Asbestos exposure found in El Dorado pets

The discovery of high levels in the lungs may heighten health concerns in the area.

By Chris Bowman -- Bee Staff Writer - *(Published August 29, 2004)*

Scientists have reported "greatly elevated" levels of a highly toxic kind of asbestos in the lungs of a small sampling of pets from western El Dorado County, where fast-paced development has unearthed the naturally occurring minerals and liberated its hazardous fibers.

Though the sample size is small - lung tissues from four deceased dogs and cats - federal environmental officials said the results are provocative and bolster their plan to investigate whether area residents, particularly children, are exposed.

"It does suggest that the potential exists out there for human exposure from dust-generating activities," said Gerald Hiatt, one of several U.S. Environmental Protection Agency scientists assessing the potential danger in the Sierra foothill communities east of Sacramento.

"That is exactly what we are trying to address," added Daniel Meer, supervisor of the agency's assessment effort.

The scientists had planned to disclose their findings later this year in a peer-reviewed scientific journal. They posted a preliminary summary of their work on Aug. 18, however, to coincide with the EPA's first public forums on the science underpinning its foothills asbestos investigations.

"We decided it was more important to present this at this meeting because people are deciding what to do about (the asbestos hazard)," said Dr. Jerrold Abraham of the State University of New York in Syracuse.

"We felt this was real solid data that could be important for public health," he said.

The findings likely will heighten public attention to the potential hazard, stir more controversy and provoke further questions from residents wanting to know simply whether they are seriously at risk.

At the recent EPA forums, several residents pointedly asked whether they endanger their health by continuing to live in El Dorado County.

The researchers' response: The science isn't there yet to provide black and white answers. They hope to move forward in their understanding of the potential risks, first by getting a better handle on how much asbestos residents are breathing in during their everyday lives.

While pet studies don't directly correlate with those of humans, the new findings help in that there is no better way to determine what's been inhaled than through an examination of actual lung tissue.

Abraham and Dr. Bruce Case of McGill University in Montreal said they examined the animal lungs at the request of two pet owners who are advocates of stronger asbestos protections in the foothills.

The lungs loaded with the most asbestos fibers - up to 9.2 million per gram - came from a male Queensland blue heeler named Leaker.

Dr. Victor Roggli, a Duke University asbestos disease expert, said the lungs of several dogs he has examined for non-fibrous particles generally are much "dirtier" than human lungs, the result of dogs habitually sniffing the ground.

"One should therefore be careful extrapolating these findings to humans," said Roggli, who reviewed the El Dorado findings at The Bee's request.

Case agreed but said if dogs inhale more asbestos fibers that makes them all the better asbestos sentinels for humans.

"These animals are canaries in the coal mine," Case said. The canary's small body and rapid breathing made it more vulnerable to poisonous gases, providing an early warning to old-time miners.

Both international authorities on lung-fiber analysis and asbestos diseases, Case and Abraham said the electron microscopic analyses occurred under their direction at separate laboratories by technicians who did not know where the animals originated.

Funding for the lung analyses came from their personal research accounts, a lab technician and from Terry Trent, who owned Leaker.

The spearlike fibers lodged in Leaker's lungs are a particularly hazardous kind of asbestos called amphibole, specifically tremolite and actinolite.

"Results from both labs show greatly elevated lung burdens of the tremolite/actinolite type of asbestos fibers ... in the dogs," the scientists concluded in the report, which is available online at www.upstate.edu/pathenvi/studies/case6.htm .

Case acknowledged in an interview, though, that the number of asbestos studies on dog lungs are too few for direct comparison.

Leaker lived the first eight of his 13 years in Shingle Springs, mostly outdoors.

Owners Trent and Carol Adams had him euthanized in March 2003 because of convulsions caused by diabetes.

Tests commissioned by The Bee in September 1997 found high levels of tremolite and actinolite in the settled dust inside the couple's home on Wild Turkey Drive and in dust raised by traffic nearby on an unpaved section of Cothrin Ranch Road.

Case and Abraham said they were struck by an unusually high proportion of fibers longer than 10 micrometers.

Many experts believe asbestos fibers longer than 5 micrometers are particularly hazardous to inhale because they are more likely to stay trapped in the lungs. The average thickness of a human hair is 100 micrometers.

Results from the lung exams didn't surprise Trent. For years, he fought to contain the asbestos dust on his 10-acre spread of rocky chaparral.

Deeply concerned for their health, Trent said he saw no way out but to stop paying their mortgage and let the bank repossess the seven-bedroom home he built.

"I knew darn well as any biologist would that every living thing carries a bit of their environment with them, and our environment was tremolite," said Trent, 52, a construction-cost consultant schooled in

biology.

The indoor environment apparently also matters because the couple's couch cat, a male tabby named Pippen who died of old age, also inhaled and retained amphibole fibers - an estimated 86,000 to 157,000 per gram, the report said.

Yet a stray cat they adopted after moving north to Placer County, to Antelope and then Auburn, had lungs completely free of asbestos.

The cat died from diabetes-related complications, and Trent said he wanted its lungs analyzed to make sure the couple had not transported the El Dorado fibers on clothing and furniture to their new homes.

The other donor of dog lungs said he was shocked to learn that his yellow labrador-golden retriever mix, Katie, had up to 1.25 million tremolite-actinolite fibers lodged in its breathing tissues. The dog, which died of unknown causes, lived all its 14 years in the western El Dorado County communities of Cameron Park, Latrobe and El Dorado Hills, according to its owner, Chris Anaya, a firefighter.

"I know I never lived next to (asbestos veins), but how close is a safe distance? How far away do I have to be to protect my family?" Anaya said.

For all 50 or more years of study that's been done on asbestos, scientists have yet to define a "bright line" between safe and dangerous levels of exposure.

The government has long-established standards to protect children in schools built with asbestos-containing materials and workers involved with its commercial use.

But those thresholds have been based on the technical limits of fiber detection, the costs of asbestos abatement and health studies that hint at but don't reveal the lethal exposures.

The recipe for disease is complicated.

Fiber dimensions and concentrations, exposure frequencies and durations, smoking history and other conditions all factor into the equation.

And no standard or reliable risk-assessment methods have been established for the much less studied "environmental" exposures of concern in the foothills and other areas where naturally occurring asbestos has been disturbed by road building, home construction and mining.

Scientists do know for certain, however, that inhaling asbestos fibers can cause cancer and other debilitating disease resulting from hardening and thickening of lung tissues.

People in industrialized countries can't help but inhale the commercially used chrysotile fibers floating in the air from vehicles and other asbestos sources, scientists say.

Most experts agree, however, that the amphibole fibers found in the lungs of the four El Dorado pets are many times more potent than the chrysotile kind in causing mesothelioma, an almost always fatal cancer in the lining of the chest and other body cavities.

No studies of California residents have shown a direct link between disease and exposure to naturally occurring asbestos, which occurs mostly undisturbed in the Sierra and Coast ranges and the southern spur of the Cascades. But studies in some Mediterranean countries and elsewhere have shown strong correlations.

EPA officials said it's too early to find such connections in the foothills.

The latency between the first known exposure to asbestos and development of mesothelioma is about 25 to 45 years. The bulk of construction in the asbestos areas occurred only in the past 25 years,

making any link between disease and housing development virtually impossible to identify.

For now, the EPA is trying to get a better read on people's exposures to asbestos fibers.

Last week, they outlined a series of air-testing scenarios planned this fall in El Dorado Hills at Jackson and Silva Valley elementary schools and Rolling Hills Middle School, the Community Center and the New York Creek nature trail.

Government contractors wearing protective white jumpsuits, respirators and air monitors will slide, skid, run and jump as they play on school and community sports fields in El Dorado Hills.

School and county health officials oppose the tests. They say the asbestos readings will be meaningless because scientists do not know for sure what kinds and levels of exposure lead to disease.

EPA officials say the tests should give residents a better idea - but not certainty - about their exposure or risk of disease

"It's not going to be definitive. It's going to be indicative," Meer said. "And we will have to take the heat for that."

About the Writer

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