

## Poisoning Our Waters

If well casings leak at PGV, it would be difficult to predict where in the community the underground water aquifer would be contaminated. Fractures and passages through the lava rock formations can carry contaminated water considerable distances in diverse directions.

Already, problems at two wells have likely resulted in contamination. *"Temperature increases and chloride contamination in the underground water corresponded with known incidents at PGV."*

**-Federal Environmental Review Board**

PGV is pumping almost 3000 gallons per minute (nearly 4 million gallons per day) of toxic brine back into injection wells. This brine contains hydrogen sulfide, lead, nickel, chromium, and mercury.

Most of PGV's work is being done in a very high tectonic stress zone. If wells begin leaking (perhaps caused by earthquakes), it would only take a short time for our drinking water to be fouled.

## The PLDC Scam

The Public Land Development Corporation (PLDC) was created by the State legislature with Act 55. The PLDC is exempt from regulatory, planning, preservation, civil service, and competitive bidding requirements.

It has shut out local communities by holding public meetings about proposed local development on O'ahu and excluded City and County governments from any involvement in the evaluation, planning and regulatory processes.

Hundreds of people turned out at public meetings held in every county for input into draft Administrative Rules for the PLDC. The vast majority disapproved of both the rules and PLDC as an agency.

## 'Green Energy' Corruption?

Ormat's lobbyist Kai Anderson and Director of Policy Development Paul Thomsen are both former senate aids and donors to Senator Harry Reid. Ormat received over \$200,000,000 in DOE grants and \$350,000,000 in DOE partial loan guarantees.

With the passage of the 2012 ACT 097, the county no longer has authority over the granting of the Geothermal Resource Permit which requires emergency plan development by PGV and addresses noise levels and H2S emissions. *-Testimony to the Hawaii Environmental Council*

Also with Act 097, Geothermal subzones were eliminated so that exploratory drilling and power plants could be built almost anywhere in the state.

## What Can You Do?

- 1) *If you wish to stay informed about community action and receive the Puna Pono Alliance newsletter and Bob Petricci's updates, email: [newsletter@punapono.com](mailto:newsletter@punapono.com) with NEWSLETTER in the subject line.*
- 2) *Puna Pono Alliance needs funds to keep up the fight for Puna. Your monetary contributions are welcome and needed! Contribute by check to PO Box 492668, Kaaau, HI 96749 or by credit card or PayPal at: [punapono.com/contribute](http://punapono.com/contribute)*
- 3) *Please support us with testimony in person or by email. It is of immense value when it comes to passing legislation. If you have never given testimony but would like to, we can guide you in this process. When the people speak en masse, the politicians listen.*
- 4) *Contact your elected officials. Call, e-mail, write letters, talk story with them.*
- 5) *Help us compile health related complaints that may be from HGP-A and the PGV plant.*

**If you can help in other ways,  
please call: (808) 339-4344  
For more info: [www.punapono.com](http://www.punapono.com)**

## HELCO Has Big Plans For Puna More Toxic Geothermal Plants



### Did you know:

The first area being considered for geothermal production was inundated by new lava flows following test drilling. The lava covered 25,000 acres destroying former rainforest and burying the original proposed geothermal site.

Many Hawaiians feel that these volcanic lava flows (as well as the 'vog' that reaches to Kona and Maui) were triggered by the drilling of those geothermal wells.

The government's response was to 'trade' 27,000 acres of public rainforest trust lands to the geothermal development company in exchange for the lava covered lands. The area traded is the 'last original rainforest within the U.S.' It was to be held in public trust to protect the native Hawaiian plants and fauna as well as allow for public use.

**There is good evidence that geothermal plants: 1) can cause earthquakes, 2) release toxic chemicals into the air and groundwater, 3) cause health problems for it's workers and area residents, 4) is not green or sustainable.**

## More History of Geothermal in Hawaii

The first geothermal plant in Puna, HGP-A, drilled in 1976, was presented as an experimental, two year demonstration well.

In 1982, with no community meetings, a three-megawatt power plant went on line. HGP-A dumped toxic geothermal brine into unlined ponds that fouled the air, land and water. Federal regulatory agencies deemed their effluent abatement systems unacceptable and the plant was shut down in 1989 after eight years. - *Testimony to the Hawaii Environmental Council*

## Puna Geothermal Venture (PGV)

In 1991, PGV had a well blow out that vented more than 2,200 pounds of hydrogen sulfide over a 31 hour period, killing animals and forcing the evacuation of at least 75 Puna Residents. - *LA Times, June 15, 1991*

Regional H<sub>2</sub>S transport [the toxic hydrogen sulfide gas cloud] was documented beyond 10 miles (16 km). Under worst-case conditions, the distance would be extended several fold. A worst case impact event would have increased impacts 4 to 10 times.

- *Goddard & Goddard Engineering Environmental Studies*

PGV made out-of-court cash settlements with affected citizens on the condition they sign confidentiality agreements.

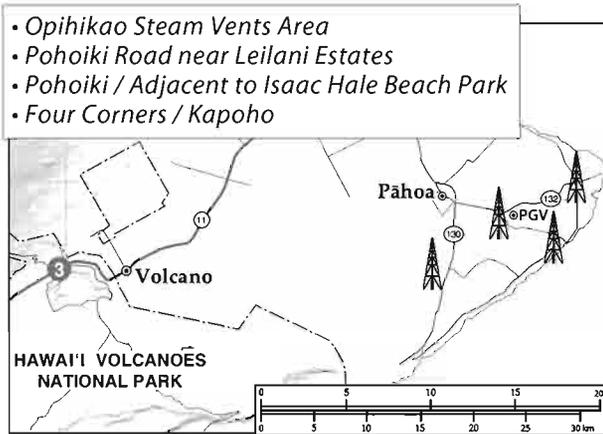
Ormat, PGV's parent company has now designed their business registration to protect their assets from financial liability in the event of another catastrophic accident.

There were 18 declared civil defense emergencies at PGV between 1991 & 1999. We believe there were many more releases of toxins but have been unable to obtain records after 1999.

The Environmental Protection Agency (EPA) issued a report on emergency procedures with recommendations that have never been implemented by the County and PGV.

## Approximately 20 more companies are looking at geothermal exploration in Hawaii County

*We know of these locations so far:*



## Toxic Processes

During drilling and production, hazardous materials like hydrogen sulfide, lead, arsenic, boron, antimony, mercury and ammonia come to the surface with the hot water.

The gas monitors on PGV's perimeter don't work since they've been set 12-15 feet above the ground and the toxic gasses they're supposed to monitor are heavier than air and hug the ground.

**PGV stores 60,000 gallons of the highly toxic chemical isopentane on site and loses an average of 40-100 gallons of it into the air every day.** - *PGV testimony, July 2, 2012 Hawaii County Council Meeting*

## Hydrogen Sulfide Is Worse Than Vog

'Vog' is mostly sulfur dioxide (SO<sub>2</sub>), but the hydrogen sulfide (H<sub>2</sub>S) released at the PGV site is much more dangerous and is more similar to cyanide gas or carbon monoxide.

**The EPA says that H<sub>2</sub>S can "reasonably be anticipated to cause serious or irreversible chronic human health effects at relatively low doses."**

## Destabilizing the Environment

There is strong evidence that geothermal wells have produced earthquakes.

In Basel, Switzerland, there were upwards of 10,000 earthquakes measuring up to 3.4 on the Richter Scale within days after a nearby geothermal plant started its water injection program. It was shut down after a study determined that the earthquakes were likely to cause millions of dollars in damage each year.

Alta Rock Energy abandoned its venture in the Geysers, Wild Horse area of California, after the area experienced quakes associated with geothermal production. Geothermal production areas in Mammoth Lakes, California have also experienced 'swarms' of quakes.

Geothermal drilling has also created a 'wild well' in the Geysers which emits about 306,000 lb./yr. of hydrogen sulfide. **Efforts to stop these emissions have proven unsuccessful.**

**"The possibility of an eruption in the geothermal area or state-wide cable path within any 50-year period is between 60% and 90%"**

- *The Hawaiian Volcano Observatory*

In 2005, drilling at the PGV well hit magma which came partway up the well shaft. "The drillers were shocked - not only to hit magma but to also hit such a big heat source at the relatively shallow depth of 2.5km. This is by far the shallowest and hottest encounter of rock in a commercial operation." - *Jonathan Amos, Science Reporter, BBC News 12/17/2008*