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March 5, 2010

Delivered via U.S. Mail and email to cahormp@ca.blm.gov

CCMA RMP/EIS Comments
Attn: Planning Coordinator
DOI-BLM, Hollister Field Office
20 Hamilton Court
Hollister, CA 95023

RE: Comments to CCMA/Hollister RMP DEIS

Dear Planning Coordinator:

Please accept these comments to the Clear Creek Management Area Draft Resource Management Plan & Draft Environmental Impact Statement (the "DEIS") released November 2009. These comments are submitted on behalf of our clients the BlueRibbon Coalition, as well as its numerous participating individual and organizational members, which specifically include but may not be limited to the Salinas Ramblers Motorcycle Club, Timekeepers Motorcycle Club, American Motorcyclist Association D36, California Enduro Riders Association, and the California Association of 4 Wheel Drive Clubs. Individual and/or organizational members of any of these organizations may submit their own comments, and all such comments must be separately and independently evaluated by BLM. Any communications regarding these comments should be directed to Paul A. Turcke at the contact information listed above and to pat@msbtlaw.com.

I. OVERVIEW AND SUMMARY

The BLM Hollister Field Office ("HFO") is poised on a monumental and unprecedented decision to eliminate meaningful human recreation on a large tract of "public" land. This extreme step is based solely upon a one-time risk analysis by EPA that is not consistent with prior analyses by that agency, other agencies, and other qualified scientists. EPA's conclusions about unacceptable risk are based on questionable methodology and fly in the face of decades-long use of the CCMA. There is a lengthy history, including establishment and monitoring of Superfund sites, involving the same *chrysotile* particles found on the CCMA, yet a virtual absence of any reasonable causal connection between site exposure and human disease. This

history would seemingly compel BLM to at least consider alternative(s) that would allow for meaningful, if not historical, levels of recreational access. One might conclude that liability concerns play a large role in BLM's overly cautious treatment, but the DEIS reflects an unprecedented approach at public lands management that potentially increases the agency's exposure to litigation risk, for BLM's overreaction here all but guarantees that the agency will be targeted by plaintiffs who allegedly suffered any exposure to the now-toxic dust of the CCMA. At the same time, BLM's closure of the CCMA will have dramatic effects on the human environment in the local and beyond as benefits associated with recreation will be all but eliminated and adverse impacts associated with displaced use will spread to alternative sites. The DEIS does not reflect a reasoned cost-benefit analysis, but instead creates nothing but "lose-lose" outcomes for the recreating public, surrounding communities, and the agency.

The apparent preferred management strategy presented in the DEIS violates the law, sound policy, and common sense. We urge BLM to refine, if not redirect, its management strategy to resume meaningful human access to the CCMA.

II. GENERAL LEGAL STANDARD

NEPA "is our basic national charter for protection of the environment." 40 C.F.R. § 1500.1. While analysis and discussion frequently focus on the natural and physical environment, NEPA embodies a Congressional desire "to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of future generations of Americans." 42 U.S.C. § 4331(a). Thus, NEPA's operative EIS requirement is triggered by federal action which may "significantly affect[ ] the quality of the human environment...." *Id.* at § 4332(2)(C) (emphasis added). The "human environment" "shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment." 40 C.F.R. § 1508.14. NEPA is a purely procedural statute designed to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 C.F.R. § 1500.1(b).

An agency's compliance with NEPA is subject to judicial review under APA 706(2). Courts generally look to see if the agency took a sufficiently "hard look" and will approve an EIS if "the EIS process fostered informed decision-making and public participation." *National Parks & Conservation Ass'n v. U.S. Dept. of Transp.*, 222 F.3d 677, 680 (9th Cir. 2000). If the Court determines the agency took a "hard look" at the environmental consequences of the project in question then "review is at an end." *Id.* However, mere "pro forma compliance with NEPA procedures, nor post hoc rationalizations as to why and how the agency complied with NEPA" will not suffice. *Int'l Snowmobile Mfrs. Ass'n v. Norton,* 340 F.Supp.2d 1249, 1263 (D.Wyo. 2004) (italics in original); see also *Davis v. Mineta,* 302 F.3d 1104, 1112-1113 (10th Cir. 2002).

Executive-branch agency decisions are ultimately reviewable by the judiciary, which is empowered to set aside agency action that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," or found to be "without observance of procedure required by law." 5 U.S.C. § 706(2)(A) & (D), see also, *Bonnichsen v. United States*, 367 F.3d 864, 880 (9th Cir. 2004) ("we review the full agency record to determine whether substantial evidence supports the agency's decision....").

The arbitrary and capricious standard is deferential and does not allow a reviewing court to substitute its judgment for that of the agency:

> The scope of review under the "arbitrary and capricious" standard is narrow and a court is not to substitute its judgment for that of the agency. Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made....Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise. The reviewing court should not attempt itself to make up for such deficiencies; we may not supply a reasoned basis for the agency's action that the agency itself has not given.

Motor Vehicle Mfrs. Ass'n. v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 43 (1983) (citations omitted) (emphasis added). Arbitrary and capricious review is the mechanism through which the courts can require basic fairness and reasonableness of agency behavior, for "unless we make the requirements for administrative action strict and demanding, expertise, the strength of modern government, can become a monster which rules with no practical limits on discretion." *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 167 (1962) (quotation omitted).

Even where an agency can arguably point to substantial evidence supporting its decision, the presence of contradictory evidence might render the decision arbitrary and capricious. Thus, "even though an agency decision may have been supported by substantial evidence, where other evidence in the record detracts from that relied upon by the agency we may properly find that the agency rule was arbitrary and capricious." *American Tunaboat Ass'n v. Baldrige*, 738 F.2d 1013, 1016 (9th Cir. 1984) (citing *Bowman Transport, Inc. v. Arkansas-Best Freight System, Inc.*, 419 U.S. 281, 284 (1974) (agency decision supported by substantial evidence may still be arbitrary and capricious)); see *Atchinson v. Wichita Board of Trade*, 412 U.S. 800, 808 (1973) (where agency modifies or overrides precedents or policies, it has the "duty to explain its departure from prior norms").

Even substantial evidence cannot properly support a decision if the information was not considered by the decision-maker at the proper stage of the process. Information cannot be presented as a post-hoc rationalization to justify a decision previously made. *Southwest Center for Biological Diversity v. U.S. Forest Service*, 100 F.3d 1443, 1450 (9th Cir. 1996). For the reasons identified below, the Decision supported by this EA violates these basic principles.

II. COMMENT ISSUES

The DEIS is seriously flawed and should be refined or replaced by a Supplemental DEIS that will present the public with necessary information and a legally-required range of alternatives.

A. BLM Must Extend the Public Comment Period.

BlueRibbon and numerous other individuals, private organizations, governmental entities, and public officials have requested an extension to the comment period currently scheduled to end on March 5, 2010. There are numerous bases to justify an extension, but the most important is the fact that the State of California has indicated that it is in the process of commissioning an independent, qualified review of the 2008 EPA Risk Assessment. Such an analysis will present critical information that will likely constitute new information relevant to environmental concerns. *See*, 40 CFR § 1502.9(c)(1)(ii). Extending the comment period is the most logical and least obtrusive way to allow any potential new information to be considered. If BLM doggedly moves forward, as it appears the agency is doing, it creates greater procedural risk and threatens to increase the total cost and time to complete the planning process. Put differently, it is far easier to extend comment for a month(s) than it is to determine further into the planning process that supplementation is legally required.

BLM's unwillingness to extend the comment period is particularly frustrating here when the DEIS itself was the subject of numerous and lengthy delays. The CCMA has effectively been closed as the result of various "interim" orders, and the public has waited for the RMP revision process to rectify those actions. BLM was on record predicting an "early 2009" release of the DEIS. We recognize the complexity and sensitivity of BLM's task, and do not question the reasonableness of BLM's multiple delays of the DEIS release, but only ask that BLM extend similar latitude to the public in responding to the DEIS.

Finally, BLM has apparently magnified any procedural gaffe by selectively and informally extending the comment period for certain commenters. Specifically, we believe that BLM has advised the State of California and San Benito County that they may have additional time in submitting formal comments to the DEIS. This result makes no sense and frustrates NEPA's fundamental information purpose, for it presents the possibility, if not likelihood, that some commenters will have a different and more developed record upon which to comment than others.

Again, we ask BLM to extend the comment period. If the State of California is able to seek independent review of the EPA's or other technical conclusions supporting the DEIS we ask that such information be made available and comment be extended or reopened for at least thirty (30) days following such release.

B. Analysis of Technical Issues is Procedurally Deficient.

The DEIS is obviously premised on the most recent (2008) EPA Risk Assessment. BLM has committed procedural violations in disclosing the EPA methodology and results.

When federal agencies evaluate technical issues or apply specialized expertise, NEPA requires them to rely on valid sources and to disclose methodology, present hard data, cite by footnote or other specific method to technical references, and otherwise disclose and document any bases for expert opinion. 40 C.F.R. § 1502.24; *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150 (9th Cir. 1998). When applying NEPA, agencies must:

> utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment....

42 U.S.C. § 4332(A); 40 C.F.R. § 1502.6. NEPA does not envision undocumented narrative exposition, instead requiring:

> Agencies shall insure the professional integrity, including the scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

40 C.F.R. § 1502.24. Where information is not provided in the NEPA document itself, but is only cross-referenced:

> "The propriety of such incorporation is dependent upon meeting three standards: 1) the material is reasonably available; 2) the statement is understandable without undue cross reference; and 3) the incorporation by reference meets a general standard of reasonableness."
>
> ...[T]here is no evidence in the record concerning the public availability of other incorporated materials. In addition, although it appears that the EA is dependent on these documents to support its finding of no significant impact, [ ] the EA does not appear to specifically cite to which documents or portions of these documents support which conclusions. This requires undue cross-referencing. It appears that

> the incorporation of these materials fails the general reasonableness test. Defendants have failed to point out where these materials are specifically cited to in the materials to support their conclusions.

Siskiyou Regional Education Project v. Rose, 87 F.Supp.2d 1074, 1098 (D.Or. 1999) (quoting *NRDC v. Duvall*, 777 F.Supp. 1533, 1539 (E.D.Cal. 1991)) (internal citations omitted). Allowing an agency to couch technical analysis in vague citations to other material violates NEPA and the Council on Environmental Quality Regulations.

The DEIS inadequately discloses the methodology and hard data of the Risk Assessment. These procedural defects condemn the DEIS technical analysis and conclusions. Further review should occur and any technical materials, including underlying data, should be made fully available for public review and comment.

C. Technical Conclusions are Arbitrary and Capricious.

In addition to the above-noted procedural deficiencies, many of the important substantive conclusions in EPA's Risk Assessment violate the applicable review standard. While the agency is entitled wide deference under the "arbitrary and capricious" standard, we believe that independent and probing analysis has exposed, and will further expose, fundamental flaws in EPA's 2008 conclusions.

We will not attempt to reiterate all of the concerns which have been presented to BLM. We hereby incorporate by reference herein all of our prior submissions and those submitted by Dr. Ed Ilgren. These outline numerous flaws in EPA/BLM analysis of risk, including, but not limited to:

(1) the absence of any diseased population or even subpopulation (including those undergoing extensive commercial exposure) that can be connected to the CCMA;

(2) numerous methodological flaws in the EPA test design related to simulation of the typical OHV rider exposure at the CCMA, such as rider ability, following distance, equipment type/usage, speed, nature/mileage of trails traveled, and similar factors;

(3) alteration of the ISO 10312 standard, including modified particle size and filter overloading criteria;

(4) inability to account for introduced amphibole material, and failure to analyze or attempt to explain whether reported amphibole particles arose from natural sources or were introduced.

Again, EPA's 2008 findings do not appear against a blank slate, but instead represent a one-time assessment to be compared to multiple other analyses conducted by EPA, BLM, private

contractors, and other sources. To belabor the obvious, a finding of meaningful health risk would imply some individual or population level effects manifested through incidence of disease connected to the CCMA. Such connection has never been established and has been persuasively disproven on multiple occasions.

The DEIS rests on premise that fails to account for the fact that there is no causal connection between persons visiting or working in the CCMA and incidences of mesothelioma. The DEIS process should include full and fair examination of the problem rather than relying on suspect data to justify conclusions. A prime example of such premise is the conclusory dismissal of the need to determine prior incidences by concluding that because the local population is small, a study examining asbestos-related disease would not be feasible. *See* DEIS at 327. However, BLM could have conducted such a study from prior employees or other long-time users. Additionally, BLM has analyzed the related question of whether its own employees are (or have been) improperly exposed to hazard at the CCMA. *See*, Exhibit "A" hereto, DOI Occupational Health and Safety report (May 2008). BLM's findings on public/employee health risk are contradictory, or the DEIS fails to allow for mitigation techniques that BLM has apparently determined are sufficient to address any risks to employees.

In a memorandum dated February 8, 2008, a BLM toxicologist expressed possible concern with the methodology of underlying the RA, yet this is not accounted for in the DEIS. BLM cannot ignore evidence - particularly by its own staff - that is contrary to the agency's favored evidence. This memorandum was obtained through a BlueRibbon FOIA request and specifically directed to the HFO's attention in, and attached to, a July 8, 2009 letter from counsel to BlueRibbon to the HFO. BLM should, at a minimum, explain for the public how it reconciles the doubts expressed from key agency personnel. Failure to at a minimum explain its reasoning in disregarding such data is characteristic of arbitrary and capricious agency conduct.

The DEIS and its illegallylimited range of alternatives flow from the 2008 EPA Risk Assessment. BLM's reliance on that flawed foundation has illegally-limited the scope of BLM's analysis. We ask that a supplemental analysis be performed.

D. The DEIS Inappropriately Expands Agency Liability Where None Should Exist.

The DEIS reflects an institutional caution apparently focused on the fear of liability from any who might contract disease allegedly connected to recreation activity at the CCMA. Neither the general scenario nor level of risk is new. In fact, the epidemiological risk suggested by EPA's analysis, though excessive, is still less than for many other sites or other causes associated with public lands recreation.

There is a well-established body of statutory and common law to address such concerns. As a general principle, a government agency and its employees are well-shielded from potential liability by the discretionary function exception to the Federal Tort Claims Act. Generally stated, an injured party must show that the challenged governmental act or omission violated a

mandatory regulation or policy allowing no judgment or choice, and that the governmental conduct was not of the type designed to be shielded by the discretionary function exception. *See*, *United States v. Gaubert*, 499 U.S. 315 (1991); *Dalehite v. United States*, 346 U.S. 15 (1953). There are numerous cases in the outdoor recreation context demonstrating the sweeping extent of protection afforded a land managing agency/officials. *See, e.g.*, *Childers v. United States*, 40 F.3d 973 (9th Cir. 1995); *Reetz v. United States*, 224 F.3d 794 (6th Cir. 2000); *Matheny v. United States*, 469 F.3d 1093 (7th Cir. 2006); *Autery v. United States*, 992 F.2d 1523 (11th Cir. 1993). The rare exceptions to the discretionary function exception seemingly arise when the agency, through an explicit policy or admission, disclaim discretion otherwise inherent in managing human use of natural areas fraught with worst-case scenarios resulting in possible injury/death. *See, e.g.*, *Brown v. United States*, 547 F.Supp.2d 759 (W.D. Ky. 2008). The DEIS reflects a strategy that inexplicably flies in the face of these protections and could be framed as a BLM admission of an environmental risk that history suggests does not exist.

E. The DEIS Fails to Adequately Describe the Existence and Extent of Cooperating Agency Status for State and Local Governments.

NEPA and its attendant CEQ regulations mandate that federal agencies, in preparing NEPA analyses and documentations "in cooperation with State and local governments," and other agencies with jurisdiction by law or special expertise. 42 USC 4331(a), 4332(2); *see also* 40 CFR 1501.6. The purpose of these requirements is to benefit the decision-making process by ensuring agency stakeholder involvement, thereby allowing the early disclosure of relevant information, avoiding duplication of federal and other governmental and tribal entities' efforts, and promoting agencies' ability to foster intra-governmental trust. The agency responsible for the NEPA analysis should determine whether any such federal agencies or governmental or tribal entities are interested and capable of participating as a cooperating agency. Even if an invited entity declines participation, it should still be considered for inclusion in interdisciplinary teams engaged in the NEPA process.

In the public scoping report, the HFO states that it will "invite federal, state, and local agencies to participate in development of the CCMA RMP/EIS to provide information and/or technical assistance in evaluating public land resources in the planning area," and identifies several state and local governmental entities to be included. The DIES states that BLM enlisted one cooperating agency (EPA), and "numerous State and local governments, and the Central California Resource Advisory committee . . . ." DEIS (letter to Reader). The DEIS later identifies as a planning criteria "government to government consultation, including Tribal interests," and then states that "[t]he CCMA RMP/EIS will allow BLM the opportunity to review existing agreements and consider cooperative agreements with Federal, State, and local agencies to improve management of public land resources in the Planning Area." DEIS at 14. The HFO, at Section 5.2.5 of the DEIS, describes its "existing agreements with several Federal State, and local agencies to assist in the management of public land resources in the Planning Area." DEIS at 552.

The "existing agreements," and the level and nature of participation by the entities listed in that section, are not disclosed in the DEIS. Thus, the DEIS suggests that the HFO has declined to pursue cooperating agency status with respect to this DEIS, instead delaying formal consultation on this particular action to a later time, or, relying on existing agreements that do not identify the manner of those agencies' participation.

F. The Range of Alternatives Illegally Precludes any Meaningful Use Within the CCMA.

Agencies must "rigorously explore and objectively evaluate all reasonable alternative." 40 CFR 1502.4. Here, every alternative in the DEIS contemplates further restriction on access to roads and trails and areas by motorized means. It is apparent from the DEIS that the purpose and need for the project is to minimize asbestos exposure and reduce asbestos emissions. DEIS at Executive Summary p. III. Thus, the DEIS accepts as a foregone conclusion that the CCMA is hazardous enough to justify limiting but one factor in exposure, based on questionable science.

NEPA imposes a mandatory procedural duty on federal agencies to consider a reasonable range of alternatives. 40 C.F.R. § 1502.14 ("agencies shall rigorously explore and objectively evaluate all reasonable alternatives.") The alternatives section is considered the "heart" of the EIS and a NEPA analysis must "explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14. A NEPA analysis is invalidated by "[t]he existence of a viable but unexamined alternative." Resources, Ltd. v. Robertson, 35 F.3d 1300, 1307 (9th Cir. 1993).

Thus the purpose and need, from which the range of alternatives flow, illegitimately crates a range of alternatives that precludes meaningful analysis. Every alternative, save the no-action alternative, results in significant limitations on motorized recreation access. Thus, the decision-making paradigm is constrained to options that rely on achieving the purpose and need through a single means: limiting recreational access. Hazards exist throughout the public lands; not every one can be identified, evaluated, and protected against. Even assuming that the underlying science conclusively demonstrates the conclusion for which it is accepted, a range of alternatives that aims solely to reduce access precludes consideration of legitimate alternative means to achieve the result. In sum, the range of alternatives, and the preferred alternative, derive from an erroneous premise and result in the impossible enterprise of closing areas based on unknown hazards.

G. The DEIS is Flawed by the Order Closing the CCMA.

BLM has adopted a "close first then analyze" strategy that violates NEPA. In particular, 40 CFR 1506.1 precludes an agency from taking an action that would have an adverse environmental impact the choice of reasonable alternatives. HFO states in the DEIS that "the closure order will remain in place during the preparation of the CCMA RMP/EIS because this issue is outside the scope of the planning effort and the temporary closure will not affect the RMP development." DEIS at 8. The closure order during the NEPA process, while founded on

less-than-conclusive science and thus not independently justified, in fact pre-ordains BLM's ultimate conclusion and therefore does effectively limit the choice of reasonable alternatives. It is obvious, also, that the closure decision, which is itself among the alternatives, appears to "determine subsequent development or limit alternatives." 40 CFR 1506.1 (1)(c)(3).

The EPA RA fails to account for concentrated areas of former commercial asbestos mines. Accordingly, the data underlying the DEIS essentially projects to a whole area an increased incidence of asbestos by including areas that could be isolated and excluded or managed differently than the remainder of the CCMA. The documents publicly available demonstrate uncertainty regarding conditions and risk. *See* email from R. Cooper to S. Murphy, Mar. 31, 2009. The result is a decision-making framework, as established by the alternatives, that skew the result. Another failure is HFO's failure to properly consider other mitigation measures, such as wash racks. The DEIS hastily dismisses the possibility without justification. *See* DEIS at 352.

The DEIS's range of alternatives fails to address reasonable alternative mitigation measures and instead favors closure to achieve its goal. However, numerous alternative mitigation measures exist and have been presented to the HFO; BLM cannot summarily disregard, without analysis, these reasonable alternatives. Indeed, the HFO was presented with evidence during the scoping process regarding the actual level of risk and appropriate response: As noted by BLM's own experts, the common and necessary practice is to improve the monitoring and methodology in order to refine "institutional controls governing when, where, how, and who can ride" in an effort to "reduce risk into the acceptable range and enable limited ORV use at the site." Ford Memo., at p.2, #14. The supposed need to close the entire area immediately is in fact defied by the HFO's allowance of two previously scheduled motorized vehicle events even *after* the HFO decided to close the area. *See* email from R. Cooper to M. Pool, Mar. 11, 2008. (This correspondence was attached as Attachment D to BRC's July 8, 2009 correspondence to the HFO.) If such a grave emergency existed, why permit hundreds of OHV and motorcycle users and fans to attend such an event? Additionally, BLM employees continue to frequent the site. These obvious contradictions must be answered; failure to do so constitutes arbitrary and capricious agency conduct.

H. The Data Underlying HFO's Purpose and Need and Range of Alternatives Fails to Support HFO's Approach.

The DEIS accepts as conclusive the EPA Risk Assessment. However, prior to producing the DEIS, the HFO was furnished scientifically sound data tending to undermine or at least demonstrate the uncertainty of, the EPA Risk Assessment. Documents provided to BlueRibbon through FOIA requests demonstrate that the access-limitation approach embodied in HFO's planning paradigm is not justified by the science underlying that paradigm. There is unquestionable uncertainty in the EPA's own report regarding the actual conditions; ergo, its sampling, testing, and conclusions do not necessarily correctly characterize the risk. Additionally, throughout the NEPA process for the CCMA RMP, HFO has essentially

disregarded, or at least ignored, credible scientific data indicating that PCME fibers are located in concentrated areas, which would allow for a more tailored management approach than is available from the range of alternatives presented in the DEIS. It also is apparent that the EPA report fails to sample according to actual riding patterns. The DEIS fails to address the ambiguity of the data, and therefore, in sum, the DEIS fails to take the requisite "hard look" at the data it accepts as true, thus failing to consider an important aspect of the problem. *See, e.g. Natural Resources Defense Council v. Callaway*, 529 F.2d 79 (2d Cir. 1975).

I. The DEIS Fails to Adequately Analyze Socioeconomic Impacts.

The DEIS fails to adequately account for the socioeconomic and environmental impacts to other areas or the local economies caused by the alternatives, including the preferred alternative, in violation of NEPA. Socioeconomic impacts are characterized in conclusory terms without specific analysis of data to support the conclusions. *See generally*, DEIS at 520-23.

J. The DEIS Fails to Analyze Prior Studies Relied Upon.

The DEIS references a 1992 BLM Human Health Risk Assessment for CCMA, DEIS at 332, but there is no comparative analysis or explanation of that document against the 2008 EPA RA.

K. Reliance on Climate Change Assumptions is Arbitrary and Capricious.

The DEIS justifies some of its analysis and conclusions on what it characterizes as the result of climate change. DEIS at 451. However, the DEIS contains insufficient data to support the conclusion that climate change will have the asserted impacts on the CCMA soils and vegetation.

We appreciate the opportunity to comment, and look forward to further participation in the planning process. Please contact us if you have questions or wish to discuss these comments further.

Sincerely,

MOORE, SMITH, BUXTON & TURCKE, CHTD.

/s/ Paul A. Turcke

Paul A. Turcke
Carl J. Withroe

/PAT: cam

BLM Employee Exposure to Naturally Occurring Asbestos at the Clear Creek Management Area and the Knoxville Management Area

U.S. Department of the Interior
Office of Occupational Health and Safety

May 2008

EXECUTIVE SUMMARY

Employee exposures to naturally occurring asbestos at the Clear Creek Management Area were monitored on 4 occasions by the DOI Office of Occupational Health and Safety. A total of 89 samples were collected representing 429 work hours. Eight hour time-weighted average exposures were determined. The results showed exposures varied by job task with the highest exposures during the SWECO operation, the sign installation, water truck operation. One 8-hr time-weighted average exposure during the SWECO operation exceeded the OSHA Permissible Exposure Limit (PEL). This report includes recommendations to limit employee exposures by engineering, work practice, and administrative controls to ensure exposures do not exceed the PEL. A cancer risk assessment tool is proposed for determining the number of work days permitted to stay below an acceptable risk level.

Measured exposures and the calculated cancer risk levels at the Knoxville Management Area were an order of magnitude lower than those at the Clear Creek Management Area. This is due to the lower measured concentrations and the small number of days employees are on-site. Several recommendations are specified to further reduce these exposures.

INTRODUCTION

This report focuses on BLM employee exposure to asbestos at the Clear Creek Management Area (CCMA), San Benito County which is managed by the Hollister Field Office and the Knoxville Management Area in Napa County California, managed by the Ukiah Field Office. It does not address public exposures during recreational activities at these sites. Exposure to the public is address in the EPA Risk Assessment Report dated February 2008 and is part of this report.

Objectives:

- To estimate employee exposure to naturally occurring asbestos during tasks performed by BLM employees during various environmental conditions using accepted industrial hygiene practices.
- Validate methods used by BLM to monitor employees' exposures. This included training employees on proper sampling techniques and providing CIH oversight and guidance to an ongoing "in house" personal air monitoring program .

Naturally occurring asbestos (NOA) on BLM managed land has been recognized as a potential exposure issue since the late 1970's. Since the early 1960's three asbestos mines have operated in the CCMA with the last mine closing in 1998. The Atlas Mine operated until 1979 and has been managed as a Superfund site since 1989. Since that time personal exposure monitoring has been conducted on employees working on the Clear Creek Site.

CCMA visitor days average around 5000 per month from October through May. Since 2005 BLM has instituted a "dry season closure" where usage is limited during the dry summer months.

According to BLM, soil concentrations throughout the Clear Creek Management Area ranged from trace levels in darker soils with higher organic material to 40% asbestos in the lighter colored sparsely vegetated soils. Although chrysotile is the predominant type of asbestos mineral present, some amphibole was detected in the air samples which were analyzed by transmission electron microscopy (TEM).

Sampling was conducted on four occasions during differing environmental conditions. According to the work descriptions, most work activity at Clear Creek takes

place in January through April. Employees spend varying number of workdays at the Clear Creek Site and are assigned through the Hollister District Office. Other than the law enforcement personnel, employees work at the Knoxville site in the range of 5 to 10 days per year.

METHODS:

In this survey, standard industrial hygiene monitoring methods were used to characterize exposures during various work activities at 4 different times of the year. Samples were analyzed by Phase Contrast Microscopy (PCM) using NIOSH 7400 method. Additionally, samples analyzed by the NIOSH 7400 method whose 8-hr time-weighted averaged exceeded ½ of the OSHA permissible exposure limit were analyzed by TEM to determine the percent asbestos of the constituent fibers. This factor was then applied to the PCM count to give a more accurate count of asbestos fibers. The last round of sampling was analyzed by PCM NIOSH 7400, TEM NIOSH 7402 method; and by TEM International Standard Organization ISO 10312 method. Reservoirs Environmental, Inc is the analytical laboratory used in this survey. It is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), and the American Industrial Hygiene Association (AIHA) PAT program.

High flow personal air sampling pumps were calibrated at 2 liters per minute prior to sampling and after sampling. The calibrator met the requirements for current annual factory calibration check. Twenty-five millimeter diameter electrically conductive cowled cassettes using 0.8 μm pore size mixed cellulose ester filters were connected via tygon tubing to the pump. The complete sampling train was used during calibration including use of a filter cassette from the lot of filters to be used in the field. Three separate calibration reading were obtained both before sampling and after sampling.

In all cases the filter was placed within the employees' breathing zones with the filter faced in a downward position. During sampling in the field, rotometers on the pumps were checked to determine constant flow during the sampling period. Filter overloading was not a problem during any of the sampling events. During times of potentially high exposures, excursion limit samples were taken for a thirty minute period for comparison to the 1.0 fiber per cubic centimeter excursion limit. The air sampling

was started at the CCMA decon facility where employee report to work before entering the contaminated area. This site is approximately 20-30 minutes from the contaminated zone. This travel time to the site is part of the employees work shift and is therefore included in the eight hour time-weighted average exposure.

General weather conditions were recorded along with temperature and humidity and wind speed readings using a hot wire anemometer to characterize environmental conditions during the sampling.

BLM has been conducting personal exposure monitoring on employees since the early 1990's. A recent OSHA inspection identified some issues with past employee exposure monitoring methods and it was determined that a new evaluation of employee exposures be conducted. Throughout this period there have been some irregularities in sampling methods such as using a primary calibrator that had an expired lab certification, and some reports of not sampling with open-faced filter cassettes. The samples were all analyzed using PCM. The quality control of the laboratory was not verified. Recognizing the irregularities in the sampling methods, the data gives an indication of general exposure levels for particular jobs over past 18 years. While it is not the purpose of this report to analyze the historic data set, this data gives an indication of general exposure concentrations over the past 18 years. The overall mean 8hr time-weighted average exposure for the data set was 0.018 f/cc. Thirteen (1%) of the 1271 samples exceeded the PEL of 0.1 f/cc for 8 hr time-weighted average exposures.

EPA has completed an evaluation of exposures for various public use activities including motorcycle, SUV, ATV, hiking, camping. The report also addressed the differences between adult and child exposure and cancer risk. These risk assessment methods provide calculations of cancer risk for the specific activities over a lifetime. It differs from the occupational exposure assessment in that it does not correspond to a specific allowable airborne concentration for a specified time.

It is important to understand the different processes determining courses of action to protect both the employee and the public. Occupational exposures are regulated by an existing standard established by OSHA. This is the law which regulated all occupational exposures to asbestos in the United States. It should be noted that OSHA has modified the standard several times in response to new information about health risk from

exposure. The 0.1 f/cc PEL has been in place since 1994, and there is currently an interagency workgroup looking at research needs to further the knowledge base on asbestos toxicity. Occupational exposures throughout all workplaces use the OSHA PEL of 0.1 f/cc for an 8-hr time-weighted average exposure. The American Conference of Governmental Industrial Hygienists is a non-regulatory standard setting organization and uses 0.1 f/cc as their 8-hr TWA threshold limit value. The occupational exposure limits are established to protect a healthy working aged adult. In establishing these standards OSHA also considers the protection from adverse health outcomes as well as the impact of the regulation on the industry. In determining the risk to the public, EPA considers all age groups including the most susceptible portions of the population. The decision how much risk is acceptable also differs when considering the general population. EPA decisions are based on a acceptable risk level of 1 in 10,000 excess cancer cases. Historically, occupational standards assume a higher level of risk because of the "healthy worker" effect.

Sampling was conducted on routine work being performed at the time of the site-visit. The fence crews made up the largest workforce during the site visits and thus resulted in the most samples collected. Work varied and included hand digging post holes, operating auger, setting posts. Visits were spread over the course of the year and in differing moisture conditions. No sampling was performed during the dry season closure. Sampling was conducted during their time spent on the worksite. Since they are full work shift samples, these results represent the actual exposure the employee is experiencing during the entire work shift and does not rely on piecing together activity based exposures.

The 87 samples correspond to 429 hours of sampling time on the actual workers who routinely perform the activities below. Full shift sampling provides exposure information for all activities performed during the work-shift. For example, during motorcycle patrol, the rider will have different exposure situations such as whether they are leading or trailing a vehicle. This full-shift sampling gives a time-weighted average of all the exposure components during the work-shift and does not rely on piecing together exposures for individual activities. It is the accepted method of measuring occupational exposures and is the basis for occupational exposure limits.

Sample Number and Activity

Activity	Samples at Clear Creek	Samples at Knoxville	Total
Motorcycle monitoring/patrol	9	0	9
Decontaminating vehicles	2	0	2
Water Truck Operation	1	0	1
Campground and Restroom Cleaning	4	2	6
Campground Area Sample	2	0	2
Entrance Station Operation	3	0	3
ATV Monitoring/Patrol	5	0	5
Fence Crew	23	0	23
Hiking/misc activity	6	0	5
SWECO trail grader	6	2	9
Sign Installation	5	0	5
LE Patrol Truck/SUV	1	2	3
Pickup truck within red zone	1	0	1
Decon	1	0	1
Heavy Equipment Operation (Dozer, backhoe, grader)	5	4	9
Transit To and From Office	3	2	5
Total	**77 (369 hrs)**	**12 (60 hrs)**	**89 (429 hrs)**

CLEAR CREEK RESULTS AND DISCUSSION

Composite time-weighted averages give weighting to the sampling time for each result, therefore giving a true average exposure over the total number of minutes sampled. Taking the mean of the filter results would not give weight to those samples that correspond to a longer sampling time, but gives all results the same weighting, therefore time-weighted averages must be used for determining occupational exposures.

Eight hour time-weighted averages were calculated for each employee monitored. This approach averages the exposure over an entire 8-hr work shift regardless of the

amount of time in the contaminated area. For example, if a worker spends 6 hours in the contaminated work site and 2 hours away from the contamination:

$$\frac{(6\text{ hrs x exposure in contam. work area}) + (2\text{ hrs x exposure in outside area})}{8\text{ hrs}} = \text{8-hr TWA}$$

Occupational exposure limits such as the OSHA PEL are based on the concept of the 8-hour TWA. Assuming the exposure time outside of the contaminated area is less than the exposures in the red zone, the 8-hour TWA will always be at or lower than the TWA for the time sampled. Sample results during the time away from the CCMA site, such as the travel to and from the site, were below the limit of detection. Detection limits varied depending on sampling time, but for the full 8-hr work shift sampling periods sampling at 2 liters per minute, the detection limit was 0.003 fibers/cc. The short term (30 minute) sampling had a detection limit of approximately 0.04 fibers/cc.

Clear Creek Sample Results

Activity	Number of Samples	Composite time-weighted average (total sampling time)	Mean of 8-hr time-weighted average exposures
Motorcycle monitoring/patrol	9	0.026	0.017
Water Truck Operation	1	0.039	0.025
Campground and Restroom Cleaning	4	0.021	<0.009
Campground Area Sample	2	BDL(.007)	
Entrance Station Operation	3	0.020	0.012
ATV Monitoring/Patrol	5	0.033	<0.017
Fence Crew	23	0.017	0.015
Habitat Monitoring Hiking/misc activity	6	0.014	<0.010
SWECO trail grader	6	0.061	0.054
Sign Installation	5	0.026	0.022
LE Patrol Truck/SUV	1	BDL(.008)	BDL
Decon (30 minute STEL)	1	BDL(.045)	
Heavy Equipment Operation (Dozer, backhoe, grader)	5	0.012	0.011
Transit in Pickup Truck From Hollister to CCMA Office	3	BDL(0.020 – 0.015)	BDL
Transit in pickup truck within red zone.	1	0.011	0.011

BDL: below detection limit

The highest exposure at the CCMA was during the SWECO operation. The SWECO machine is a tracked trail grader with an enclosed cab with HEPA filtration. The operator spends most of the day in the vehicle but on several occasions had to perform maintenance work on the equipment. During the sampling dates the SWECO would be stored in the red zone for use the following day. HEPA vacuuming of the cab was not routinely done. Sampling conducted in March 2007 during the extreme dry conditions resulted in an exposure at the OSHA PEL of 0.1f/cc. At that time the operator was quoted as "never seeing such dry conditions" and that "if this doesn't blow the sample, nothing will". The subsequent results showed that the samples were at the OSHA PEL. This indicates that the operator is able to identify the extreme situations to avoid operation of the SWECO during these periods. SWECO trail maintenance should never be performed during extremely dry conditions. HEPA vacuum the SWECO cab after each work shift.

The mean 8-hr TWA for sign installers was 0.022 f/cc. The highest exposures for sign installer were on the high traffic day of sampling. The most frequent task for sign installers is manually driving in the flexible reflector posts on the road side. They are in close proximity to the roadbed where exposures may be more likely due to the high traffic volume rather than the dust generated by installing the signs. Replacing the deteriorating fiberglass posts may result in glass fibers being counted on the PCM analysis. This task should be restricted to days with low traffic volume.

A separate short term exposure sample taken during decontamination of the vehicle showed a concentration less than the detection limit. A microvac sample of the motorcycle following decontamination showed 7% chrysotile in the remaining debris after cleaning. This shows that decontamination procedures do not remove all of the asbestos material. This is not surprising, but can be an educational tool for employees that decon is effective, but asbestos can still be present following cleaning. This indicates the need to thoroughly decontaminate equipment.

The decontamination station is currently located 15-20 minutes away from the contaminated area. The clean and dirty areas are not currently separated and employees exit the shower area back into the "dirty" or pre-decon area. The office space is also

accessed by employees returning from the red zone prior to decon. Ideally, the areas should be located adjacent to the contaminated zone and the traffic flow should require crossing the decon pad to enter the "clean area". Employees should also enter the shower facility on the pre-decon side and remove coveralls and shower then enter the "clean side of the locker room and exit into the clean area. Some form of barricade or fence should separate the clean area from the dirty area. The office area with the sampling equipment should be only accessible on the clean side.

It was difficult to characterize soil moisture conditions. The use of the soil moisture meter was ineffective in characterizing the soil moisture conditions. The variability of the readings depending on location and the lack of precision of the meter made it an ineffective tool for the purposes of this assessment. Soil moisture varied greatly on north versus south facing slopes and trails. We depended on qualitative judgment of soil and environmental conditions. Using the mean concentration for the time sampled during the particular sampling trips showed a general relationship with the qualitative environmental conditions. This suggests that employees may be able to qualitatively judge and avoid extreme conditions. From discussions with employees however, dry and extreme conditions may occur at any time of the year. It should be noted that seasonal differences in asbestos concentration were not statistically significant for the PTI study. EPA also suggested no relation between season and exposure concentration, however most of their sampling was conducted in dry conditions.

Environmental Conditions

Qualitative Assessment of Environmental Conditions at Clear Creek	**Date**	**Number of Samples (all activities)**	**Mean PCM Concentration for Time Sampled (f/cc)**
Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	Jan/Feb 2007	14	0.013
Dry/dusty; low wind; high traffic	March 2007	29	0.023
Extremely dry; low soil moisture; low to moderate wind; low traffic rH 8.1%; 90 F;	May 2007	11	0.049
Moderate soil moisture; moderate	Feb 2008	13	0.012

wind; low traffic, rH 25%; 70-75 F;			

Not including 30 minute excursion samples
Detection limit was used in the mean for samples that were BDL

Four of the 89 samples were subsequently analyzed by TEM to determine the percent asbestos fibers on the filter. The percentages varied from 86% (motorcycle patrol); 90% (ATV patrol); 86.6% (SWECO); 28.6% (SWECO). These percentages could be applied to the PCM count. The last round of sampling was analyzed by the TEM NIOSH 7402 method and the ISO 10312 method and reported Phase Contrast Microscopy Equivalent PCME fiber counts. Although these methods are counting fibers greater than 5 microns with 3:1 aspect ratio and a diameter greater than .25 microns, they use differing counting rules for bundles and clusters of fibers. The table below shows the variability in the results from the differing methods. The ISO method uses different rules for counting bundles and clusters. It also is looking at a much smaller area of the filter. This may account for the differences from the PCM results. The NIOSH 7402 method mimics the PCM counting rules but is able to differentiate asbestos from non-asbestos fibers. The NIOSH 7402 PCME results are more likely to be similar to the PCM counts.

Along with the PCME fiber counts, the ISO 10312 method also reports total asbestos structures detected. The results show only 2.8% of the total structures detected met the PCME definition. Most structures detected were associated with complex structures, were shorter than 5 microns, or had aspect ratios of less than 3:1.

PCM NIOSH 7400A / NIOSH 7402 / IOS 10312 Comparison

Sample Activity	PCM 7400	NIOSH 7402 PCME	IOS 10312 PCME
Backhoe/fencing	0.007	0.0142	0.0644
ATV monitoring	0.019	0.0229	0.077
Restroom Cleaning	0.016	0.0517	0.0517
SWECO	0.011	0.0124	0.0068
Truck in Red Zone	0.011	0.0167	0.0402
Truck to Hollister	BDL	BDL	BDL
Truck to Residence	BDL	BDL	BDL
Fence work	BDL	0.0064	BDL

Campground Area Sample	BDL	0.0067	0.0088
Campground Area Sample	BDL	BDL	BDL

Sampling procedure review

During the first site visit, the calibration and sampling procedures were reviewed the BLM personnel responsible for coordinating the sampling. Emphasis was placed on the use of open-faced cassettes and on keeping the calibrator current on factory calibration check. Exposures should be evaluated based on the running mean of the particular employee/task and less emphasis placed on the upper confidence limit as a decision making endpoint. Employee personal exposure monitoring should continue using PCM as the analytical method since occupational exposure limits and health outcome data including the EPA unit risk factor are based on this method of analysis.

Although not strictly required by the OSHA standard at these exposure levels, the employees should continue in the medical surveillance and respiratory protection programs. Unanticipated job tasks with potential for high exposure may arise which would be prudent for employees to wear respirators to reduce exposures.

KNOXVILLE RESULTS AND DISCUSSION

Operations at the Knoxville site are very limited with maintenance activities occurring 5 to 10 days per year. Law enforcement patrols occur more frequently, however employee exposures never exceeded a quarter of the PEL. Highest exposures resulted in dry sweeping cement pads in campgrounds and sweeping restrooms and during transit to and from worksite. Recommendations include HEPA vacuuming cabs of heavy equipment and of vehicles. Dry sweeping of campground pads and of restroom floors should be eliminated and replaced with hosing off with water. The exposures measured on the open cab SWECO were unexpectedly low. This was a very dusty operation and on both samples the asbestos exposures were low. Higher than expected levels were found in the vehicles used for transport to and from the site and in most cases these levels exceeded what was measured during the work at the Knoxville site. Because of the lower exposure concentration and the lower frequency of the on-site work, the risk calculations for employees do not indicate risk levels greater than the 1 in 10000 at the

Knoxville site based on the PCM data collected. If frequency of on-site work increases in the Knoxville site, the occupational risk should be recalculated. Exposure to the public was not evaluated in this report, but since on-site work exposures were considerably lower than that at Clear Creek, public exposure is expected to also be lower.

With the smaller number of samples taken and the low exposure levels during the on-site work time, we saw no apparent correlation with airborne concentration and qualitative environmental conditions for the Knoxville site.

Recommendations for Knoxville:

- Eliminate dry sweeping of camping pads and restrooms.
- Routinely HEPA vacuum vehicles used to transport employees to and from the worksite.
- Routinely HEPA vacuum heavy equipment cabs.

Knoxville Results:

Task	Date	Conditions	Sampling Time (minutes)	TWA for Time Sampled (f/cc)	8-hr TWA (f/cc)
LE Patrol Truck (window open)	5/24	Low soil moisture; Very dry/dusty; low to moderate wind; low traffic	245	BDL	BDL
Grader operator (HEPA cab)	5/24	Very dry/dusty; low to moderate wind; low traffic	338	0.013	0.009
Loader/backhoe (HEPA cab but rear window open)	5/24	Very dry/dusty; low to moderate wind; low traffic	305	0.015	0.010
SWECO (open cab)	5/24	Very dry/dusty; low to moderate wind; low traffic	343	BDL	BDL
Campground / Restroom Cleaning (dry sweeping pads)	1/30	Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	275	0.041	0.024
Campground / Restroom Cleaning	1/31	Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	262	0.014	0.017
Transit in Ford F250			227	0.021	
Loader/backhoe (HEPA cab but rear window open)	1/30	Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	276	0.021	0.012

Grader operator (HEPA cab)	1/30	Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	274	0.035	0.020
LE Patrol Truck (window down)	1/31	Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	273	0.007	0.004
Transit to/from site Dodge PU			213	BDL	
SWECO (open cab)	1/31	Moderate soil moisture; 50 -60% RH; 45-55° F; moderate wind; low traffic	340	BDL	0.012
Transit Dodge PU			202	0.030	

Exposures at the Knoxville site were generally lower than those at Clear Creek and employees spend much less time on-site than in the Clear Creek Area. Public usage also differs. Employee risk levels at Knoxville calculated from the personal monitoring data are an order of magnitude below the risk levels calculated at the Clear Creek site.

DATA INTERPRETATION

Standard work practices were employed during the sampling period to estimate exposure levels during normal operating conditions. No unusual techniques were used to create unrealistic exposure situations, nor did work practices minimize actual routine exposures during the sampling period.

BLM employee exposures are regulated under the Occupational Safety and Health Administration which established a Permissible Exposure Limit of 0.1 fiber per cubic centimeter using the PCM method of analysis. Historically this PEL has been lowered several times and current literature suggests that this level may not provide adequate protection to employees. With all of the scientific debate on the mechanism of toxicity, definition of asbestos, and definition of the physical characteristics of a fiber, and differing toxicities of the various types of asbestos, the occupational health community still relies on the established exposure limits. The OSHA regulations in 29 CFR 1910.1001 and 29 CFR 1926.58 specify a permissible exposure limit of 0.1 fibers per cubic centimeter of air for an 8-hour time-weighted average exposure. This standard pertains to fibers with a length-to-width ratio of 3 to 1 and a fiber length of greater than 5 μm. An excursion limit of 1.0 fiber per cubic centimeter has also been established by OSHA which limits the exposure during any 30 minute period of the work shift.

Proposed Risk Assessment Tool

Exposures at or below the PEL does not imply employees are protected from adverse health effects. Since most risk assumptions follow a linear model, some level of risk still exists at and below the PEL. Tracking the risk level of employees can be a useful tool in managing exposures.

Below is the description of a proposed management tool for BLM to calculate risk levels for employees and determine the number of days an employee may work in the red zone without exceeding the 1 in 10,000 cancer risk level. It utilizes the risk calculation from EPA to be applied to employee exposures. The Unit Risk Factor is based on health outcome studies using PCM exposure data and is relevant to the PCM analytical method used in this survey.

The OSHA PEL is still used for a level not to be exceeded, however the risk calculation can be used to determine the number of days per year an employee can perform a specific job without exceeding a cancer risk of 1:10000. The proposal would use a running arithmetic mean of the exposure data collected for the individual employees. Taking the arithmetic mean of sample measurements is mathematically equivalent to compositing all samples and measuring the concentration of the mixture even though measurements are log-normally distributed. When the number of workdays corresponding to the 1:10000 risk level is exceeded, exposure can be controlled by use of personal protective equipment, or administrative controls to limit time on site. This can serve as a tool for management to control employee exposures using both the OSHA PEL and a cancer risk model.

Excess Lifetime Cancer Risk = EC x URF

Where:

EC = Chronic Exposure Concentration (f/cc averaged over a 70 yr lifetime)
URF = Unit risk factor for inhalation of asbestos $(0.23\ (f/cc)^{-1}$

$$EC = \frac{C_a \times ET \times EF \times ED}{AT}$$

Where:

EC = Chronic Exposure Concentration (f/cc averaged over a 70 yr lifetime)
C_a = Asbestos Concentration in fibers per cubic centimeter (f/cc)
ET = Exposure Time in hours/day
EF = Exposure Frequency in days/year
ED = Exposure Duration in years
AT = Averaging Time of 24 hours/day x 365 days/year x 70 years.

The following equation is used to determine the maximum number of workdays (EF) at the average exposure level for that job (C_a) maintaining less than a 1:10000 cancer risk. It is merely solving the above equations for EF using the acceptable excess lifetime cancer risk of 1:10000.

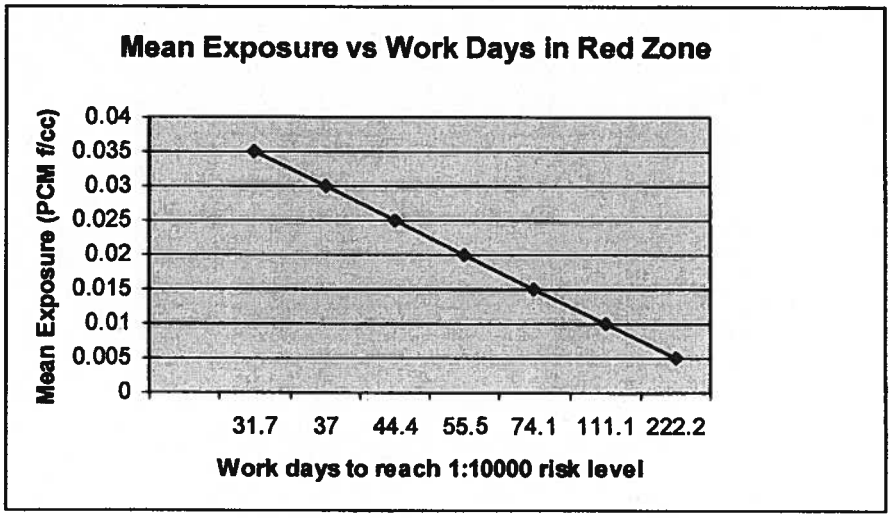
$$EF = \frac{AT \times EC}{(C_a \times ET \times ED)} = \frac{AT \times ELCR}{(C_a \times ET \times ED \times URF)}$$

Where:

ELCR = Excess Lifetime Cancer Risk (selected to be 1/10000)

Proposed employee risk Calculation: Acceptable occupational risk levels generally are greater than those defined by EPA for public risk. For workplace carcinogens, OSHA has not regulated below 1×10^{-3}, largely because of technical feasibility. The Supreme Court action was instrumental in defining acceptable occupational risk for OSHA. The court suggested that significant occupational risk be determined by comparing the risk in question with other common occupational risks. The court suggested that an occupational lifetime cancer risk of 1×10^{-3} is significant when compared to other occupational risks. For the OSHA benzene standard, the maximum estimates of individual risk for benzene are considered tolerable at the 1×10^{-3} risk level. On the whole, occupational cancer risk boundaries are understood to be somewhere below 1×10^{-3}. (Appendix B "Review of Acceptable Cancer Risk Levels, Assessing and Managing Chemical Hazards to Deployed Personnel, US Army 2004). In order to consistently apply risk factors for Clear Creek Management Area, 1 excess cancer in 10000 workers (1:10000) is proposed as an "acceptable risk level" in calculating allowable workdays on site.

For example, an employee with an average measured exposure using PCM of 0.015 fibers/cc an 8-hr time-weighted average will be able to work at the site for 74 days during the year and remain below the cancer risk level of 1:10000. When this risk level is exceeded, protective measures such as use of respirators or use of administrative controls (limiting work to days with optimal environmental conditions) could be implemented to ensure employees are protected and the work is performed.



Exposure Control Methods

General Principles of Industrial Hygiene control exposures through a hierarchy of methods. Engineering, work practice, and administrative controls are the primary means of reducing employee exposure to occupational hazards.

Engineering controls minimize employee exposure by either reducing or removing the hazard at the source or isolating the worker from the hazard. Engineering controls include enclosing work processes or confining work operations, and the installation of general and local ventilation systems. This has been accomplished through the use of enclosed cabs, HEPA filtered air in cabs, using back-hoe auger in place of hand digging when possible.

Work practice controls alter the manner in which a task is performed. Some fundamental and easily implemented work practice controls include (1) eliminating dry sweeping, using wet methods where possible, positioning the employee away from the

visible dust where possible, and implementing thorough housekeeping and decontamination procedures.

Administrative controls include controlling employees' exposure by scheduling tasks, in ways that minimize exposure levels. Limit exposure by not working in the contaminated area during extremely dry conditions, and by performing work such as sign installation during very low traffic times.

When engineering controls, work practices, or administrative controls fail to reduce exposures to levels below the acceptable levels, or where they are not feasible to implement, appropriate personal protective equipment such as respirators must be used. Respiratory protection is viewed as the last resort in the hierarchy of control measures.

RECOMMENDATIONS:

Clear Creek

- Employee exposures can be controlled through administrative controls such as limiting work in contaminated area during extremely dry condition. For tasks that cannot be avoided or rescheduled, employees should wear respiratory protection. Use respiratory protection during potentially high exposure tasks such as performing mechanical repairs on SWECO or heavy equipment where heavy dust accumulation.
- Continue with employee exposure monitoring using PCM analytical methods.
- Continue with medical surveillance.
- Continue with respiratory protection program and ensure proper use of PPE whenever exposure conditions warrant.
- Restructure the decontamination facility and ensure thorough decon procedures are followed.
- HEPA vacuum the SWECO cab after each work shift.
- Evaluate the risk calculator for employee exposures. Use mean of exposure measurements for each employee as input into risk calculator to monitor employee risk level and allowable red zone work days.

Knoxville

- Eliminate dry sweeping of camping pads and restrooms.

- Routinely HEPA vacuum vehicles used to transport employees to and from the worksite.
- Routinely HEPA vacuum heavy equipment cabs.
- Repeat employee exposure monitoring if work frequency or conditions change.