

Gary Nabhan

I am a Patagonia resident and PhD. environmental scientist submitting a personal and professional comment on the Permit Renewal for Australian mining company South32 to discharge pollutants into Harshaw Creek and Alum Gulch; this permit is known as an AZ Pollutant Discharge Elimination System permit (AZPDES). In addition to AZDPDES mandates to protect the quality of Arizona water for all uses including personal consumption, the agency has a responsibility to consider SOUTH32's past record, both in the US and abroad. My attached comment that suggests that South32 leaves a trail of water problems in its wake, and fails to engineer for future climate variability, only for minimum compliance. I urge you to postpone or deny it this renewal on the basis of the following grievances.

This is my (Gary Paul Nabhan, PhD.) appended comments requesting denial on the Permit Renewal for Australian mining company South32 to discharge pollutants into Harshaw Creek and Alum Gulch; this permit is known as an AZ Pollutant Discharge Elimination System permit (AZPDES). It is critical- given Arizona's current crisis of surface water scarcity, groundwater overdraft and patches of groundwater contamination throughout Southern Arizona—that AZPDES carefully evaluate South32's track record of whether it regularly meeting and exceeding water compliance standards, not just its words in its submitted request for a renewed permit.

Lets first look at its failure to control water contamination at its operation in Colombia:

[South32 lashed by Colombian court over Cerro Matoso waste emissions \(afr.com\)](#) The Australian Financial Review:

“South32 may have to reapply for its licence to run the Cerro Matoso nickel project in Colombia and is facing a hefty compensation bill after a court ruled that waste emissions from the mine and smelter had seriously affected neighbouring communities. On March 16, Colombia's constitutional court overturned a previous decision to deny compensation for the indigenous and Afro-Colombian communities affected by the operations of Cerro Matoso, which has operated for more than 30 years and is one of the world's largest producers of ferronickel. The court found that waste from the mine, which is located in northern Colombia, had led to community members being diagnosed with problems including lung cancer and high levels of nickel in their blood and urine”.

If you believe that is merely muckraking journalism that played fast with the facts, read this full article in THE Lancet, one of the world's most reputable medical journals about the mine which South32-a BHP Billiton spinoff-continues to run, while denying it has no liability there:

[Cerro Matoso mine, chemical mixtures, and environmental justice in Colombia - The Lancet](#)
[https://doi.org/10.1016/S0140-6736\(18\)30855-9](https://doi.org/10.1016/S0140-6736(18)30855-9)

“On March 16, 2018, a milestone event in the history of environmental health in Colombia occurred; the Colombian Constitutional Court decided that the Cerro Matoso ferronickel mine in Montelibano, Córdoba, had caused irreparable damage to the environment and health of people living in the surrounding area. Cerro Matoso mine, controlled by the multinational company BHP Billiton, is one of the largest open-pit ferronickel mines in the world, and has been an important source of income for Colombia since the mining and metallurgy processes began in 1982. About 20 years ago, the health effects of the mine were observed among the indigenous Zenú, Afro-Colombian, and farming communities living near the mine, who reported an increase in neoplasms and respiratory, dermatological, ocular, and reproductive problems. However, guerrilla and paramilitary groups dominated the area for over three decades, making it difficult for scientists to study the problem and for government agencies to verify the mine's compliance with environmental and sanitary regulations.

A few scientific studies, with small samples and limited resources, have reported the presence of nickel monoxide, mercury, zinc, copper, lead, cadmium, and arsenic in environmental and human samples from the area. These findings suggest a substantial public health problem associated with exposure to chemical mixtures, including carcinogenic compounds, among vulnerable populations with poor sanitary conditions. In 2015–16, an ad hoc (unpublished) study done by the Colombian Institute of Legal Medicine and Forensic Sciences reported that the presence of nickel in urine and blood samples, high occurrences of dermatological lesions, and upper respiratory tract irritation were common among people living near to Cerro Matoso, even up to about 15 km away.

For the Colombian Constitutional Court, these findings were sufficient evidence to determine an association between Cerro Matoso mine and the increased occurrence of disease among people living in the local area. The company could argue that the studies done have methodological limitations, which are common in environmental epidemiology studies, but the reality of the situation cannot be covered up by the company demanding further expensive studies when the lives and wellbeing of people in the

community are at risk. For this reason, Colombian environmental health scientists, public health practitioners, and doctors rejoice at this decision that partly compensates for an obvious environmental injustice.”

Early in my environmental sciences, I was contracted through a limnological firm, Limnetics, Inc, to review public comments on Army Corps of Engineers permitted projects in the Great Lakes and Mississippi watershed. If I were to have reviewed anything of this severity -of a project causing birth defects and other health impacts for 15 km downstream—I would have recommended denial of further permits. I believe USACE staff would have had the integrity to do so. And yet, every time the Cerro Matoso water contamination issue comes up in conversation with Arizona’s South32 staff, we are told that the problem has been “fixed,” the earlier decision in the court was overturned on the basis of insufficient evidence, or that South32 didn’t own the mine at the time of contamination. Their utter lack of ethical expression of regard for the heartbreak and health problems of the miners and downstreamers may not be a legal problem, but it is a moral problem that is worrisome to Patagonia and Nogales residents.

If you believe grievances about the BHP Billiton or South32’s efforts to escape liability for damages to water or air are only overseas, please review the numerous articles online about Navajo protests of their unscrupulous practices within our state and country:

[Navajo Nation’s purchase of a New Mexico coalmine is a mixed bag — High Country News – Know the West \(hcn.org\):](#)

“The Office of Surface Mining Reclamation and Enforcement is also reviewing the potential environmental impacts of extending the life of the power plant to 2041 and expanding the mine, which the tribal corporation plans to do. Initial findings aren’t expected until later this year, which worries Lori Goodman of Diné CARE. BHP Billiton is “trying to jump ship” before the environmental impact statement is finished, she says. “Why don’t we wait until after the EIS is done (to buy the mine)?”

Other Navajos have protested a liability waiver that the tribal energy company signed, absolving BHP Billiton of all future responsibility for any “known or unknown” damages, liabilities, or costs associated with operating the Navajo Mine.

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On the local front in Arizona, I have documented to the Santa Cruz County and South32 staff their initial efforts to control erosion and water contamination with mud that reduces biological oxygen demand for endangered fish were inadequate on the new escape route from Harshaw Road to Highway 93 even after rains of less than an inch. Downstream from their new road construction, neighbors had sheet flow of exogenous sediments flooded onto their land and I observed increased turbidity in our Partners in Wildlife pond that is a safe harbor for two federally fish through our collaboration with US Fish and Wildlife Service and Arizona Game and Fish. Although South32 responded after our complaint by claiming they had fixed the problem, the next rain of nearly an inch led to erosion on steep slopes that undercut their erosion control structures. They have not engineered many of their erosion control/water contamination control structures to in any way be sufficient if we ever receive 8-10 inches of rain in 2 days as southern California and adjacent southwestern Arizona received with tropical storm Hilary in late summer 2023. Regardless of past permitting standards, the need for engineering for extreme weather events to prevent contamination must be given exceptional attention in this era of rapid climate range.

Finally, I want to remind all state agency staff of their moral responsibility to future generations. Giving permits for more mining water use in a watershed where historic mining activities *continue* to generate water contamination to this day is NOT adequate protection of Arizona citizen's public health. Until there is sufficient attention to our exposure to past mining toxins left between South32's proposed mining site and Patagonia Lake, where tens of thousands of low income minority citizens drink and fish each year, why is ANY other permit given for activities than could potentially damage child health in our watershed?:

[USGS Response to Possible Metals Contamination from Legacy Mines in the Patagonia Mountains Region and Adjacent Areas, Southeast Arizona and a Template for Future Mineral Environmental Emergency Response | U.S. Geological Survey](#) Dr. Floyd Gray, Scientist Emeritus, USGS

"In late September, 2014, unusually heavy monsoonal rains were followed by citizen observations of bright orange "sludge" flowing in streams in the vicinity of the Lead Queen and Trench Camp Mines in the Patagonia Mountains. Lead Queen is an abandoned mine located on U.S. Forest Service land, and Trench Camp is a mine site that was remediated in the 1970s and is currently managed by Asarco Multistate Environmental Custodial Trust. At Lead Queen, flushing of adits and shafts by rapid inflow of rainwater apparently led to the mobilization of iron- and aluminum-rich sludge, which has mostly settled in the upper canyons near the mine site. Similar flow occurred at the Trench Camp site due to the failure of a sediment dam and overflow of the wetlands area established as part of the remediation.

Critical issues include how these other contaminants have dispersed through the watershed, the extent to which they have been deposited in sediments that can be remobilized in future events, the potential for future contaminant outflows from these two sites as well as other sites in the selected southeast Arizona mountain regions, and developing a plan for future USGS response to this and similar events in other areas."

It is unacceptable for AZPDES to grant or renew of a permit that may in any way negatively affect water quality and quantity in a manner that could potentially damage human health or compromise the state's water supply during the worst Arizona water crisis in state history. If Governor Hobbs can revoke and not renew the Saudi Arabian Almorai farm water permits that affect a small portion of Arizona's water compared to what South32 will use, then it is paramount to prevent any more contamination to a key water source for Santa Cruz County's future. In a county dominated by low-income minority populations, this is an environmental justice issue key to our future.

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