

## Alan Ehrlich

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**From:** Leslie Wakelyn <wakelyn@theedge.ca>  
**Sent:** September-26-12 12:20 PM  
**To:** Alan Ehrlich  
**Subject:** EA0809-001 Giant Mine Remediation Project

Alan:

I'd like to request that this article be put on the public record for the GMRP, as the "Myth of 'Monitoring in Perpetuity' " should be considered by the Board. The author has "more than 20 years of experience with the Nuclear Regulatory Commission (NRC) and Department of Energy (DOE)".

A couple of key excerpts:

"Delusional believers of "monitoring in perpetuity" should consider another version of the second law: "Given enough time, everyone screws up. Perpetuity is more than enough time."

"Some of the world's greatest disasters have resulted from failed and inadequate monitoring systems."

Leslie

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<http://truth-out.org/opinion/item/11662-debate-on-alaska-mine-waste-storage-spreads-the-myth-of-monitoring-in-perpetuity>

Debate on Proposed Alaska Mine Waste Storage Facility Spreads the Myth of "Monitoring in Perpetuity"

Friday, 21 September 2012 10:11 By Donald G. Schweitzer  
<[http://truth-out.org/opinion/item/index.php?option=com\\_k2&view=itemlist&task=user&id=47737&Itemid=252](http://truth-out.org/opinion/item/index.php?option=com_k2&view=itemlist&task=user&id=47737&Itemid=252)>,  
Truthout | Op-Ed

The Pebble Partnership in Southwest Alaska is proposing to build the largest facility on the planet to hold toxic acid-mining wastes - forever. It is to be built on a seismically unstable site adjacent to a pristine region that contains one of the few remaining sustainable salmon sources in the world.

History is replete with incidents of accidents in mining-waste storage sites. The position taken by Pebble was recently summarized on television by their CEO John Shively: "It's our job to convince people we can monitor in perpetuity, or we won't get a permit." The claim pervades the literature and remains unchallenged.

Some of the world's greatest disasters have resulted from failed and

inadequate monitoring systems.

Those of us who pay attention know that logic, facts, scientific reasoning and reality itself are no longer acceptable to much of the population. The rational remainder, however, should recognize that a constructed facility or structure which is designed to perform a set of functions perpetually, will, in fact, neither last nor perform forever. If performance failure is admitted to result in disaster and safe performance requires monitoring in perpetuity, then a permit claim that such a requirement can be achieved is indefensible, if not criminal. Perpetual monitoring coupled with perpetual remediation response is even more ludicrous. Sanity requires that the structure is doomed to eventual failure and should never be built.

A library of information shows that the major role of monitoring in the licensing review of a facility or structure is to demonstrate that it can detect the precursors of all credible accidents in order to initiate previously reviewed and acceptable prevention strategies. Monitoring after the accident begins is used to assist remediation strategies. There is no mechanism to force consideration of post-accident monitoring requirements during licensing: they do not have to be taken into account, so they can be totally infeasible and a project can be licensed anyway. In addition, the results of similar situations' accidents' monitoring - which should suggest preventive strategies - can almost always be ignored. The only time post accident monitoring is required is for a limited group of "common cause" accidents that history shows have evolved along similar paths. Regulators recognize that most other accidents evolve along a large number of different and hard to predict paths, so the applicant is only asked to show he has designed to prevent such accidents.

My more than 20 years of experience with the Nuclear Regulatory Commission (NRC) and Department of Energy (DOE) reviews of accident analyses, evaluation of Environmental Impact Statements, and licensing of nuclear reactors and nuclear waste facilities shows that a facility that uses monitoring solely to determine the onset and extent of the accident without a remediation plan would never be granted a license.

The EPA, by authority of the Federal Clean Water Act, is facing exactly such a perpetuity scenario. The Republican Party, led by Darrell Issa (R-California), chairman of the House Oversight Committee, is supporting highly organized and vastly funded efforts to build, in Bristol Bay, Alaska, not one, but several "never-before-seen" structures that may be the largest on the planet. They are designed to hold, in perpetuity, an estimated 10 billion tons of acid-mining wastes. Issa opposes EPA review of the plan.

As a former tenured senior scientist at Brookhaven National Laboratory, I was adviser to the Atomic Energy Commission (AEC), the DOE, the NRC, the State Department, the International Atomic Energy Agency, the Air Force and the nuclear submarine program. I have been involved in the licensing of waste sites and the analyses of, and responses to, accidents that include Windscale, Three Mile Island (TMI), Chernobyl and the Hanford waste tank leakage into the Columbia River.

With the exception of Hanford - which was a classified facility and not subject to licensing regulations - the other accidents involved documented human errors, violations of existing regulations, deceptions, cover-ups and near total disregard for, and misuse of, required

monitoring procedures The still-unfolding disaster at Hanford is a micro-version of the projected disaster at Bristol Bay.

Hanford has 53 million US gallons of high-level radioactive waste stored in 177 underground tanks. About one-third of these tanks have leaked waste into the soil and groundwater. Nearby aquifers contain an estimated 270 billion US gallons of contaminated groundwater as a result of the leaks. As of 2008, 1 million US gallons of highly radioactive waste is traveling through the groundwater toward the Columbia River. Hanford PR people claim this waste is expected to reach the river in 12 to 50 years if cleanup doesn't proceed on schedule.

The leakage at Hanford, although radioactive, is chiefly caused by the acidity of the waste. The estimated acid waste inventory at Bristol Bay will be more than 20,000 times greater than the Hanford inventory.

In 2000, a leach mine in Romania, similar to the proposed Pebble Mine, leaked a deadly flow of cyanide and heavy metals that poisoned the Tisza River, killing fish, birds and wildlife all within a week. The inventory expected to be stored at Bristol Bay will be about 100,000 times greater than the inventory spilled in the Tisza.

This is an age where punditry has become a profession as well as a weapon of deception. Media commentators are encouraged and rewarded for explaining more than they understand and using repetition to develop belief in lies. Parroting the concept of "monitoring in perpetuity" is being used successfully to develop widespread acceptance of a scientifically indefensible claim in order to obtain a permit. The recent Frontline documentary <http://www.pbs.org/wgbh/pages/frontline/environment/alaska-gold/partner-in-pebble-mine-fires-back-at-epa-report/> has scientists both for and against Pebble mindlessly repeating and discussing the necessity for "eternal monitoring and responsive remediation" of a structure the likes of which does not exist.

Shively admitted on television, "It's our job to convince people we can monitor in perpetuity, or we won't get a permit."

Regulators in the state of Alaska have never refused a mining permit. The Pebble Partners expect to extract a half trillion dollars of metal value from the mine. They can afford a lot of convincing.

Consider the following:

"The Pebble Mine dams would contain 10 billion tons of toxic mining waste. These waste storage dams would need to be monitored in perpetuity (which means forever!)." ("Pebble Mine: Short-Term Gain, Long-Term Loss" <http://www.chefnews.com/pebble-mine-short-term-gain-long-term-loss.html> -July 2011)

"Some mine owners had gone bankrupt, leaving festering scars that would have to be decontaminated in perpetuity;" ("The Midas Touch" <http://www.motherjones.com/environment/2006/05/midas-touch>," Kenneth Miller, Mother Jones May/June 2006 Issue)

"the sense that I get is that designing things to last in perpetuity is gaining popularity as an idea, as it should. With Pebble Mine, we can't guarantee perpetuity." (Comment to the article "Pebble Mine

and Bristol Bay EPA Report Meet the Black Swan  
<<http://ithinkmining.com/2012/06/21/pebble-mine-bristol-bay-epa-report-meet-the-black-swan/>>"  
June 21, 2012 by Jack Caldwell)

"It will generate as much as 10 billion tons of mine waste (tailings), which will be stored at the headwaters of Bristol Bay behind large dams in perpetuity". (Factsheet  
<<http://www.ourbristolbay.com/the-risk-factsheet.html>>, Our Bristol Bay)

The above comments are from opponents to the mine. They are frightening in their tolerance and widespread acceptance and propagation of what should be obvious scientific and conceptual absurdities.

For example, from National Geographic Magazine  
<<http://ngm.nationalgeographic.com/print/2010/12/bristol-bay/dobb-text>>, which claims a worldwide circulation of over 6.5 million and a US circulation of over 5.2 million:

"from shutdown day onward - in perpetuity. No one disputes this.

Indeed, a recent addition to the requirements for permitting is that companies develop a mine-closure plan that includes perpetual monitoring and maintenance, and that they post a bond to cover some of those costs." ("Alaska's Choice: Salmon or Gold  
<<http://ngm.nationalgeographic.com/print/2010/12/bristol-bay/dobb-text>>"  
Edwin Dobb, National Geographic Magazine Dec 2010)

How do you determine the cost of a process maintained "in perpetuity"? How can anyone defend such a plan? How can anyone accept such a plan? How did a conceptual impossibility become a permit requirement? Why is the elephant in the room invisible to everyone? Why do the regulators and opponents not argue that an impossible claim by an applicant who does not deserve the time and expense of a permit hearing?

Thermodynamics is the branch of science that deals with "forever" and "perpetual." It offers first-principle arguments to prove that "a system in equilibrium, if unperturbed, will remain in the same state forever." A solution of salt in water will never separate if the water vapor pressure and temperature are not changed.

The second law of thermodynamics is famous for its many versions. The two most popular are "You can't build a perpetual motion machine," and "The entropy (disorder) of the universe increases indefinitely." My version is "Every morning when I wake, the world is more screwed up than when I went to bed the night before."

In contrast to scientists, politicians who deal with perpetuity get it wrong. Take Calvin Coolidge, for example: "The government of the United States is a device for maintaining in perpetuity the rights of the people, with the ultimate extinction of all privileged classes."

How about that.

I would have thought it the epitome of obscene chutzpah on the part of the Pebble staff to believe you can convince enough people that human monitors will hang around forever just to keep returning runaway mine tailings to their source. The great tragedy is that people actually seem to be persuaded by this dreck. Nature made a really bad mistake when it

let the monkeys come down from the trees and evolve into two-legged, greedy troublemakers.

Delusional believers of "monitoring in perpetuity" should consider another version of the second law: "Given enough time, everyone screws up. Perpetuity is more than enough time."

We are a nation no longer capable of, or inclined to, protective regulation. The "sex for oil" scandal in the Minerals Management Service (MMS) showed that regulators - qualified by greed and mediocrity - were recruited from the industries they regulated. They used bribes and sex with clients at drunken orgies as a standard for awarding permits. Their punishment was forced attendance at Ken Salazar's ethics reform lectures. In the rare cases where adequate written regulations still remain, Congress, by intentional defunding, has made them unenforceable.

The licensing process for the Pebble mine is a fiasco. The admission by the applicants of what is needed for a permit is enough to disqualify them without a hearing and without the useless and expensive review of thousands of pages of irreproducible data and calculations.

If the Pebble mine receives a permit, it will snatch the gold medal of scandals away from the investment thieves, at least until the next event. The last hope is that the Environmental Protection Agency does its job. If it doesn't, prepare for a new bumper sticker:

/Pebble's gift to posterity - the largest structure on earth - the Eighth Wonder of the World - an everlasting garbage dump./

