section 106(a), 42 U.S.C. § 9606(a),[25] unilaterally order potentially liable parties to abate the release or threatened release.[26] Those who comply with such administrative orders

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[25] That statute provides, in pertinent part:

> [W]hen the President determines that there may be an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility, he * * * may also * * * take other action under this section including, but not limited to, issuing such orders as may be necessary to protect public health and welfare and the environment.

[26] Although the statute gives the President the authority to issue such orders, the President has delegated this authority to certain agencies, including the EPA. *See* Executive Order No. 12580 (Jan. 23, 1987); 52 Fed. Reg. 2923 (Jan. 29, 1987).

may petition the Agency for reimbursement of their costs in that effort, according to CERCLA section 106(b)(2)(A), 42 U.S.C. § 9606(b)(2)(A). That section provides in pertinent part:

> Any person who receives and complies with the terms of any order issued under subsection (a) of this section may, within 60 days after completion of the required action, petition the [Agency] for reimbursement from the Fund for the reasonable costs of such action, plus interest.[27]

To obtain reimbursement, a petitioner:

> [S]hall establish by a preponderance of the evidence that it is not liable for response costs under section [107(a)] and that costs for which it seeks reimbursement are reasonable in light of the action required by the relevant order.

CERCLA § 106(b)(2)(C), 42 U.S.C. § 9606(b)(2)(C). In addition, a petitioner who is liable, and therefore is not entitled to reimbursement under the provision quoted above, may nevertheless recover costs it expended to the extent that:

> [I]t can demonstrate, on the administrative record, that the [Agency's] decision in selecting the response action ordered was arbitrary and capricious or was otherwise not in accordance with law.

CERCLA § 106(b)(2)(D), 42 U.S.C. § 9606(b)(2)(D).[28] Under either statutory basis for reimbursement, the petitioner bears the burden of

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[27] The Agency has interpreted this statutory provision as setting forth prerequisites that must be satisfied before the merits of a petition will be considered. *See A&W Smelters and Refiners,* 6 E.A.D. at 315. Here, we are satisfied that Cyprus Amax has met these prerequisites. The Region submits that Cyprus Amax has not met the prerequisite to incur "reasonable" costs because the Region disputes the reasonableness of the costs incurred by Cyprus Amax. Response to Petition at 15. We have interpreted CERCLA section 106(b)(2)(A) as requiring initially only that a petitioner incur costs, the reasonableness of which can be determined only after a finding that reimbursement is warranted. *A&W Smelters and Refiners,* 6 E.A.D. at 316. Because the Region does not argue that Cyprus Amax did not incur costs, the prerequisites have been met.

[28] The "administrative record" for the purposes of this provision is the one developed pursuant to CERCLA section 113(k)(1), 42 U.S.C. § 9613(k)(1), which provides that the Agency "shall establish an administrative record upon which the [Agency] shall base the selection of a response action." An administrative record developed under this provision may be supplemented in accordance with established tenets of administrative law. *See In re T H Agriculture & Nutrition Company, Inc.*, 6 E.A.D. at 575.

proving its claim. *In re A&W Smelters and Refiners, Inc.*, 6 E.A.D. 302, 314-15 (EAB 1996), *aff'd, A&W Smelters and Refiners, Inc. v. Clinton*, 962 F. Supp. 1232 (N.D. Cal. 1997).

A. *Liability*

CERCLA section 107(a), 42 U.S.C. § 9607(a), establishes four broad classes of parties liable for response actions under CERCLA. One such class consists of any person, including a corporation,[29] who at the time of disposal owned or operated the facility at which a hazardous substance was disposed. CERCLA § 107(a)(2). Another class, generally referred to as "generators," includes "any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person." CERCLA § 107(a)(3). The Region issued the UAO to Cyprus Amax based on its conclusion that Cyprus Amax "was an operator and a generator at the Site during the timeframe when disposal of hazardous substances * * * occurred at the Site." UAO at 10.

Before initiating this reimbursement action, Cyprus Amax was actively engaged in defending itself in a federal court action brought by other parties potentially responsible for cleaning up contamination resulting from smelting operations at the NZC facility. In that action, the other parties sued Cyprus Amax pursuant to CERCLA section 113(f), 42 U.S.C. § 9613(f), seeking to have Cyprus Amax contribute to the cost of the cleanup on the ground that Cyprus Amax was liable for such contamination.[30] On November 20, 1995, a federal district court held, in an interlocutory order, that Cyprus Amax was a generator of the hazardous substances that contaminated the NZC facility and the surrounding areas.[31] *Horsehead Industries, Inc., d/b/a Zinc Corporation of America v. St. Joe Minerals Corp., et al.*, No. 94-C-98-B, slip op. at 13-

[29] For the purposes of CERCLA, "[t]he term 'person' means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, United States Government, State, municipality, commission, political subdivision of a State, or any interstate body." CERCLA § 101(21), 42 U.S.C. § 9601(21).

[30] The federal court litigation was an action against Cyprus Amax by other private parties to recover costs spent to clean up the NZC facility itself. Cyprus Amax filed a counterclaim to recover money it spent cleaning up the Site involved here, that is, the area outside the NZC facility. The court considered the NZC facility and the surrounding areas as one "facility" for the purposes of determining liability.

[31] The court also found that Cyprus Amax was liable as an operator of the facility where the hazardous substances were disposed (the NZC facility).

14 (N.D. Okla., Nov. 20, 1995). In particular, the court found that Cyprus Amax was the corporate successor to American Metal Company, Limited, the parent company of Bartlesville Zinc Company and Lanyon-Starr Smelting Company, both of which conducted smelting operations at the NZC facility. *Id*. at 3. The federal district court entered a final judgment adverse to Cyprus Amax in this matter on May 31, 1996, after Cyprus Amax had filed its petition for review.

In its petition for reimbursement, Cyprus Amax averred that it is entitled to reimbursement on the ground that it is not liable for the cleanup. In particular, Cyprus Amax stated its intent to appeal the adverse federal court interlocutory decision as soon as the decision became final, and explained that it asserted its non-liability in this proceeding merely "to preserve its right to reimbursement in the event that the Court's finding of liability is overturned on appeal."[32] Petition for Reimbursement at 8-9. According to Cyprus Amax, a "final decision on appeal in that case will necessarily resolve the question of Cyprus' status as a responsible party under CERCLA." *Id*. at 9. Further, Cyprus Amax represents that it "understood that the issue of its alleged liability would not be re-litigated before the Board." Memorandum in Support of Motion to Supplement Petition or, in the Alternative, for Further Briefing at 3.

In response, the Region argues that the federal district court's final decision as to Cyprus Amax's liability is entitled to res judicata effect in these proceedings, and that in light of that decision, Cyprus Amax is collaterally estopped from arguing its non-liability here.[33]

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[32] We note that Cyprus Amax's assertion that it is not liable is not supported by any legal and/or factual arguments in the petition for reimbursement. However, in reply to the Region's response to the petition for reimbursement, Cyprus Amax obtained leave from this Board to supplement its petition with copies of its briefs from the federal court litigation. Thus, Cyprus Amax's petition, as supplemented, contains the same argument concerning liability that Cyprus Amax made in federal court.

[33] As noted above, the federal court litigation was a suit for contribution among private parties (Cyprus Amax and others potentially responsible for contamination at the smelter and the surrounding areas), and hence the EPA was not a party to that action. Because of the disparity between the parties involved in the federal court action for contribution under CERCLA section 113 and the parties involved in this reimbursement proceeding under CERCLA section 106(b), res judicata would not apply here. Under certain circumstances, collateral estoppel may apply even where the party asserting collateral estoppel was not a party to the previous litigation. *See LeBlanc-Sternberger v. Fletcher*, 67 F.3d 412, 433 (2d Cir. 1995) (In which the court (citing *Parklane Hosiery Co. v. Shore*, 439 U.S. 322 (1979)) stated that "[i]n federal court, the applicability of collateral estoppel is not limited to cases where there is a complete identity of parties."). Cyprus Amax does not argue against its application, and indeed, as explained in the text, apparently concedes that the outcome of the federal court litigation is dispositive of its claim respecting liability here.

We interpret the statements made by Cyprus Amax in its pleadings before this Board as reflecting its view that a final decision in the federal litigation would be dispositive on the issue of its liability for the purposes of the petition for reimbursement. It is clear to us that Cyprus Amax asserted its non-liability here merely to preserve its right to pursue reimbursement on the ground that it is not liable in the event the federal district court decision was reversed on appeal. Because Cyprus Amax never intended to re-litigate its liability in these proceedings, we need not determine whether Cyprus Amax would have been collaterally estopped from doing so had it intended to.

As previously noted, after Cyprus Amax filed its petition for reimbursement, the federal district court entered a judgment in the matter of *Horsehead Industries, Inc., d/b/a Zinc Corporation of America v. St. Joe Minerals Corporation, et al.*, on May 31, 1996, thus making the interlocutory order holding Cyprus Amax liable under CERCLA section 107(a) ripe for appeal. Cyprus Amax has neither averred nor demonstrated that it appealed the judgment of the federal district court, and to the best of our knowledge, no appeal has been filed, making the federal district court's judgment final. Accordingly, the final decision in the federal litigation on Cyprus Amax's liability, which Cyprus Amax concedes is dispositive here, is that Cyprus Amax is a generator of the hazardous substances (lead and cadmium) found on the Site, and an operator of the facility at a time that the hazardous substances were disposed of at that facility.[34]

For all of these reasons, Cyprus Amax has failed to demonstrate that it is entitled to reimbursement on the grounds that it is not liable under CERCLA section 107(a).

B. *Response Selection*

1. *Imminent and Substantial Endangerment*

"The Agency's authority to issue a clean-up order under CERCLA § 106(a) is limited to those situations where there has been a determination that 'there may be an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility.'" *A&W Smelters and Refiners, Inc.*, 6 E.A.D. at 325. This Board interprets an argument that there was no "imminent and substantial endanger-

[34] In its comments on the Preliminary Decision, Cyprus Amax states that "it does not contest the portion of the Preliminary Decision denying Cyprus' Section 106(b)(2)(c) claim." Cyprus Amax Comments on the Preliminary Decision at 2 n.1.

ment" underlying a UAO as an argument that no response action should have been selected. *Cf. id*. Hence, such claims will be evaluated under CERCLA section 106(b)(2)(D), which, in our view, "is broad enough to allow an argument that the Agency acted arbitrarily or capriciously in selecting a remedy where no remedy selection was authorized because the statutory prerequisites to the issuance of an order did not exist." *Id*. Claims made under CERCLA section 106(b)(2)(D), by the terms of that statute, must be resolved on the administrative record established under CERCLA section 113(k), 42 U.S.C. § 9613(k), and 40 C.F.R. § 300.800 *et seq*., to support the ordered response action.[35] Now, we turn to the merits of Cyprus Amax's claim.

Cyprus Amax contends that the UAO issued to it by the Region was not based on a showing of an imminent and substantial endangerment to the public health or welfare or the environment as required by CERCLA. Cyprus Amax makes two main arguments in this vein. First, Cyprus Amax argues that "prior to the issuance of the UAO, EPA already had removed any possible 'imminent and substantial endangerment' by first conducting soil removal at 'high access' areas and then by actually removing soil from yards of children with elevated blood levels." Petition for Reimbursement at 11. In addition, Cyprus Amax claims that "there were no children in the Bartlesville area with elevated blood lead[] [levels] believed to be caused by lead in soil." *Id*. Second, Cyprus Amax contends that instead of issuing a long-term UAO addressing the 1200 residences, the Region should have ordered all of this work to be performed under the remedial process, which process ultimately required Cyprus Amax to complete the removal action ordered by the UAO, but at different (and less stringent) cleanup levels for lead and cadmium.

In response to Cyprus Amax's first argument, the Region states that as memorialized in the September 1993 Action Memorandum, it demonstrated that an imminent and substantial endangerment to public health or welfare or the environment justified the UAO ordering soil removal at 1200 residences with elevated levels of lead or cadmium in the soil. The Region argues that the lead or cadmium in the soils at these residences posed an imminent and substantial endangerment different than the endangerment addressed by the soil removals at the "high-access" areas and the homes of children with elevated blood lead levels. In particular, the Region asserts that the elevated levels of lead and cadmium in the soil at these 1200 residences constituted an imminent and substantial endangerment "by creating a situation

[35] *See* n.28 *supra*.

where contaminated soil could be incidentally ingested or inhaled by children." Response to Petition at 31.

With respect to Cyprus Amax's second argument, the Region notes that Cyprus Amax has not challenged the Region's characterization of this as a "time critical" removal,[36] and hence cannot now claim that the removal action could have been delayed until the final remedy was selected. Further, the Region argues that none of the documents from the remedy selection process upon which Cyprus Amax relies are included in the administrative record for this UAO, and that therefore those documents cannot be used to determine whether the Region acted arbitrarily or capriciously in selecting a response.

The "imminent and substantial endangerment" requirement was discussed by this Board in *In re The Sherwin Williams Company*, 6 E.A.D. 199, 210-11 (EAB 1995), where we said:

> While the phrase "imminent and substantial endangerment" is not specifically defined in CERCLA, the phrase has been scrutinized by the courts. "Endangerment means a threatened or potential harm and does not require proof of actual harm." *United States v. Ottati & Goss, Inc.*, 630 F. Supp. 1361, 1394 (D. N.H. 1985). The "endangerment" need not be an emergency, nor does it have to be immediate to be "imminent." *United States v. Conservation Chemical Co.*, 619 F. Supp. 162, 193 (D.C. Mo. 1985). Given the importance of any threat to public health and the reality that implementing a corrective plan might take years, "imminence" must be considered in light of the time that might be

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[36] A "time critical" removal is one for which on-site work must commence within six months from the selection of the removal action. In contrast, a "non-time critical" removal is one for which a planning period of at least six months exists before on-site activities must be initiated. *See In re Asarco Incorporated and Federated Metals Corporation*, 6 E.A.D. 410, 421 n.23 (EAB 1996).

In its comments on the Preliminary Decision, Cyprus Amax contends that it "necessarily challenged the time-critical designation" through its argument that the removal action was not required in light of the imminent remedial action. Cyprus Amax Comments on Preliminary Decision at 4-5 n.5. Even if we were to conclude that Cyprus Amax was intending to challenge, albeit obliquely, the time-critical designation, we find ample support for the Region's decision to proceed with a removal action even though a remedial action was contemplated at some future time, given the risks involved in delaying soil cleanup. As set forth in the text, we reject Cyprus Amax's contention that it was arbitrary and capricious for the Region not to delay cleanup pending institution of a remedial action.

> needed to sufficiently protect the public health. *See B.F. Goodrich Co. v. Murtha*, 697 F. Supp. 89, 96 (D. Conn. 1988). Thus, an "endangerment" is "imminent" "if factors giving rise to it are present even though the harm may not be realized for years." *Conservation Chemical Co.*, 619 F. Supp. at 194.
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> Furthermore, the word "substantial" does not require quantification of the endangerment; "an endangerment is 'substantial' if there is reasonable cause for concern that someone or something may be exposed to a risk of harm by a release or a threatened release of a hazardous substance if a remedial action is not taken."

Id. After reviewing the administrative record in this case, we conclude that Cyprus Amax has not met its burden of proving that there was no imminent and substantial endangerment underlying the UAO at issue here.

The administrative record clearly reveals the following. Cadmium has been identified as a probable carcinogen, and lead is a highly toxic metal. Children are more sensitive to lead exposure than adults. When present in soil, cadmium and lead can either be inhaled or ingested, particularly by young children who frequently engage in hand-to-mouth conduct. The Region identified 1200 residences within a three-kilometer radius of the NZC facility containing lead contamination greater than 1500 ppm and/or cadmium contamination greater than 90 ppm, or, in other words, lead and/or cadmium contamination more than three times greater than the cleanup levels for those elements established to protect human health. Further, blood testing showed a correlation between distance from the smelter and blood lead levels greater than 10 μg/dl in children under the age of six. *See* September 1993 Action Memorandum at 7. Based upon the evidence that both soil contamination and blood contamination increased with proximity to the NZC facility, the Region concluded that "[i]t appears that there is a very strong correlation between the locations of elevated surface soil lead concentrations and the locations of the residences of children with elevated blood lead levels." September 1993 Action Memorandum at 8.

Given the risks posed by lead or cadmium contamination, the undisputed fact that approximately 1200 residences contained soil contaminated with lead in excess of 1500 ppm or cadmium in excess of 90 ppm, and the apparent correlation between high blood lead levels

and high levels of soil contamination, it is clear to us that the UAO issued to Cyprus Amax was based upon an imminent and substantial endangerment. Under the standard set forth above, the "endangerment," or the threatened or potential harm, is the risk that people, and especially young children, will be exposed to and contaminated by lead or cadmium through inhalation or ingestion of contaminated soil. The endangerment was "imminent" as the factors giving rise to it were present, that is, the soil was contaminated, a fact not in dispute. The endangerment was "substantial" as the facts in this case reasonably present cause to be concerned that people, and in particular young children, could be exposed to a risk of harm from the contaminated soil if a response action was not ordered.

Cyprus Amax argues that there was no imminent and substantial endangerment because there was no evidence of children in the Bartlesville area with elevated blood lead levels believed to be caused by lead in the soil. To support its claim, Cyprus Amax relies upon a document entitled "Bartlesville Lead Project, Blood Lead Studies," attached as Exhibit 9 to the petition for reimbursement. Exhibit 9, which is not in the administrative record, summarizes the results of the blood lead testing among children in Bartlesville. However, Exhibit 9 tends to support rather than rebut the Region's conclusion that there is a correlation between high levels of lead soil contamination and high levels of lead in children's blood. The blood testing summarized in Exhibit 9, and in the September 1993 Action Memorandum, showed that all of the children who tested with blood lead levels greater than 10 μg/dl lived within three kilometers of the NZC facility, the same area with lead soil contamination more than three times greater than the cleanup levels established to protect human health.[37]

Cyprus Amax also argues that there was no imminent and substantial endangerment because at the time the UAO issued, the Region had already eliminated any imminent and substantial endangerment by conducting soil removal at the high-access areas and the yards of children with elevated blood lead levels. This argument is also unpersuasive. As explained above, in order to issue a UAO, the Region must determine that an actual or threatened release of a hazardous sub-

[37] CERCLA section 106(b)(2)(D) requires that our determination of whether the Region acted arbitrarily or capriciously in selecting a response action be made *on the administrative record*. Exhibit 9 is not in the administrative record for this UAO, and ordinarily could not be considered by us in determining whether the Region acted arbitrarily and capriciously in selecting a response action. *See T H Agriculture & Nutrition*, 6 E.A.D. at 572. However, we will consider the data in Exhibit 9 since they are summarized in the September 1993 Action Memorandum, which is in the administrative record.

stance presents an imminent and substantial endangerment to public health. What is relevant here, then, is whether circumstances as they existed when the UAO was issued presented an imminent and substantial endangerment; whether more compelling circumstances were previously present and addressed is not legally relevant. We have already determined that even after the Region's efforts in removing the contaminated soil from the high-access areas and the yards of children with elevated blood lead levels, the circumstances present when this UAO was issued demonstrated an imminent and substantial endangerment to human health, and Cyprus Amax has not met its burden of proving otherwise.

Cyprus Amax also argues that the Region should have ordered the soil removal to be completed through the remedial, instead of removal, process. Cyprus Amax states that the remedial process was under way, and indeed a remedial investigation/feasibility study (RI/FS)[38] was in the early stages at the time the Region issued the UAO. Petition for Reimbursement at 11. Cyprus Amax argues that:

> However, EPA did not wait for issuance of the Record of Decision ("ROD") based on the RI/FS but instead issued the UAO in February 1994. Given the fact that EPA was aware of higher cleanup levels of both cadmium and lead approved by EPA at other sites and that EPA knew how dependent the lead cleanup level was to site-specific conditions, its insistence on issuing the long-term UAO before the RI/FS was completed and the ROD was issued was arbitrary and capricious.

Petition for Reimbursement at 12.[39] In its comments on the Preliminary Decision, Cyprus Amax articulates a similar argument, contending that the Region arbitrarily did not evaluate the risks posed solely by delaying the soil cleanup by one construction season,

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[38] A remedial investigation is the "process * * * to determine the nature and extent of the problem presented by the release." A feasibility study is "undertaken * * * to develop and evaluate options for remedial action." 40 C.F.R. § 300.5.

[39] As evidence that the Region acted arbitrarily and capriciously in issuing the UAO prior to the selection of a remedy, Cyprus Amax relies upon a document, attached to its petition for reimbursement as Exhibit 14, that Cyprus Amax claims shows EPA approved higher cleanup standards for lead and cadmium at other sites undergoing remedial action. Exhibit 14 is an unsigned, undated two-page list of arsenic and cadmium cleanup goals, apparently reflecting remedial action cleanup levels for cadmium contained in various RODs for sites across the country. This document, however, is not in the administrative record. As noted above, we are statutorily limited to the consideration of documents in the administrative record when determining whether the Region acted arbitrarily or capriciously, and therefore Exhibit 14 is not relevant to our analysis.

until after the RI/FS was complete. Cyprus Amax Comments on Preliminary Decision at 5.

Cyprus Amax's argument is unpersuasive. CERCLA gives the Agency "broad authority * * * to fulfill the statute's * * * goal of obtaining *timely* clean-ups of environmental threats." *A&W Smelters and Refiners, Inc.*, 6 E.A.D. at 330 (emphasis added). In this case, the Region exercised this broad authority by deciding to conduct the residential soil cleanup as a removal action, rather than as a remedial action, which would have taken longer to implement.[40] In this way, the residential soil cleanup began on March 1, 1994, approximately one and one-half years before the remedy for cleaning up residential soils was adopted on August 7, 1995. Indeed, the Region deliberately chose to begin the residential soil cleanup as a removal action expecting that the cleanup would ultimately be subsumed in the remedy adopted by the remedial process. September 1993 Action Memorandum at 9, 10. Contrary to Cyprus Amax's comments on the Preliminary Decision, the Region did evaluate the risks presented by delaying soil cleanup until the remedy was selected, and decided that in light of those risks it would begin addressing soil contamination immediately, through a removal action, rather than delaying such work until the then-unknown date upon which remedial action would commence. While the Region anticipated that remedial activity would begin in the 1995 construction season, at the time the removal was selected there was no certainty as to the timing of the anticipated remedial activity.[41] Further, when it selected the removal action, the Region was not certain that the anticipated remedial action would address the urgency of the human health threat as did the removal action, and therefore, when selecting the removal action, the Region made clear that despite the anticipated remedial action, additional removal activity may be necessary. *See* September 1993 Action Memorandum at 13 ("[I]f a human health and environmental endangerment remains after signing of the ROD, EPA may address the endangerment under either removal or remedial authority depending on the urgency of the situation.").[42]

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[40] "Generally, the selection of a remedy takes longer than the selection of a removal, and involves more Agency deliberation and public participation." *T H Agriculture & Nutrition*, 6 E.A.D. at 558-59.

[41] *See* September 1993 Action Memorandum at 2 ("Region 6 will endeavor to propose the final remedy in approximately one year. The Record of Decision (ROD) will be finalized, and remedial action will begin pending sufficient funding.").

[42] As the Region points out in its response to Cyprus Amax's comments on the Preliminary Decision, Cyprus Amax's argument that only a remedial action was called for ignores the rela-

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"The arbitrary and capricious standard is not based upon hindsight." *T H Agriculture & Nutrition Company, Inc.*, 6 E.A.D. at 586. At the time the Region issued the UAO, circumstances presented an imminent and substantial endangerment, and the Region chose to act promptly rather than maintain the status quo pending the selection of a remedy. Because the Region did not have the benefit of a completed remedy selection process, it used the information it had available at that time, and selected a response. *See T H Agriculture & Nutrition*, 6 E.A.D. at 586-87. Under the arbitrary and capricious standard, "the critical determination is *not* whether the Region selected the best possible response, or whether another response would also have been an acceptable selection; it is merely whether the Region acted arbitrarily in making its selection." *Id.* at 578. Cyprus Amax has not pointed to any evidence in the administrative record showing that the Region acted arbitrarily in choosing the path it took (proceeding with a removal action) rather than the one advocated by Cyprus Amax (waiting for a remedial action). Rather, the administrative record amply supports the Region's determination to issue a UAO requiring the removal action.

2. *Cleanup Standards*

Cyprus Amax contends that the Region acted arbitrarily and capriciously in requiring that the residential soils be cleaned to levels of 500 ppm for lead and 30 ppm for cadmium.[43] We conclude that Cyprus Amax has failed to meet its burden of proving that the Region acted arbitrarily in selecting the soil cleanup levels.

With respect to the 500 ppm cleanup level for lead, Cyprus Amax makes the following two statements:

> EPA Guidance dated August 29, 199[1], states that the "best available approach is to use [the] EPA Uptake

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tionship between removal and remedial actions. *See* 53 Fed. Reg. 51,394, 51,405 (Dec. 21, 1988) ("There will always be some overlaps between the two programs, and it is important that they work closely together. The goal is to ensure that the most significant threats are addressed in the most efficient and effective manner."). Cyprus Amax's argument appears to be premised upon the faulty assumption that removals and remedies are mutually exclusive.

[43] The Region argues that because the UAO is not in the administrative record, it cannot be reviewed by the Board under CERCLA section 106(b), Response to Petition for Reimbursement at 49, and cannot serve as a basis for a reimbursement claim. *Id.* at 47. We need not decide this issue. Cyprus Amax has asked this Board to consider whether the Region's selection of a removal action (which includes the cleanup levels) was arbitrary and capricious. The selection of the removal action, in this case, occurred in the September 1993 Action Memorandum, which clearly is part of the administrative record.

> Biokinetic (UBK) Model as a risk assessment tool to predict blood lead levels and aid the risk management decision on soil lead cleanup levels at CERCLA/RCRA sites which are characterized as residential." The fact that the lead cleanup level for residential soils for this particular site was nearly doubled to 925 ppm in the ROD indicates the imprecision of EPA's initial cleanup level.

Petition for Reimbursement at 12.

The 500 ppm cleanup level for lead was selected based upon the Agency's guidance available in 1993. September 1993 Action Memorandum at 3. At that time, there were two relevant guidance documents. The first, OSWER Directive #9355.4-02, entitled "Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites," was issued in 1989 and provided "an interim soil cleanup level for total lead, at 500 to 1000 ppm, which [EPA] consider[s] protective for direct contact at residential settings." The second guidance document was an update to the 1989 document, and was issued on August 29, 1991 ("Update"). The Update reiterated the recommendation that cleanup levels for lead-contaminated residential soil be in the range of 500 to 1000 ppm. The Update also explained that the Agency had developed a computer model, known as the UBK model, as a tool for site-specific risk assessments for lead in soil. Although the Update did not explicitly recommend the use of the UBK model at that time, it did describe the UBK model as the best available approach to aid the determination of cleanup levels for lead-contaminated soil. "The UBK model predicts blood lead levels for children * * * based on the site-specific information (if available) about the various lead-containing media (such as air, dust, soil and water) to which [the children] are likely to be exposed." *In re Asarco Incorporated and Federated Metals Corporation*, 6 E.A.D. 410, 433 (EAB 1996). If no site-specific information is available, the UBK model prescribes "default values" for the various lead-containing media. In using the UBK model, the Agency "recommend[s] a model projection benchmark of either 95% of the sensitive population having blood lead levels below 10 µg/dl, or a 95% probability of an individual having a blood lead level below 10 µg/dl." Update at 3.[44] "When the model is run using this benchmark, as well as each of the model's default parameters (i.e., no site specific data is input), an acceptable soil level of approximately 500 ppm is predicted of lead." *Id*.

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[44] Thus, the threshold level of concern for purposes of the UBK model is 10 µg/dl, *see Asarco Incorporated*, 6 E.A.D. at 433, the same level of concern used by the Region and the State of Oklahoma in this case.

The Region avers, and Cyprus Amax does not contend otherwise, that there was no site-specific data available in this case for input into the UBK model. In these circumstances, Agency guidance, including the Update, provides that if the UBK model were used, it would produce a recommended cleanup level of 500 ppm, consistent with the Agency's policy of using lead cleanup levels between 500 ppm and 1000 ppm for residential soil. Thus, based upon this Agency guidance for selecting a soil cleanup level, the Region selected a 500 ppm cleanup level for lead-contaminated residential soil at the Site.

It is therefore difficult to perceive precisely what argument Cyprus Amax is making when it challenges the cleanup level for lead on the basis that Agency guidance states that the UBK model is the best available tool for aiding in the establishment of soil lead cleanup levels. Cyprus Amax has not made any claim that with respect to the Region's reliance upon the Update, the Region should have acted in any other way. Indeed, as explained above, given the lack of site-specific input to use in the UBK model, the Update suggests a cleanup level of approximately 500 ppm.

In its comments on the Preliminary Decision, Cyprus Amax contends that the administrative record fails to provide a sufficient explanation as to why the Region selected 500 ppm for the lead cleanup standard, and in particular, why the Region selected the lowest level in the 500 - 1000 ppm range suggested by Agency guidance. We find this argument unpersuasive for several reasons. First, the argument is made for the first time in Cyprus Amax's comments.[45] Second, as detailed above, the Region first considered the then-current Agency guidance, which, as explained above, recommended a cleanup level in the range of 500 to 1000 ppm. The Region then considered the Agency guidance indicating that if the UBK model were used without site-specific data, it would produce a cleanup level of 500 ppm.[46] In addition, the Region considered the apparent strong correlation

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[45] The 1996 Guidance indicates that in the absence of extraordinary circumstances, the Board "will * * * decline to consider any new claims or new issues sought to be raised during the comment period." 1996 Guidance at 9.

[46] Cyprus Amax correctly notes that the Agency guidance indicated some "concerns" about the use of the UBK model in default situations, that is, in situations where no site specific data are available. However, it is clear to us that what the UBK model would have recommended, had it been used in this case, was only one factor in the Region's selection of a cleanup level. The Region also relied upon the apparent correlation between elevated soil lead concentrations and locations of children with elevated blood lead levels, and the Agency guidance recommending cleanup levels in the range of 500 to 1000 ppm. Based upon the totality of these circumstances, we cannot say the Region acted arbitrarily.

between the locations of elevated surface soil lead concentrations and the locations of children with elevated blood lead levels in deciding to choose the low end of the range recommended in Agency guidance. Particularly in light of the apparent correlation described above, the Region's selection of 500 ppm was not unreasonable. In our view, Region's decision-making path "may reasonably be discerned," *see Dickson v. Secretary of Defense*, 68 F.3d 1396, 1404 (D.C. Cir. 1995).

Cyprus Amax's petition raises the concern that "[t]he fact that the lead cleanup level for residential soils for this particular site was nearly doubled to 925 ppm in the [record of decision] indicates the imprecision of EPA's initial cleanup level." Petition for Reimbursement at 12. We interpret this as an argument that the cleanup level for lead-contaminated soil ultimately adopted through the remedial process (925 mg/kg) demonstrates the arbitrariness of the Region's selection of a cleanup level for lead-contaminated soil in the removal process (500 ppm). We find this argument unpersuasive. The document from the remedial process upon which Cyprus Amax relies (the Record of Decision) is not in the administrative record for this UAO, not being in existence at the time of issuance of the UAO. Further, as we have previously explained, "[t]he arbitrary and capricious standard is not based upon hindsight." *T H Agriculture & Nutrition*, 6 E.A.D. at 586. Instead, we examine the Region's selection of a response action at the time it made that selection. At the time the Region selected the 500 ppm cleanup level, it did not have the benefit of a completed remedial investigation and feasibility study identifying long-term cleanup standards. Rather, the Region utilized the information it had available at the time it selected a cleanup level, and based upon that information made a selection that Cyprus Amax has not demonstrated to be arbitrary or capricious. *See id*. at 586-87.

With respect to the 30 ppm cleanup level selected by the Region for cadmium-contaminated soil, Cyprus Amax again points to the cleanup level adopted by the remedial process as evidence that the Region acted arbitrarily. In particular, Cyprus Amax notes that the remedial process produced a cleanup level of 100 mg/kg for cadmium-contaminated soil. In contrast, the removal action subject to Cyprus Amax's complaint requires soil with concentrations of cadmium in excess of 90 ppm to be cleaned up to a standard of 30 ppm.

The Region selected the cadmium cleanup level for the removal action based upon a health consultation with the ATSDR. September 1993 Action Memorandum at 3. Indeed, on May 12, 1992, ATSDR reviewed the Region's proposed 30 ppm cleanup level, and concluded that "[t]he proposed [cleanup] level of 30 ppm total cadmium for

residential areas in Bartlesville is considered adequately protective of public health." ATSDR Record of Activity (May 12, 1992). Cyprus Amax's argument that the remedial cleanup level ultimately adopted for cadmium demonstrates that the Region acted arbitrarily in selecting a 30 ppm cleanup level for the removal action is unpersuasive for the same reasons set forth above with respect to the lead cleanup level. The document from the remedial process upon which Cyprus Amax relies (the Record of Decision) is not in the administrative record for this UAO. Further, the Region did not have the benefit of a completed remedial investigative process at the time it selected the cadmium cleanup level for the removal. When the removal cleanup level for cadmium was selected, the Region had before it the ATSDR health consultation, and Cyprus Amax has failed to demonstrate that the Region acted arbitrarily in relying thereupon.

Cyprus Amax also contends that the selection of a 30 ppm cadmium cleanup level was arbitrary because "EPA had approved at least five other sites with higher cleanup levels than 30 ppm." Petition for Reimbursement at 13. To support this claim, Cyprus Amax again refers to the document attached to Cyprus Amax's petition as Exhibit 14. Because Exhibit 14 is not in the administrative record, Cyprus Amax cannot rely upon this document to prove its claim. *T H Agriculture & Nutrition*, 6 E.A.D. at 587. In any event, Exhibit 14 is inconclusive, at best, with respect to recommending an appropriate cadmium cleanup level for Bartlesville residential soil. Exhibit 14 is merely a list of CERCLA sites with their corresponding cadmium remedial (not removal) cleanup levels; other than these two pieces of information, no site-specific information is provided. Thus, there is nothing in the document to demonstrate why the five sites with cadmium cleanup levels greater than 30 ppm are so like the Bartlesville site that the latter should also have a cadmium cleanup level greater than 30 ppm. Further, Exhibit 14 also indicates thirteen sites where cadmium cleanup levels were more stringent than the 30 ppm level at issue here. Thus, an at least equally plausible assertion can be made that Exhibit 14 could have argued for a *more* stringent standard.

Lastly, Cyprus Amax argues that the 30 ppm cleanup level for cadmium is arbitrary and capricious in light of "EPA's own Risk Assessment Guidance for Superfund [which] indicate[s] that a risk-based cleanup level for cadmium was 140 ppm (based on a Hazard Index of 1)." Petition for Reimbursement at 13. According to the Region, the Risk Assessment Guidance is not relevant here because:

> Under EPA's Risk Assessment Guidance, a cleanup level of 140 ppm may be appropriate *if* the risk is

> based solely on toxicity and not carcinogenic risk, *and if* the cleanup is intended for a person who is exposed for six years as a child and then 24 years as an adult (the risk assessment formula is based on body weight). * * * However, the September 9, 1993 action memorandum, on which the UAO is based, is intended to produce a removal action which will protect children, * * * and to address carcinogenic (not just toxic) risk. * * * Therefore, the information regarding the 140 ppm cleanup level is irrelevant in any event.

Response to Petition at 52 (citations omitted). Cyprus Amax, which bears the burden of proof here, has failed to persuade us that the Risk Assessment Guidance demonstrates that the cleanup level for cadmium was selected arbitrarily in this case.

Cyprus Amax, in its comments on the Preliminary Decision, argues that the Region arbitrarily and capriciously selected the lead and cadmium cleanup levels because those levels were selected in 1992, and the Region did not "revisit" those levels in 1993, when the September 1993 Action Memorandum was signed, and in 1994 when the UAO was issued. Cyprus Amax Comments on Preliminary Decision at 8. We are not persuaded by this argument, which is made for the first time in the comments on the Preliminary Decision. The Region clearly had the opportunity to modify the cleanup levels when it proposed the removal action for approval in the September 1993 Action Memorandum, and it obviously chose not to. Cyprus Amax, which has the burden of proof in these proceedings, has not pointed to any evidence in the administrative record suggesting that circumstances so changed between 1992 and 1993 (or, for that matter, between 1992 and 1994) such that the Region acted arbitrarily in making that choice.

For all of these reasons, Cyprus Amax's argument that the Region acted arbitrarily in establishing the cadmium cleanup level of 30 ppm is without merit.

3. *Hot Spots*

Cyprus Amax argues that "the removal action requirement that an entire residence have all its soil removed if any single sample exceeded either the 1500 ppm lead or 90 ppm cadmium action levels, rather than only remove the 'hot spot,' was also arbitrary and capricious." Petition for Reimbursement at 13. Cyprus Amax contends that the Region should have required composite sampling before requiring the

removal of all soil from a residence. To support this claim, Cyprus Amax refers to the remedial design report for the Site, and the "Baseline Human Health Risk Assessment" prepared in 1995 for the California Gulch Superfund Site, both of which utilized composite sampling. *Id.* at 13-14. Again, we find Cyprus Amax's arguments unpersuasive.

The Region explained that its decision to require the removal of the soil from an entire yard based on one sample testing above the 1500 ppm lead and/or 90 ppm cadmium action levels rested upon the Region's "judgment that if a sample in a yard exceeded the action level, then the rest of the yard probably exceed[ed] the action level." Response to Petition at 42. Given that the soil contamination in Bartlesville resulted from air disposition from uncontrolled stack emissions at the smelter(s), and given the widespread contamination within three kilometers of the NZC facility, as evidenced by the Phase III Report, the Region contends that its judgment was reasoned. *Id.*

Cyprus Amax has not pointed to any evidence in the administrative record, nor provided any argument, as to why the Region's reasoning is arbitrary or capricious. The risk assessment prepared in 1995 for a California Superfund site is not in the administrative record, and therefore cannot be considered when determining whether the Region arbitrarily selected a response action. *T H Agriculture & Nutrition*, 6 E.A.D. at 587.[47]

Nor can the remedial design report relied upon by Cyprus Amax be used to demonstrate that the Region acted arbitrarily in requiring the removal of all of the soil from a yard where one sample demonstrated lead or cadmium concentrations in excess of the action levels, for at the time the Region selected the removal action, the remedial design report was not yet available, and as such could not be included in the administrative record on which the Region based its decision.

In its comments on the Preliminary Decision, Cyprus Amax argues that:

> Rather than ordering "whole yard" removal action, which it knew would never be completed at the 1200 residences, the only reasonable course of action for

[47] In any event, Cyprus Amax does not show why this report, prepared by a contractor in 1995 and dealing with both a different site and a different hazardous substance (arsenic), should compel us to conclude that the Region acted arbitrarily in selecting a response action in 1993.

> EPA to take was to require "hot spot" removal, thereby maximizing the number of residences and the amount of cleanup of more highly contaminated soil that would be addressed during this interim period[.]

Cyprus Amax Comments on Preliminary Decision at 9. This argument, however, does not demonstrate that the Region acted arbitrarily or capriciously.[48] Instead, it merely amounts to the unpersuasive argument that the Region could have and should have ordered a different response. As we have previously stated herein, under the arbitrary and capricious standard, "the critical determination is *not* whether the Region selected the best possible response, or whether another response would also have been an acceptable selection; it is merely whether the Region acted arbitrarily in making its selection." *T H Agriculture & Nutrition*, 6 E.A.D. at 578. Because Cyprus Amax does not point to any evidence in the administrative record showing that the Region acted arbitrarily in ordering whole yard soil removal as opposed to "hot spot" soil removal, Cyprus Amax's claim lacks merit.

III. *CONCLUSION*

For the reasons detailed above, it is the Board's final decision that the claim for reimbursement in CERCLA Petition No. 96-2 must be denied in all respects.

So ordered.

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[48] As the Region points out, Cyprus Amax's argument is premised on the assumption that the remedy selected for this site would necessarily supersede the removal. Region's Comments on Preliminary Decision at 18-19. For the reasons set forth in the text above, this premise is faulty. *See* Section II.B.1, *supra*.