

Project Description
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Geothermal Public Health Assessment Study Group

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1. Why this project?

Public officials, regulators and residents must consider the potential health risks that may be associated with geothermal energy production. Historically, health complaints -- respiratory problems, sleep disturbances, nausea, dizziness and others -- have been attributed to emissions from the plant. Sorting out the facts is challenging.

Science coming from one or two data sets is rarely definitive. More often, answers emerge from a fabric of studies. In the case of geothermal health impacts, research-based and clinical information is scattered across different geothermal energy producing areas like California, Philippines, Indonesia, Mexico, New Zealand, and Iceland. Getting clarity and insight for Hawai'i is an important work in progress.

This project, initiated by the County, will bring together an independent Study Group with diverse expertise: associated scientific disciplines, medical experts and knowledgeable community representatives.

2. What will it do and what will get produced?

First, it will bring together a reasoned, sustained, and science-focused deliberation to capture in one document a listing of the public health questions pertinent to the production of geothermal energy in the Puna region.

Second, it will create a reliable inventory of existing studies that address the public health concerns surrounding geothermal plants and other H₂S emitting facilities around the world to serve as a baseline for the current state of knowledge on the topic.

Third, it will develop a set of recommendations about the priorities and preferred methodologies for future scientific and monitoring studies that may be required or that can best assist the County and the Windward Planning Commission to make informed

decisions that protect the long term health of the neighboring communities that surround geothermal energy development on Hawai‘i Island.

3. What questions will the group will take up?

Once assembled, the Study Group will formulate its own key questions and seek to gather together the best available information. These could include, among others:

- What is in the geothermal steam coming through the PGV facility, how is it similar or different from other production facilities, how safe or dangerous is it, and at what exposure levels?
- What specific health complaints have been attributed to geothermal energy production, by whom, and when?
- What is known about the toxicity, exposure levels and health impacts of chemicals other than H₂S?
- What kinds of long term records of steam and fluid releases are in place, who has them, and what do they tell us?
- What are the background ambient conditions and how distinguishable are those from somewhat higher, intermittent impacts?
- What do we know about quality of air and its monitoring in and around PGV and in other nearby areas of Puna?
- How can health problems that might be attributable to geothermal production be distinguished from those that may be attributable to ambient air and ground conditions?
- What studies have been done that establish actual or potential correlations between spikes in emissions and spikes in health complaints?
- Do wind and other climate conditions affect health complaints?
- What is the current state of knowledge about the short or long term health issues that may be associated with reinjection from the geothermal energy plant?
- What are the best methodological approaches to study the issues in a way that produces high quality information for decision-making.
- What constitutes a defensible health assessment study?
- What is the recommended priority of studies that need to be undertaken?

4. Will the project produce original research?

No. The project will be as summative as possible of current research-based knowledge.

5. Why do it then?

The County needs a robust roundup of what we know, don't know, and still need to know about health impacts that may be associated with geothermal energy production. Joint Fact-Finding ("JFF") brings experts and knowledgeable stakeholders together to focus on factual questions. JFF procedures are flexible but usually have six

characteristics. (1) They involve people who have different kinds of expertise and different views; (2) they are collaborative and require people to work together to improve on existing knowledge; (3) they are structured, meaning that meetings are well designed and highly focused; (4) they are inquiry based and require a robust exploration to understand perceived problems from all angles; (5) they are “study” processes and not forums for arguing political positions; and (6) they are integrative and multidisciplinary.

5. Who will be responsible for independently convening, facilitating and reporting on the results of the Study Group?

Peter S. Adler, Ph.D will serve as Project Director (bio attached below). He and his team will operate at arm’s length from elected officials and pro- or anti-geothermal energy advocates.

6. How will the project work?

The Project Director and his team will bring together an initial inventory of existing studies and other baseline information. Simultaneously, interviews with 15-25 people will be conducted to identify (a) potential health related issues to be flagged for study; and (b) the potential expertise needed to populate an effective Study Group. Using graduate student researchers and an assistant, a more expansive set of reference documents will be annotated and made available to Study Group members both electronically and in a binder. This will ultimately be made available to the public on the County’s website.

The Study Group itself will convene for an anticipated set of 5 meetings over a 3-5 month period with information gathering taking place between meetings. The 1st meeting will establish full understandings on scope of the project and rules of the road, engage preliminary thinking on geothermal health issues, and take a first pass at identifying, characterizing and categorizing actual or potential health questions to be studied.

While the process will remain flexible, the Study Group’s anticipated 2nd meeting will review information gathered and undertake a first pass at evaluating the strength and relevance of various issues. The 3rd meeting will undertake a rough ranking of issues in terms of their scientific and technical levels of hazard and exposure, prepare a possible sequence for future study and monitoring, identify preferred methodologies and develop a list of the types of expertise needed to conduct future studies and monitoring.

The 4th meeting will be a public presentation of the Study Group’s preliminary findings in power point form with an open invitation to provide substantive comments and ideas. Following this meeting, the group will consider the comments, additions and ideas that have been received, prepare a first draft, and submit it to three independent reviewers.

A 5th and final meeting of the Study Group will be held to conclude a final report will be submitted to the Administration, the County Council, and The Windward Planning Commission and the report posted on the County's website.

7. How can persons submit information on relevant studies or other data that the Study Group should consider?

As the project proceeds, materials will be posted at <http://www.accord3.com/pg68.cfm>. Three sub-folders have been established. "Background" contains Adler's resume, a Statement of Independence, and several science-articles. "Bibliography" will be the location where studies and research materials are posted. This section will be updated periodically. "Meeting Announcements" will carry announcements of Study Group meetings and other materials pertinent to those meetings.

The Study Group will also welcome comments which can be sent to geothermalhealth@gmail.com.

Peter S. Adler, PhD is a principal in **ACCORD3.o** which specializes in foresight, strategy, joint fact-finding and non-routine problem-solving. Adler has worked in the government, business and NGO sectors. He teaches advanced problem-solving courses in the Department of Urban and Regional Planning at the University of Hawaii, and represents the USDA's Agricultural Mediation Program in Hawaii. Prior organizational experience includes nine years as President and CEO of The Keystone Center (www.keystone.org), Executive Director of the Hawaii Justice Foundation, and founding Director of the Hawaii Supreme Court's Center for Alternative Dispute Resolution. He is the author of three books and numerous chapters and articles.