



*Secretariat:*  
Infinity Conference Group  
(Contact: Doreen Albertson)  
1035 Sterling Road,  
Herndon, VA 20170

703-925-0178 (Voice) 703-925-9453 (Fax)  
info@iseepi.org (E-Mail)  
[www.iseepi.org](http://www.iseepi.org) (website)

Francine Laden, Sc.D., *President*  
Verónica Vieira, D.Sc., *Secretary-Treasurer*  
Manolis Kogevinas, M.D., Ph.D., *President-elect*

May 6, 2015

Toshihide Tsuda, MD PhD  
Professor of Environmental Epidemiology  
Graduate School of Environmental Life Science  
Okayama University  
3-1-1, Tsushima-naka, Kita-ku  
Okayama 700-8530 JAPAN  
e-mail: tsudatos@md.okayama-u.ac.jp

Dear Professor Tsuda,

As a member of our society, you know that the International Society for Environmental Epidemiology is made up of experts from all over the world who study the effect of the physical environment on health (see [www.iseepi.org](http://www.iseepi.org)). You have written our Policy Committee for advice on how regulatory agencies can use information about radiation exposure to protect the public and to explain possible risks to them. In particular, your concerns about the Fukushima disaster raise the questions as to what can our science of epidemiology offer to such issues of risk and what can it not offer. Above all, our members wish to extend our most sincere condolences to the people of Japan who have been affected by the terrible tsunami and nuclear events at Fukushima. We also express our sympathy for the difficult decisions that the government of Japan has to make in responding to the aftermath of these events. We can understand why you are concerned and have written to us.

There can be a tendency to misinterpret epidemiology when guiding policy actions. In particular, it may happen that a specific location lacks the population size needed for an epidemiology study to directly detect an excess risk despite a relatively high exposure to a known human carcinogen. In this case, to take action to protect the exposed populations, decision making can use the risk assessment method to estimate an excess risk. Here, the method uses dose-response curves from epidemiology and toxicology studies conducted elsewhere combined with exposure assessment in the population whose risk is being evaluated.

So, based on the preceding, for anyone implying that there is no risk if epidemiology has not demonstrated it, we would say the following with regard to ionizing radiation and cancer:

That assumption is contrary to the best understanding of how ionizing radiation works. Scientists have produced experimental, and cell biological evidence that suggests that there is no threshold for radiation effects. We refer you to the 2013 WHO Health Risk Assessment for Fukushima which documents the science behind this assertion. By extrapolating downward from the epidemiologically documented radiation effects above 100 milliSieverts it is possible to estimate added lifetime risks of cancer from radiation exposure below that level. Regulatory agencies in America and Europe begin taking protective actions at estimated risk levels that exceed the "*de minimis*" added lifetime risk of 1/1000000. The exposures that would produce this risk are far below 100 milliSievert. An example of a procedure for estimating risks from various levels of exposure is on the website of the United States National Cancer Institute.(See: <https://irep.nci.nih.gov/radtrat/model/inputs/> )

We understand that there are discussions of epidemiological studies as a result of the Fukushima disaster. As we learned at Chernobyl with childhood thyroid cancer, there are often special local conditions that produce effects that we did not expect. Also the social and emotional effects of fear and dislocation have their own independent health effects which could conceivably interact with radiation effects. As was the case after the atomic bomb exposures in Hiroshima and Nagasaki, it is possible and desirable to learn from misfortune.

You may be interested to know that our society is devoting a symposium to assess lessons learned at Fukushima and Chernobyl in our 2015 annual meeting in Sao Paolo. It should provide a good forum for discussing how to communicate with and involve stakeholders in situations such as that at Fukushima. We are hoping you will be able to join us along with other distinguished scientists to share your valuable experience as we develop a policy statement based on the symposium. We are continuing to explore how we could be helpful and thank you for drawing this subject to our attention.

It has been our experience in disasters such as this that governments must struggle to build trust with the many affected stakeholders in society. The best way is to work the greatest degree of consultation and transparency with all concerned as it relates to risk management, risk communication and epidemiology. Japan has an ancient tradition from its first Buddhist Emperor, Shotoku Taishi that is relevant to this; he said:

“When big things are at stake, the danger of the error is great. Therefore, many should discuss and clarify the matter together so the correct way may be found.”

If the International Society for Environmental Epidemiology can help your government to identify scientists to advise you on these matters we would be happy to do so.

Sincerely yours,

A handwritten signature in black ink that reads "Francine Laden". The signature is written in a cursive, flowing style.

Francine Laden, President of ISEE