



**Responses by the International Environmental  
Research Foundation to**

**Comments by**

**United States Environmental Protection Agencies,  
Region 9, Letter May 12, 2011 to**

**Hollister Field Office of  
United States Bureau of Land Management**

**on**

Preliminary Analysis of the Asbestos Exposures  
Associated with Motorcycle Riding and Hiking in  
The Clear Creek Management Area (CCMA)  
San Benito County, California

*May 23, 2011*



## General Response to EPA Region 9's Comments

The IERF team had all read the Cooper *et al.* 1979 study before they came to Clear Creek Management Area (CCMA) in April 22-23, 2010. At no point has IERF maintained that anyone can use the CCMA site without restrictions as Cooper's 1979 study clearly shows. Motorcycle riding in dry condition at CCMA raises dust in excess of the asbestos permissible exposure limit (PEL).

We do not need the EPA Region 9 study to tell us or US. Bureau of Land Management (BLM) this.

The IERF study addressed limited questions of which the most important is: "*Are there conditions under which it is safe to ride a motorcycle at CCMA?*" We maintain that the answer is unequivocal. *YES*, we found conditions under which it is safe. Based on EPA (1986) *Airborne Asbestos Health Assessment Update* calculated risks for mesothelioma and lung cancer were less than one-in-a-million, *de minimus* or virtually safe level by the EPA's own guidelines.

Can CCMA be managed so that these or similar conditions can be met?

We did not address this directly but we believe that with the limited amount we do know the answer is *YES*. Can BLM manage it safely? Again, we do not know, but in our limited observation of the operations at the Hollister Hills State Vehicular Recreation Area, near Hollister, California, managed by the Off-Highway Motor Vehicle Recreation Division of California State Parks we feel that the State of California is capable of doing so.

Before we began the IERF study, we were also very puzzled by the large amphibole asbestos (including tremolite asbestos) exposures reported in the EPA Region 9 study. We noted at the start that if these are correct it is a matter of great scientific interest, and evidence of amphibole asbestos should be provided—evidence such as fiber bundles, energy dispersive spectra and selected area electron diffraction patterns.

We explained this to the regional representative of BLM, Mr. Rick Cooper, when he met with us during our fieldwork in April 2010. We were intrigued as well to find tremolite in our study, but it was not asbestiform—we did not observe fiber bundling or other traits consistent with amphibole asbestos. Nonetheless, we counted these fragments as if they were asbestos fibers so that our analysis would remain most protective.

Detailed examination shows the airborne tremolite asbestos at CCMA (and IERF found the highest concentration ever reported at CCMA) are *not* asbestos or asbestiform fibers, but acicular or needle-like. It seems likely, to us, that the tremolite found by EPA Region 9 is not asbestos. If not, they do not have the carcinogenic potency of the asbestos minerals (Gamble and Gibbs, 2008).

We understand that the EPA Region 9 air samples exist, and we have suggested on numerous occasions that they be made available so that scientists can study this matter. Any restriction on such access only suggests that the EPA Region 9 study is not a scientific one.

It is important that the EPA *Airborne Asbestos Health Assessment Update* of 1986 applies to asbestos as discussed few years later by OSHA (see Wilson *et al.* 2008 for a discussion).

### Specific Response to EPA Region 9's Comments

1. The study was designed to compare airborne asbestos exposures with those reported in earlier CCMA studies, specifically Cooper *et al.* 1979, and U.S. EPA 2008. IERF sampling was conducted April 22 and 23, 2010.

*Response: That was NOT the design. The study was undertaken to determine if there are conditions where the asbestos exposure from motorcycle riding in CCMA is not a serious problem.*

2. We were not able to do any in depth analysis of the IERF results because the report does not include the information necessary.

- a. Report never state the method used to analyze the samples.

*Response: The fibers on the filters were examined by analytical transmission electron microscopy using the ISO Method for asbestos in ambient air (see ISO10312:1995 International Standard, Ambient air- Determination of Asbestos fibres – Direct-transfer transmission electron microscopy method).*

*The counting criteria from the NIOSH-7400 method was used – objects  $\geq 5 \mu\text{m}$  in length were measured. The flow rate was the 2 liters per minute commonly used for personal asbestos air samples.*

*To maximize the asbestos exposures IERF counted all the fibers  $\geq 5 \mu\text{m}$  visible by ATEM at 20,000x magnification regardless of width. All the asbestos fibers of any type present are visible using these conditions. Our counting rules included counting the non-asbestos acicular tremolite fragments as if they were asbestos. We biased the counting rules to give the highest airborne asbestos concentration possible.*

- b. Missing information that would typically be presented in such a report – volume of air, flow rate, quality control, total time and number of grids counted.

*Response: Drs. Arthur M. Langer and Robert P. Nolan analyzed all of the air samples themselves. Quality control data include a large collection of tremolite samples with varying morphology collected from human exposures leading to mesothelioma and experimental animal studies where tremolite has and has not caused increased risk of cancer. A transmission electron photomicrograph of virtually all of the  $\geq 5 \mu\text{m}$  is*

*given in the report. EPA Region 9 provided none in its 2008 CCMA report.*

*We have catalogued reference energy dispersive spectra and selected area electron diffraction patterns representing all the regulated asbestos minerals.*

*The two air samples labeled as Control-1 and Control-2 in Table 5 of the IERF report are field blanks. These two sample collection cassettes are from the same group of air samples used to collect the personal and area samples. The controls were taken into the field and opened and closed. The controls were analyzed in an identical manner as the air samples to establish if there is asbestos on the filters prior to collecting the air samples. These are the standard type of controls used in asbestos air sampling and no asbestos contamination was found.*

*The personal pumps were calibrated in California the evening prior to use and the calibration was checked on each sample day. These were carried out by Mr. John Kelse with decades of experience characterizing dusty environments.*

- c. There is also little information on the meteorological conditions.

*Response: Our sampling dates were selected independent of any knowledge of pending or preceding weather conditions. The 2008 EPA Region 9 report on CCMA claims that airborne asbestos concentrations at CCMA are not reduced to acceptable levels under any weather condition other than “actively raining.” According to the EPA Region 9, if it was not raining, it did not matter. Our study proves otherwise.*

*In future studies we will gather more “information on meteorological conditions” as we have established their importance.*

- d. “These are all critical parameters that are easily supplied, but conspicuous in their absence in the study.”

*Response: Many of the “critical parameters that are easily supplied, but conspicuous in their absence” in the IERF study are also absent from Cooper et al. (1979)’s Science paper and EPA Region 9’s CCMA report. Several of the “critical parameters” are given in 2, a,b,c above.*

3. If the IERF results are taken at face value and compared with those EPA found under similar meteorological condition and with similar riding conditions.

*Response: The airborne asbestos concentration reported by IERF describe the ambient asbestos exposures, those of the riders and others on April 22-23, 2010.*

*Data shown in Figure A of the 2008 CCMA letter by EPA Region 9 show asbestos exposures similar to those observed by IERF under three different meteorological conditions.*

- a. Our independent evaluation of weather conditions indicate IERF samples were similar to EPA wet season sampling.

*Response: We did not notice anyone from EPA Region 9 doing an “Independent evaluation of the weather conditions” on April 22-23, 2010 in CCMA. The IERF study team was at CCMA, outside, on those two days, and did not get “wet.”*

*Based on our experience, the soil conditions on the days of our fieldwork would be described as “moist.” Our two riders, who have ridden many times at CCMA prior to its closure by BLM, considered the riding conditions almost perfect. The atmospheric conditions ranged from partly sunny to clear. Overall, these weather and riding conditions gave us the opportunity to test the EPA Region 9 hypothesis that regardless of weather (except when “actively raining”) asbestos exposures are “of concern.” Our data do not support EPA Region 9’s conclusion.*

*The available evidence does not support EPA Region 9’s claim that the IERF sampling condition were “wet.”*

- b. IERF biased the sample collection by keeping a distance of 15 to 20 feet between riders and directing trailing riders to minimize exposure to the lead rider.

*Response: The IERF study was designed not as a worst case scenario but to research the possible usefulness of safe riding practices. The distance between the riders varied as they started out together and established a distance. Earlier studies, particularly Cooper et al. 1979, have shown under dry conditions motorcycle riding at CCMA caused airborne asbestos level exceeding the current permissible exposure limit for asbestos.*

*Photographs from the EPA Region 9 (2008) study show the trailing riders following closely behind the lead rider, almost intentionally staying within the lead rider’s dust cloud.*

*Questioning motorcycle riders with a long history of riding at CCMA revealed that it is not a common practice for individuals to ride in a lead rider's dust cloud.*

*It is common practice for riders to avoid dusty environments, and, prior to its closure by BLM, to not ride at CCMA when it was dry, hot, and dusty.*

- c. For wet conditions the EPA and IERF show a similar concentration.

*Response: Our riding conditions were moist not "wet." The Figure A provide by EPA Region 9 in its comment letter is a scatter gram of asbestos exposure, not numerical values. One needs the numerical values for the EPA "wet" condition and the other data to determine if these are statistically different from the IERF values.*

*In Figure A, provided in EPA Region 9's comment letter, it shows there are at least six different symbols including "dry trailing," "dry lead," "wet lead," "wet trailing," and "moist lead" that are similar to the IERF airborne asbestos concentrations.*

*The data in Figure A do not support a claim that the moist conditions observed by IERF were "wet."*

- d. The ambient air results found by IERF are also in the same range as previously reported for CCMA in this season, and are lower than the activity samples.

*Response: EPA Data is not shown. Does EPA Region 9 have a seasonal asbestos background dataset for CCMA? If so, please provide it, as it would be useful for additional risk analysis.*

4. "The risk assessment used in the report do not reflect typical CCMA use patterns and result in deceptively low risk estimates."

*Response: CCMA use patterns can be changed. It is not necessary or desirable to have trailing riders in clouds of dust when the cloud is easily avoided. The simple safe riding instructions were given to the riders and easily followed.*

*We have indeed observed motorcycle riders in other OHV parks where this seems to be the case.*

- a. The IERF report bases its assessment of risk on the exposure that a 30 year old rider would from riding at CCMA for five days in one year under wet conditions and without coming within 20 feet of another rider or encountering any sort of dust.

*Response: The EPA Airborne Asbestos Health Assessment Update (1986) requires an “age at first exposure” to be selected (see Appendix 4 of the IERF, 2011 report). Therefore an age was assumed and was stated as such. Risk of asbestos-related cancer will vary with age at first exposure, and the size of this risk is discussed in the IERF Report. The IERF riders did encounter dust as their asbestos exposures were about 10-fold above the background asbestos levels.*

*The IRIS method used by EPA Region 9 does not include any of this information – age at first exposure, specific for male or female, smokers and non-smokers or type of asbestos-related cancer. Their conclusion regarding risk is only an approximation.*

- b. The PTI Human Health Risk Assessment (1992) estimate that five visitor days per year was reasonable exposure level, but, based on a survey and BLM CCMA visitor information that indicated more frequent use, also included a high estimate of 12 off-road rides a year.

*Response: EPA Region 9 refers to “five visits per year as a “reasonable exposure level.” Exposure is generally reported as the concentration of airborne asbestos and not dependent on time. The cumulative exposure includes the airborne concentration of asbestos and the duration of time the exposure lasts.*

*PTI’s high estimate of 12 off-road rides a year, 7-hour/day or 84 hours per year. IERF estimated 40 in one year, so 84 hours/40hours is 2.1-fold greater. For the PTI exposure the increase in asbestos-related cancer would 2.1-fold higher than the IERF (2011) estimate of 0.18 per million or 0.38 per million. Both values are below EPA’s de minimus or virtually safe level.*

- c. The EPA Region 9 comments the exposures occur during wet, moist, and dry meteorological conditions and involve groups containing both lead and trailing riders and adults and children.

*Response: The preliminary study done by the IERF was never meant to sample all the conditions that occur at CCMA. It was designed to see, if on any given day, are asbestos exposures at CCMA a reason for concern. The exposures we measured were very low and the risk assessment indicates an extremely low risk of asbestos-related cancer.*

*The weakest and least credible aspect of the EPA Region 9 study at CCMA is the claim that children riding at CCMA had markedly higher asbestos exposures.*

*EPA Region 9 modeled the children's exposure simply by collecting an additional air sample, in a lower position on an adult rider.*

*There is no evidence to support a claim that this sampling approach provides any useful information on the asbestos exposure among children riding independently on their own motorcycles.*

*Our observations of child riders at the Hollister Hills State Vehicular Recreation Area, near Hollister, California, found that children ride smaller motorcycles that are much lighter than an adult's, and the dust raised will be related to the weight on the rear wheel. For some children this force will be much lower than for an adult.*

*Currently, a free ATV training certificate program for children, beginning at age six, is available OHV ([http://ohv.parks.ca.gov/?page\\_id=25676](http://ohv.parks.ca.gov/?page_id=25676)). If we assume that child riders are between the age of six and seventeen, their weights and heights will vary, as will the sizes and weights of their vehicles. Due to child growth and as their motorcycles increase in size and weight, child exposures will be defined by a range of values that are not yet known. The simple modeling done in the Region 9 EPA report is not adequate to estimate the real asbestos exposure to children.*

*Currently the question of child exposures riding at CCMA has not been adequately modeled to provide cumulative asbestos exposures for risk assessment. From our review of the 2008 Region 9 EPA report on CCMA, we would expect a range of exposure values similar to the adult riders in the IERF study, and some exposures may be very small. Young riders going slowly on small motorcycles might have exposures similar to hikers.*

- d. Preparing a risk estimate for a total lifetime exposure of five days of essentially single riding under wet conditions is misleading and does not reflect the risk experience of most CCMA users.

*Response: The IERF study did have two riders, riding within sight of each other, not "five days of essentially single riding." The riders are characterized in our study as lead and trailing riders. That the second rider was not in the lead rider's dust was the desired outcome of the safe riding practice we requested of our riders. The IERF study is the first to show that trailing riders need not have higher asbestos exposures than the leader.*



*Again the EPA Region 9 opines the conditions were wet while we observed and reported the conditions as moist. No IERF team member got wet on April 22-23, 2010 at CCMA.*

*The days per year and the number of rides each year are variables. Current policy at CCMA includes a bans riding 5-day over a lifetime.*

- e. The IERF report discounts the exposure to children.

*Response: The IERF report is salient on asbestos exposures to children at CCMA. We find the EPA Region 9 modeling of children's exposure might justify not allowing children to ride as passengers on adult, full-size motorcycles, but it does not evaluate risk of asbestos exposures to children riding on their own motorcycles.*

5. The risk comparisons used by IERF in the study are incorrect and inappropriate to a risk assessment of recreational exposure to the general public.

*Response: The risk comparisons were published by Harvard University Press in 2001 and have been widely quoted since. The EPA Region 9 is the first to flatly state they are all "incorrect" without troubling themselves to explain why. We reject this position.*

*There are 13 activities that show one in a million risk of death. Twelve other activities are recreational. The comparison with recreational activities is important information the general public should have when they consider the advice EPA Region 9 is giving them. The general public commonly engages in recreational activities far more dangerous—for example swimming—than the asbestos-related cancer risk from the motorcycle riding at CCMA, as documented in the IERF study.*

*It is not "incorrect" or "inappropriate" to present risk comparison, particularly to the general public considering recreational activities in the CCMA. It is disingenuous for EPA Region 9 to make such a demonstrably false claim.*

6. They also mislead a reader into believing that the exposures at CCMA do not present a significant risk.

*Response: We are not misleading anyone. We carefully measured the asbestos exposure from motorcycle riding at CCMA, biased the fiber counts to include all the fibers  $\geq 5\mu\text{m}$  in length (including acicular tremolite fragments we know are not asbestos), and used the EPA's (1986) Airborne Asbestos Health Assessment Update. Our assumptions for the exposure scenario are all clearly stated.*

*The results indicate an increase risk of death from asbestos-related cancer of 0.18 in million lifetimes. EPA Region 9 opines they observed similar asbestos exposure (see EPA Region 9 Figure A).*

*The reader is left to decide what these exposures mean, the exposure levels are given and the risks are calculated. The reader is left to make up his/her mind.*

7. The OSHA standard is not a public health standard. It is designed to provide as much protection as is reasonably possible to healthy adults in a working environment with asbestos concentration air testing while receiving regular medical monitor for their asbestos exposures.

*Response: We agree it is not a public health standard. The OSHA standard is an occupational health standard but it is the strictest asbestos exposure standard in the world. Some will recreate in CCMA, but for others, such as a park ranger, the CCMA will be in their workplace.*

*These rangers with a long history of asbestos exposure at CCMA have never been medically monitored for this exposure. EPA Region 9 has a years-long history of studying asbestos exposure at CCMA. Yet we saw noting in the record to suggest EPA Region 9 thought the BLM park rangers should be receiving medical monitoring. At the April 5<sup>th</sup> OHV Commission meeting in Hollister, April 5<sup>th</sup>, 2011, BLM stated there was no medical monitoring for the CCMA park rangers.*

*In our study, we wanted the reader to know that the asbestos exposures we measured were below the OSHA PEL. It worth noting as well that EPA Region 9 felt it necessary to reference the OSHA PEL on the two figures it submitted with its comments on our study.*

8. EPA Region 9 has no comment the Russian Federation standard for asbestos in the ambient air or the World Health Organization's background concentration, but relies exclusively on IRIS and OEHHA.

*Response: We are interested in the background levels of asbestos reported by the World Health Organization particularly as the motorcycle riding exposure IERF measured at CCMA are so similar to background. It is generally accepted that background concentration of asbestos in the ambient air, particularly for chrysotile, do not cause increases in asbestos- related cancer.*

*Generally, more information is useful in developing public policies with a credible scientific basis. One way to establish this is by showing that*

*others addressing similar issues came to similar conclusions. That is why we referenced the Russian Federation standard.*

*In Russia, asbestos production started in Asbest City in 1886 (Shcherbakov et al. 2001). The Russian Federation is the largest producer of asbestos (about 50% of the worldwide asbestos production), and it is the largest consumer of the material. The maximum production in 1975-76 was 1.55 million tons.*

*And yet, proportionately, pleural mesothelioma is more common in the general population of the United States than in the total population of 114,000 in Asbest City, Urals Region of the Russian Federation. There is evidence that Russian Federation exposure limit is controlling the asbestos-related cancers.*

## **References**

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