

Mercury contamination in Clear Lake a legacy of mining

CLARK MASON, *Press Democrat*, 2-5-17

CLEAR LAKE — Standing on a bluff overlooking Clear Lake, it's possible for Elem Indian Colony elder Jim Brown III to envision a time more than 10,000 years ago, when humans first arrived and settled the area.

“We are the oldest tribe classified as Pomo ever created,” the tribal historian said, explaining there were large geysers and hot springs close to the lake “where our people did our sweats. Thousands traveled to the place.”

But what was once an area of spiritual significance is today a toxic dump. For more than a century, an abandoned mine named Sulphur Bank has leached tons of mercury into Clear Lake and poisoned not only the food chain and the fish the tribe traditionally relied on, but possibly the people, too.

Fifteen years and several cleanup operations after it was made a high priority by the U.S. Environmental Protection Agency, Sulphur Bank still defies efforts to stop the contamination.

This spring, the EPA expects to complete a feasibility study describing its latest evaluation and possible cleanup method that will be available for public review and comment.

Clear Lake is a poster child for mercury contamination, but is not unique. The state has identified roughly 150 “mercury impaired” reservoirs including Lake Sonoma, Lake Mendocino, Lake Berryessa and Lake Pillsbury. Even Spring Lake in Santa Rosa is on the list for future study, due to concerns about mercury levels in fish.

Contaminated runoff from abandoned mines impacts tens of thousands of acres of public and private land, along with groundwater and hundreds of streams, rivers and lakes, according to the California Department of Conservation.

Abandoned mines release a host of toxins, including arsenic, asbestos, lead and other chemicals. But mercury is the most insidious, accumulating in fish that become hazardous to eat.

Clear Lake, a 60-square-mile body of water that flows into Cache Creek, the Sacramento Delta and eventually San Francisco Bay, has other periodic problems that include toxicity from blue-green algae blooms, clogging from hydrilla and invasive plant species.

The difference is mercury, transported via waterways, spreads beyond the lake and into the aquatic food chain.

“It's not just the population of Clearlake and 65,000 people. It's a potential contaminant to several million people,” said Lake County Supervisor Jim Steele, a freshwater ecologist and retired branch chief of the Department of Fish and Game's science division.

Once mercury gets into the water it settles to the bottom where bacteria transform it to organic, highly toxic “methylmercury” accumulating in shellfish and fish that are unsafe for humans to consume.

A tarnished legacy

Sulphur Bank Mercury Mine is part of the most visible evidence of California's mining and Gold Rush legacy, which according to a state report includes more than 47,000 abandoned mines statewide with 11 percent — about 5,170 — presenting environmental hazards.

Today, it's a Superfund site where the federal government has spent more than \$60 million on cleanup costs. The figure is expected to exceed \$100 million in total to fix the problem, but with no certain funding or end date for the project.

The Sulphur Bank mine, located on an eastern arm of Clear Lake near Clearlake Oaks, is one of three mercury mines among California's 97 Superfund sites, which also include gold, copper and other mineral extraction operations. It's one of two ongoing Superfund sites in the North Bay, a federal designation for cleaning up some of the nation's most contaminated lands.

The abandoned mine pit next to the 50-acre Indian reservation has become a huge, 90-foot-deep pond topped with an orange-green sheen, occasionally belching a sulfurous, rotten-egg odor.

It's what remains of an operation that started as a sulfur mine in the 1860s. Demand shifted in the 1870s to mercury, primarily to extract gold and silver from ore deposits throughout the West.

The Sulphur Bank mine, once one of the largest producers of mercury in California, has been inactive since 1957. But approximately 150 acres of mine tailings and waste rock remain from what was piled into the lake and close to shore. Mercury, with suspected carcinogens arsenic and antimony, seeps into the lake aided by groundwater springs.

"They can't stop it. They can slow it down," Karola Kennedy, the environmental director for the Elem Indian Colony, said of the containment effort to date.

About 17 different water companies, including Clearlake Oaks County Water District about a half-mile away, draw from Clear Lake, but drinking water supplies generally are safe.

"In lakes, mercury concentrations are not a drinking water issue, unless you are right next to a mercury mine, where you will have really high concentrations," said Patrick Morris, a senior engineer with the State Water Resources Control Board.

Major health threat

The major health threat comes from fish consumption. The risk comes when the elemental mercury is transformed into a more dangerous methylmercury via a biochemical process aided by bacteria and other microbes. The potent neurotoxin finds its way up the food chain and into fish flesh.

It not only poses a hazard to humans, but wildlife.

There have been recent studies in Lake Berryessa, for example, indicating nine out of 10 grebes, a long-necked water bird, had levels of mercury high enough to put them at risk of reproductive impairment, such as reduced hatching success.

Less than a quarter-mile from the Sulphur Bank Mine site is critical habitat for three endangered species — the peregrine falcon, southern bald eagle and yellow-billed cuckoo.

But just as close are the tribal residents in fewer than 10 homes built on the ancestral lands of the Elem Colony Pomos, known as the Sulphur Bank Indians when they were officially recognized in 1937.

Many in the tribe were fishermen in the old days. Indians also sold some of the fish to people who drove to the reservation.

“That was our livelihood. My dad set lines, set traps for subsistence,” said Brown, 63. “There was a big fishing industry in the 1950s through the early 1980s.”

By the late 1970s, the state Department of Fish and Game was testing for pesticides in Clear Lake fish and detecting alarming levels of mercury. Even though there are natural sources of mercury, the main culprit eventually was shown to be the mine, owned by the defunct Bradley Mining Co. and a family trust.

Blood tests administered by the California Department of Health Services on 44 volunteer adult tribe members in the early 1990s showed elevated levels of mercury in some individuals that were twice that of the general population.

There was enough concern that EPA contractors began hauling out thousands of cubic yards of contaminated mine waste from the Indian colony residential area, some of which had been brought in by the Bureau of Indian Affairs decades earlier for building roads and elevating ground beneath homes.

Anecdotal evidence from tribal members suggests the mercury may have taken a toll over the years, and may be to blame for miscarriages, autism and some developmental disabilities.

“We have several tribal members who died of kidney and liver failure,” said Elem Colony Chairman Augustine Garcia. “They never drank a day in their life. They consumed massive amounts of fish.”

Tribal troubles

The Elem Pomos in recent years have been beset by infighting, tribal disenrollments and violence.

The tribe has long been split along family and political lines, but tensions over control of its small casino — no longer in operation — and strife about a federal lawsuit against the mining company erupted in 1995 into a flurry of arson fires, shootings and assaults.

As a result of the conflicts, some dubbed the Elem Pomos the “Mad Hatter tribe,” referring to the mental deterioration from mercury vapor poisoning documented with hat makers who used the substance in the 19th century.

Tribal members also acknowledge instances of alcohol and methamphetamine use that caused standoffs and other problems.

Today, only eight homes remain on the reservation which once housed more than 200 people. The tribe is down to 82 members, most of whom live elsewhere.

The EPA has been studying and working at Sulphur Bank Mine since 1990. The work has included erosion control to stabilize the shoreline waste, diversion of storm water away from the mine pit, covering contaminated

sediment with clean soil and vegetation, and dumping sand and gravel on top of the lake bed to stop the mercury from entering the food chain.

The agency has embarked on yet another study to figure out the next level of remediation, with alternatives the public will be able to comment on before a final plan gets approved, probably by the end of the year, according to EPA spokeswoman Michele Huitric.

The mitigation measures for the tons and tons of mine waste is formidable.

“Two to 3 million cubic yards of waste is a real challenge to remove and place elsewhere,” EPA Site Manager Gary Riley said of an operation that would take the equivalent of at least 200,000 large dump trucks to haul away.

He indicated a more likely scenario would be to cover the piles with soil and vegetation that eliminates direct contact with humans and animals.

Lake County Supervisor Steele, who has a master’s degree in freshwater ecology, is critical of what he sees as the EPA’s slow pace and approach.

“We need to have some more science involved with this,” he said, adding that the mercury could be made inert by mixing it with other chemicals.

Tribal Chairman Garcia said the mine contamination and its potential health impact on the tribe has been discussed since he was a child in the early 1980s.

In 2012, the tribe and the EPA settled a lawsuit against the Bureau of Indian Affairs, the Bradley Mining Co. and its heirs. The BIA agreed to pay nearly \$7 million to reimburse the EPA for cleanup costs. And the tribe received 380 nearby acres from the mining company as compensation.

But Garcia maintains that land is also contaminated along with the existing reservation. As a result, the tribe has not taken title of the new land.

Garcia believes the Elem Pomos deserve a new start with a reservation established somewhere else — probably in another county — that would not infringe upon the ancestral territory of other tribes.

The “ultimate dream,” he said, is to have a casino resort or other economic development, perhaps in Solano County, something the tribe has been pursuing in connection with Las Vegas investor Gary Green.

But trying to get a new reservation established through an act of Congress, or administrative approval through the BIA, is fraught with uncertainty and potential opposition, especially if a casino is proposed.

Still, Garcia sees it as more realistic than remaining at Sulphur Bank, living next door to a mercury-contaminated Superfund site.

“Mercury is still flowing there. Reservation people are still exposed to it,” he asserted. “You could throw all the money in the world at it, and you’re still talking 100 years before the land is usable.”