Mickelson Anastasia

From: Mickelson Anastasia
Sent: Wednesday, May 20, 2015 8:20 AM
To: Mickelson Anastasia
Subject: Linda Richards Testimony - HB 3445

From: **Linda Richards** <atomiclinda@gmail.com>
Date: Mon, May 18, 2015 at 4:57 PM
Subject: 3445
To: Rep VegaPederson <Rep.JessicaVegaPederson@state.or.us>, Beth.Patrino@state.or.us

Dear Rep Pederson and Beth Parino, I would like to testify on Tuesday at the hearing on bill 3445. I am an Instructor in the History of Science at OSU and my dissertation involves the construction of nuclear safety and radiation safety standards.

I feel it is imperative that this bill be laid to rest. The last thing we need in Oregon is a diversion from developing sound energy alternatives to more nuclear quandaries and problems.

My dissertation involved some of the history of the behavior of the nuclear industry and government regulators such as the Public Health Service, the Atomic Energy Commission and their successor agency, the Nuclear Regulatory Commission and the UN agencies as regards safety.The bill 3445 states that there is a state of emergency in Oregon, supposedly due to Oregon's energy needs, but the real emergency is that resources are continuing to go into nuclear power, forestalling efforts for safer, known and effective alternatives to be put into place.

As you are aware, the faulty Trojan Nuclear power plant was a huge investment that did not generate returns other than the skyrocketing costs of its decommissioning. Currently, the nuclear Columbia Generating Station has been ordered temporarily closed by the NRC due to improper safety and evacuation plans as well as unevaluated seismic risks. A neglected crack in the piping may also be dangerous and a request has been filed to investigate this.

Safety issues are endemic to the history of nuclear operations. In my years of studying this history in the records of health physicists, several instances stand out that I believe are pertinent.

The first academic research reactor that was ever installed in the US was built at North Carolina State University. Nicknamed the "Temple of the Atom" it suffered a melt down soon after operations began. Official documents in the archives show the man in charge, Clifford Beck, did not inform the college or his colleagues of the severity of the accident, which occurred in the radiation center built in the center of the Raleigh NC State University campus.

Clifford Beck was released from his position at the college when this came to light, but only to rise in the ranks of the AEC and then the NRC as an expert in nuclear reactor safety. The accident he presided over secretly, gave him expertise and rewards that led him to become in charge of nuclear power reactor safety codes for the NRC during an era when many nuclear power plants were built in the US and worldwide. Beck's actions are detailed in the book *Nuclear Reactor Safety: On the History of the Regulatory Process* by David O'Krent (1981) a nuclear engineer who was in the safety task force with Beck. Beck eliminated taking into account the most severe accidents that might occur due to his own opinion that these scenarios were unlikely.

Yet these unlikely scenarios have taken place. The public was reassured that a nuclear accident would only occur rarely, if at all, perhaps at most, one severe accident in every 100 years-- yet the prediction is now that we will have a serious accident each decade since the majority of the plants are now aging. We were told a technology would be found for nuclear waste, and this has also not been the case.

Many argue that due to climate change we must select the better of two evils, and nuclear is better than coal. Why frame this a choice between two evils when they could both be avoided? Oregon used to be a leader in environmental stewardship and we should follow the lead of Germany to commit to renewables that are far less dangerous and more economical than nuclear power with long lived inescapable nuclear waste and pollution.

Another aspect of nuclear history that I study is even more distressing. I study how radiation safety standards were originally made. After seeing documents from the US AEC at the National Archives, the International Atomic Energy Agency in Vienna, the World Health Organization in Geneva, the National Institute of Health, and the papers of the founder of Health Physics, Karl Z Morgan, it is clear to me that radiation safety standards are based on highly questionable assumptions that often do not take into account known biology and chemistry and neglect internal radiation exposure, which can be caused by inhalation or ingestion of radioactivity.

Even currently used radiation health textbooks, for just one example, *Radiation Protection and Dosimetry: An Introduction to Health Physics* by Michael G. Stabin (Springer, 2008) admit the uncertainty of radiation dangers and effects. On pp. 4 "we are still struggling to understand... all relationships of dose and effect are not well understood...For the present, the health physicist must work with these uncertainties remaining unresolved." There is no way to really know what each type of radiation does to each organ, but "conservative assumptions are usually applied to ensure reasonable protection....while allowing technologies involving the use of radiation to continue and develop."

Is that science at all?

Even more troubling to me, is that the standards were based on unethical studies.

The data used was from unethical human radiation experiments without the knowledge or consent of the victims of exposure. Dr. Willard Libby, a scientist who worked for the AEC conducted the Sunshine Project, one of the first secret studies of the radiological contamination worldwide from atmospheric nuclear weapons tests. This established the motif that "below background levels" radiation would be safe. However, It has been stated conclusively in several early government hearings, including the 1957-58 Congressional Hearing on the "The Nature of Radioactive Fallout and its Effects on Man" that according to most geneticists, no levels of radiation can be considered "safe."

There are much better alternatives and those alternatives that do not inflict harm are the ones that need study by an Oregon Legislature Task Force.

SMRs in particular are an untried technology years away from development to be useful and opposed by many Oregon citizens, who have seen the damage of other nuclear investments such as Three Mile Island, Chernobyl, Fukushima and so called "safe" fallout from nuclear weapons tests. Time has shown there is no answer to the problem of nuclear waste, as seen by the wastelands of Hanford Nuclear Reservation and the current troubles with the vitrification plant.

Time and time again my research showed how the public trust has been broken by the nuclear industry, government and academic interests promoting the safety of nuclear power. There has been no democratic process for gaining consent to exposure to nuclear power risks and pollution. A task force on nuclear energy for Oregon is misguided about the reality of contamination and past and future accidents. Please feel free to contact

me if you have any questions or if I can be of any assistance. Thank you, Dr. Linda Marie Richards, History of Science, Oregon State University