CSRP 2015
Monday, September 21, 2015
Session 1 and Round-table discussion:
Biological effects and public health
National Olympics Memorial Youth Center

How to Exchange Information on Scientific Evidence – In a Case of Radiation Health Effects

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Principles of Risk Communication

Ministry of Agriculture, Forestry and Fisheries website
http://www.maff.go.jp/j/syouan/seisaku/risk_analysis/r_risk_comm/
CDC website http://www.atsdr.cdc.gov/risk/riskprimer/index.html

- Primer on Health Risk Communication: Principles and Practices
  - "Get the receiver involved up front."
  - **Risk Communication: Myths and Actions**

    Myth: Telling the public about a risk is more likely to unduly alarm people than keeping quiet.
    Action: Decrease potential for alarm by giving people a chance to express their concerns.

    Myth: We shouldn't go to the public until we have solutions to environmental health problems.
    Action: Release and discuss information about risk management options and involve communities in strategies in which they have a stake.

    Myth: Technical decisions should be left in the hands of technical people.
    Action: Provide the public with information. Listen to community concerns. Involve
    policy.

Current situation in Japan leans towards the *Myths*!

My own stance

Myōshin-ji branch

Shinbutsu-shūgō
En no Gyōja (Yamabushi, Shugendō);
Inari Ōkami; a household Shinto shrine
in my ancestral home

Merely 50-60 years for NPP issues, merely 70 years for rightist/leftist issues, even only 225 years counting back to the French Revolution.
People in Kansai region have witnessed a history of chaos and opposition, such as the Jinshin War (627), Shingon Buddhism vs. Tendai-shu, Shogo-in vs. Daigo-ji, since before Kamakura Buddhism emerged in late 12th century.

- [redacted]
- [redacted]
  - [redacted] conversation class as a sophomore. Not very good at movements and activities and feel weary about them.
- University faculty specializing in environmental epidemiology and environmental health
  - Acquainted, by necessity, with many concerned parties of physical chemical and biological environmental pollutions, such as (alleged) victims, (alleged) perpetrators, their proxies (lawyers) and legal officials, and relevant administrative officials, as well as media people. Very knowledgeable (perhaps more than anybody) about what sort of discussion goes on among them.

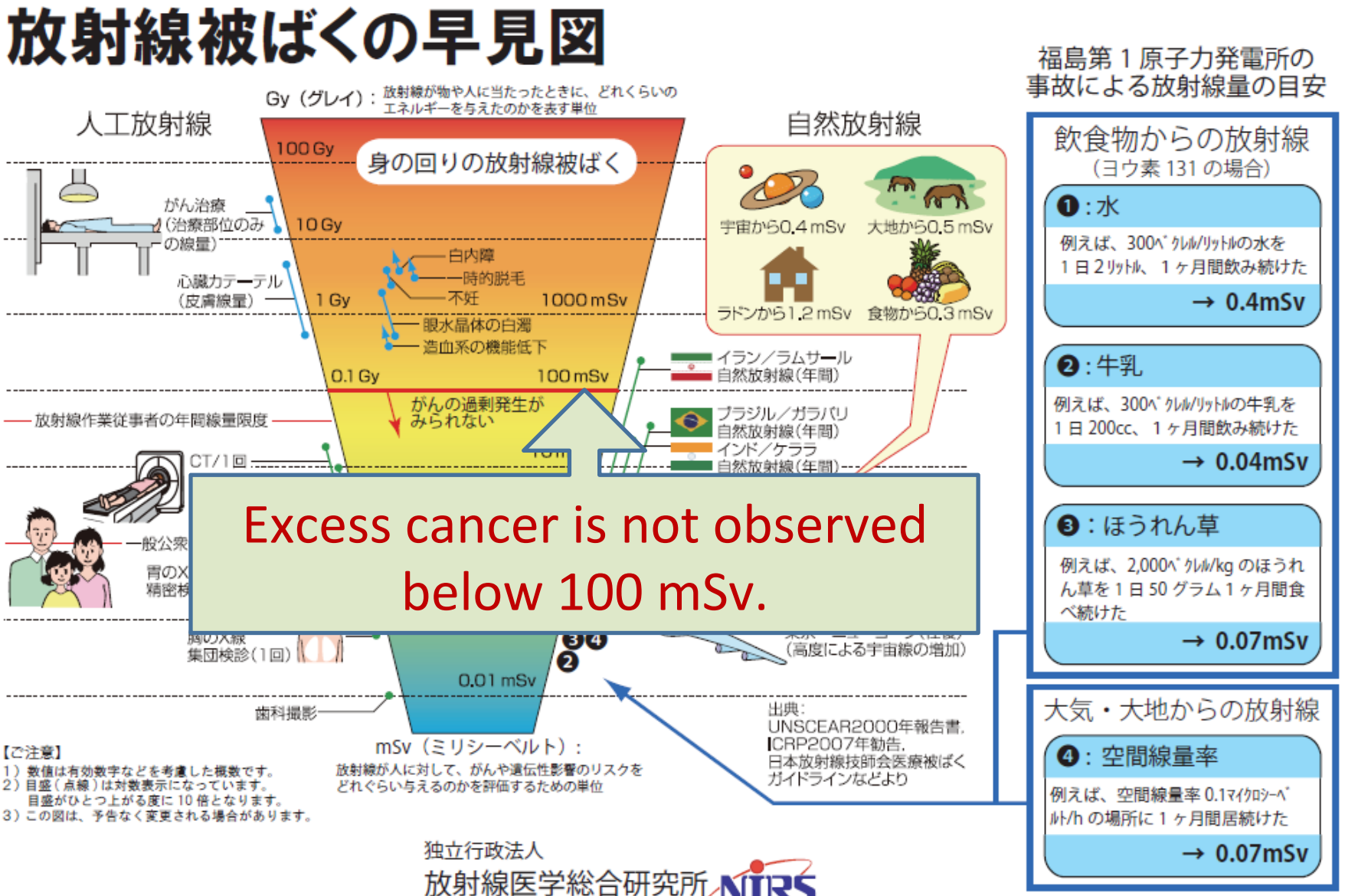
The so-called “100 mSv threshold”

- After the accident, Japanese medical societies, governments and institutions began to say, “**Doses under 100 mSv are safe because excess cancer incidence is undetectable or nonexistent below 100 mSv.**”
- As well known, the carcinogenic effect of radiation has followed “linear no threshold (LNT)”theory since 1949, confirmed by a number of epidemiologic studies under 10 mSv level.
  - “100 mSv threshold” discourse abruptly emerged after 2011 only in Japan although its precursor could be seen before 2011.

Japanese government agencies and academic societies issuing statements endorsing the “100 (or even 200) mSv threshold" discourse in 2011

- April 2, 2011: National Institute of Radiological Sciences (NIRS)
- April 13, 2011: Japan Epidemiological Association (JEA)
- April 20, 2011: Ministry of Education, Culture, Sports, Science and Technology (MEXT)
- May 23, 2011: Japan Pediatric Society (JPS)
- June 2, 2011: Japan Radiological Society (JRS)
- July 17, 2011: Science Council of Japan (SCJ)
- December 22, 2011: Working Group on Risk Management of Low-Dose Radiation Exposure requested by Minister for the Restoration from and Prevention of Nuclear Accident of Japan

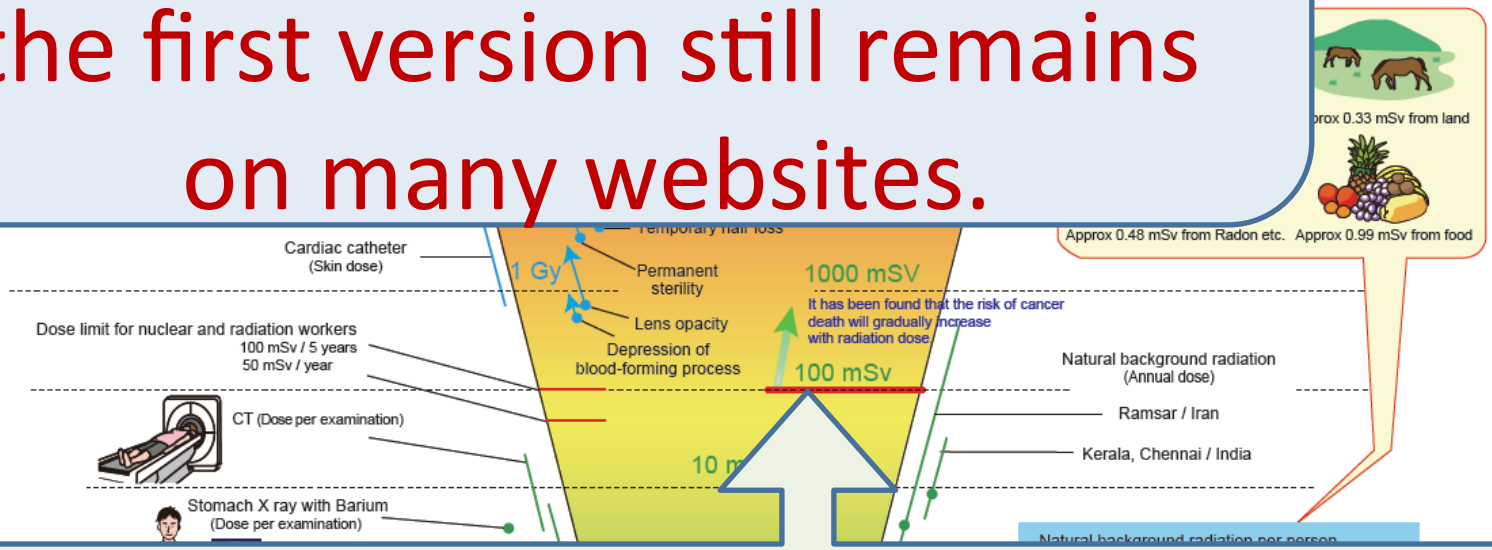
Radiation Exposure in Living Environment (first version issued by NIRS on April 2, 2011, in Japan)



The version change was not publicly announced at all, so the first version still remains on many websites.

2013

nd Radiation



"It has been found that the risk of cancer death will gradually increases with radiation dose over 100 mSv".

Illustrate

Reference:

- UNSCEAR 2008.
- ICRP 2007 Recommendations.
- The Guidelines for Medical Exposure by Japan Association of Radiological Technologists.
- Radiation in the living environment, new version. (Radiation Safety Research Association, 2011) etc.

[Note]
1. The numerical values are approximate figures based on significant digits.
2. The scales shown by the dotted lines are a logarithmic display. Each step up on the scale represents ten times more than the previous step.
3. This chart is subject to revision without notice.

Units of dose

Absorbed dose to each organ or tissue: Gy

The unit to show energy received per unit weight (J/kg) at each organ or tissue exposed to radiation.

Effective dose: mSv

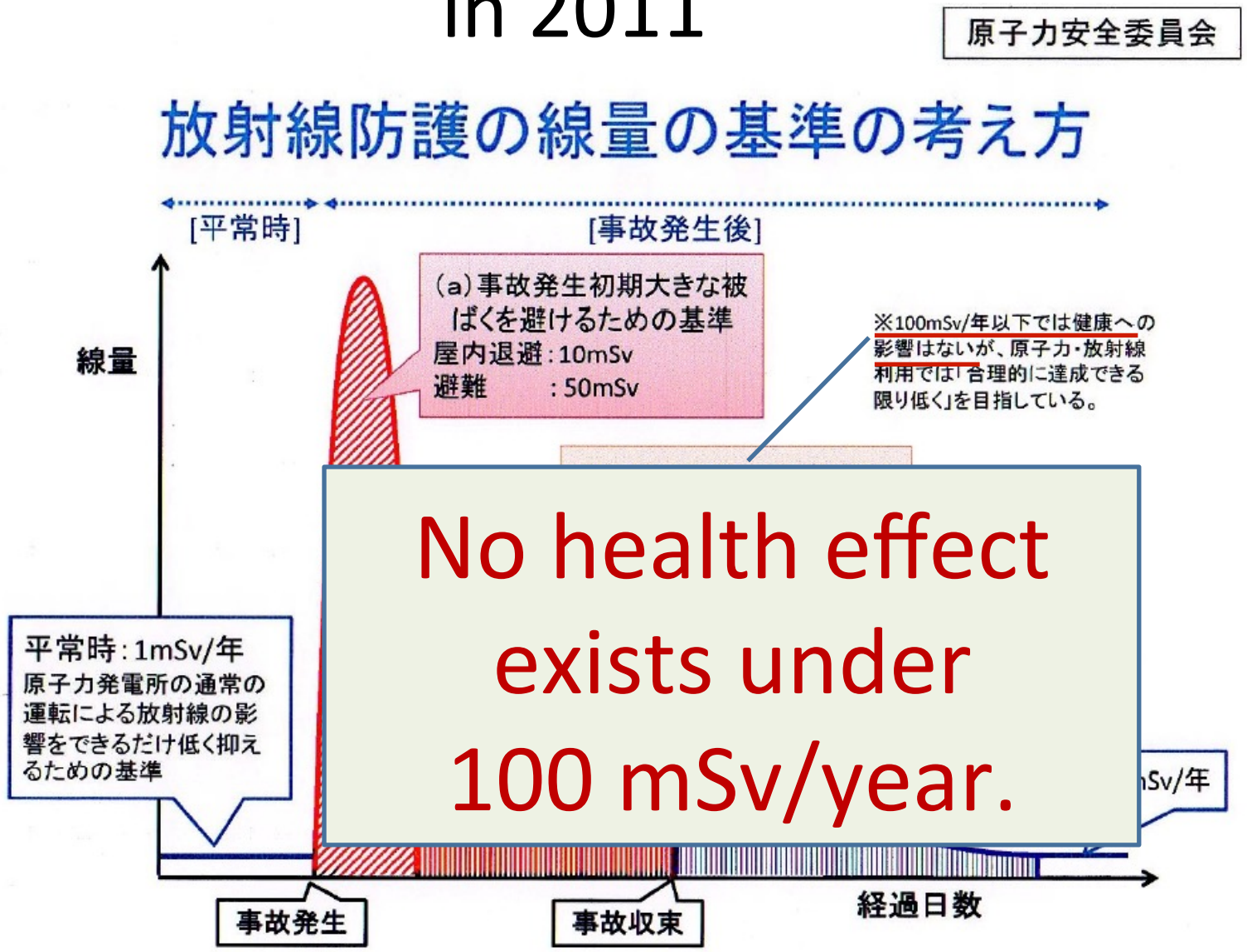
The dose of radiation to the entire human body considering sensitivity of each organ or tissue to cancer and hereditary effects. This unit of dose is used for radiation protection.

When the entire human body is evenly exposed to gamma rays at an absorbed dose of 1 Gy, the dose is equivalent to 1000 mSv **as effective dose**.

National Institute of Radiological Sciences,Japan
http://www.nirs.go.jp

Ver.130502

Nuclear Safety Commission of Japan in 2011



Report of Working Group on Risk Management of Low-Dose Radiation Exposure held in 2011

Requested by Minister for the Restoration from and Prevention of Nuclear Accident of Japan

- "Reports from epidemiological studies of A-bomb survivors from Hiroshima and Nagasaki have shown a dose-dependent increase in cancer risk starting at dose levels slightly more than 100 mSv. Risk of cancer development from radiation at levels of 100 mSv or lower is considered so slight according to international consensus that risk is concealed by carcinogenic effects from other causes. At such low levels, clear increased risk of cancer development from radiation is difficult to prove. "

Report of Working Group on Risk Management of Low-Dose Radiation Exposure held in 2011

Requested by Minister for the Restoration from and Prevention of Nuclear Accident of Japan

- "Generally speaking, relative risk of cancer development tends to be higher with younger age at exposure. Among those in childhood/puberty, cancer risk from high-dose radiation exposure is greater than the risk among adults. In low-dose exposures, however, such disparity in cancer risk profiles due to age-group differences is unclear. On the other hand, research into in-utero survivors of the atomic bombings has suggested that risk of developing cancer in adulthood among those exposed in utero is equivalent to, or perhaps slightly lower than, the risk of those exposed in early childhood."

In February 2013, the Japanese Government issued a pamphlet

Basic Information on Radiation Risk

In the pamphlet, the Government explains that according to international consensus, cancer risks due to radiation exposure to doses below 100 mSv are masked by effects of other carcinogenic factors in a living environment, and thus excess cancer risks under 100 mSv are too small to be clearly demonstrable.

http://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/20140218_basic_information_all.pdf

*There is **no** such international consensus!*

Correction of errors from the Government of Japan on the Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, Anand Grover (27 May 2013)

Based on the data from Hiroshima and Nagasaki, it is believed that the effects on health from radiation exposure are less significant than the effects from other causes or nonexistent as long as the exposure is at the level of 100 mSv or less.

There are many other comments on the 100 mSv threshold by the Japanese Government and Fukushima Prefecture.

The Ministry of Economy, Trade and Industry in March, 2013

- *On the annual dose limit of 20 mSv*
  - From the data on the atomic bomb survivors in Hiroshima/Nagasaki, carcinogenic risks due to radiation doses under 100 mSv, are said to be so small that they are hidden by the effects of other carcinogenic factors.
  - The dose limit affects the current policy on evacuee return by the Government.

On the return to areas below 20 mSv/year
(July 2014, the UN Human Rights Committee)

"24. The Committee is concerned that the high threshold level of exposure set by the State party in Fukushima, and the decision to cancel some of the evacuation areas, provides no choice to people but to return to highly contaminated areas (arts. 6, 12 and 19). The State party should take all the necessary measures to protect the life of the people affected by the nuclear disaster in Fukushima and lift the designation of contaminated locations as evacuation areas only where the radiation level does not place the residents at risk. The State party should monitor the levels of radiation and disclose this information to the people affected in a timely manner."

On August 17, 2014, the Japanese Government released a public service announcement

- The announcement appeared in five major nationwide newspapers (Yomiuri, Asahi, Mainichi, Sankei, Nikkei) and two local newspapers in Fukushima Prefecture.
- In the public service announcement, Dr. Nakagawa (The University of Tokyo Hospital) confidently asserted that excess cancer risk due to radiation exposure would not be observed under the exposure dose of 100 mSv. According to Dr. Nakagawa, the highest external exposure dose estimated in Fukushima residents was below 35 mSv, so no excess thyroid cancer incidence would be observed in Fukushima Prefecture.

There is no evidence to support his claims.

"100 mSv threshold" came from the ICRP 2007 Recommendation

A case of simple misinterpretation

On page 173

A.4.1. Funda

"(A86)(...)Th

epidemiolog

cancer risk d

cancer risks in the dose range up to around 100 mSv."

UNSCEAR 2008 Paragraph D251

"Neither the most informative LSS study nor any other studies have provided conclusive evidence of carcinogenic effects of radiation at smaller [than 100 mSv] doses".

*This means that an increase of **all cancer under 100 mSv** is not statistically significant among **all age groups** at the **5%** significance level in the LSS cohort (Atomic bomb survivors) .*

Statistically significant at the 8% level even in LSS cohort! (Brenner 2014)

"No statistical significance" is completely different from "No excess cancer."

Conditions for "statistical significance"

1. Increasing the number of observations
   - LSS Cohort (atomic bomb survivors) is not the largest in the world.
   - e.g. CT scan studies; exposure to natural radiation.
2. Restricting subjects to the radiation-sensitive population
   - e.g. fetuses, children, adolescents, etc.
3. Restricting the outcome to radiation-sensitive malignancies
   - e.g. leukemia, brain tumor, thyroid cancer, breast cancer, etc.
4. Raising the significance level
   - From the 5% significance level to the 10% significance level
   - Excess cases of all cancer in the LSS Cohort was significant at 8% level in 2003.
5. There are other conditions besides the above four.

Numerous studies have actually shown excess cancers below the 100 mSv exposure dose.

So-Called “Radiation Stress”

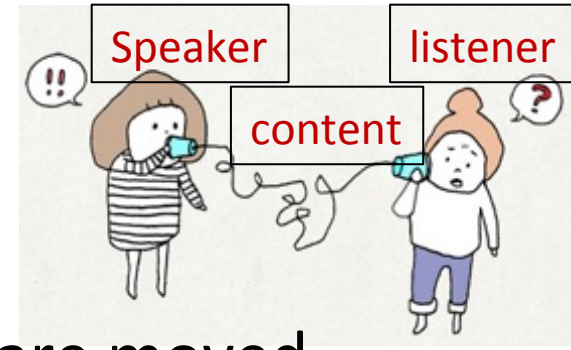
- As a result of the miscommunication, Fukushima residents who expressed fear of the radiation health effects, even if their knowledge was evidence-based, were considered by psychiatrists and psychologists to suffer from “Radiation Stress.” They subsequently received intervention in a governmental program.

Persuasion is not going well!

- In both of the administrative bodies, Fukushima Prefecture and Ministry of Environment, and expert groups such us Fukushima Medical University and Nagasaki University, and others…
  - Direct dialogue of different opinions hardly exists.
  - They say, “This is stated by ICRP and UNSCEAR,” but it is not explained where the statement is and what is stated.
  - No medical evidence is specified whatsoever, and to begin with, the basis of medical evidence has not been shared.
  - Basic mistakes have been neglected (i.e. the “100 mSv threshold” discourse).
- In the end, things are declared unknown
  - What is known to what extent is not even explained, and explanation isn’t permitted.

3 conditions for successful persuasion: *Rhetoric* by Aristotle

Aristotle summarized 3 conditions required for a speaker to persuade a listener as below.

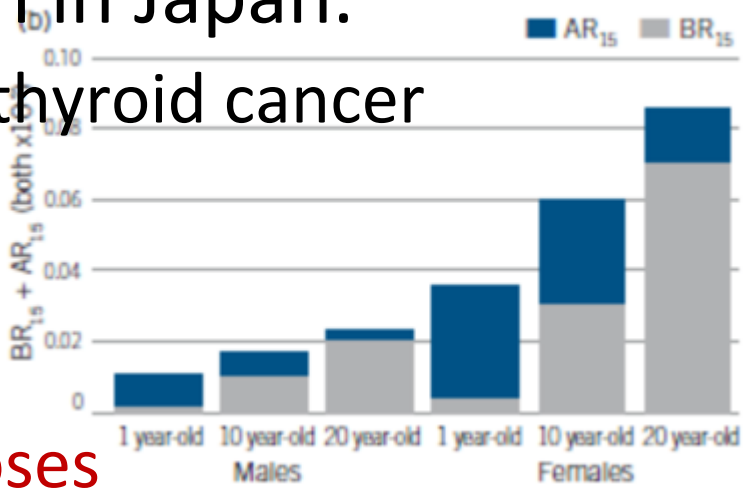


- Logos (λόγος): persuasion by proof
  - Logical content (persuasiveness of the content)
- Pathos (πάθος): the listener's emotions are moved
  - The speaker controls the listener's feelings by eagerness, etc.
- Ethos (ἦθος): the listener gets a certain impression from the speaker
  - The listener accepts speaker (speaker's personal character is appealed)

In February 2013, WHO reported on health risk assessment in Fukushima

- WHO (2013) quantitatively reported excesses of thyroid cancer, leukemia, breast cancer, and other solid cancers.
- The report is rarely known in Japan.
  - Figure indicates excess of thyroid cancer

Excess cancer cases are indicated by blue bars.



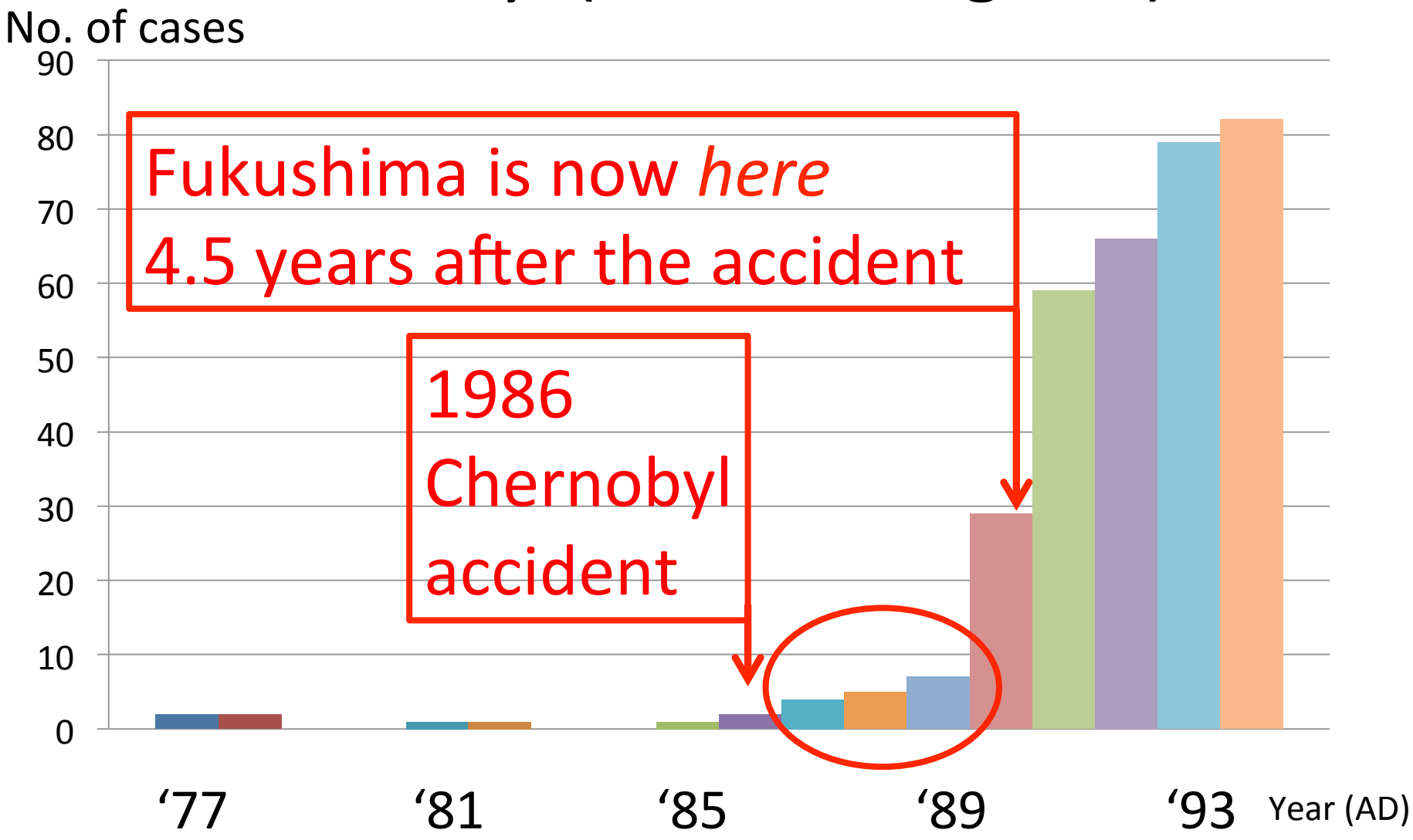
Furthermore, the estimated doses which the WHO Health Risk Assessment was based on were reduced by the Japanese governmental lobby…

In the November 2011 draft of the WHO Preliminary Dose Estimation

- Thyroid equivalent doses for 1 y/o infants were **estimated to be 300-1000 mSv in Namie Town, Fukushima, and 10-100mSv in Tokyo and Osaka**.
- The Japanese Government lobbied WHO for revisions, and the estimates for 1 y/o infants were eventually **reduced to 100-200 mSv in Namie Town, and 1-10 mSv in Tokyo and Osaka**.

(From Asahi Shimbun Globe on December 7, 2014)

Epidemic curve of thyroid cancer in Chernobyl (Belarus ≤ age 14)



Logos (λόγος)
Persuasion by proof

- This is the *essence* and core – convincing debate
  - *Donna Hito mo Omoidori ni Ugokaseru – Aristoteles no Invincible "Rhetoric" (You Can Move Anybody At Will – Invincible "Rhetoric" by Aristotle)* by Kentaro Takahashi (Asahi Shimbun Publications)
- A basic aim of *logical speech* is to persuade that your own opinion is *more correct* than the counter opinion
- However, the idea that *as long as the content of speech is correct the listener can be persuaded (the listener needs to be persuaded)* itself is illusionary…

Pathos (πάθος)

Listener's emotions are moved

- "Our judgments when we are pleased and friendly are not the same as when we are pained and hostile." *Rhetoric* (excerpted from translation by W. Rhys Roberts)
- Guiding the listener's emotions to the speaker's advantage.
- Actively controlling emotions of the audience so they will agree with the speaker's opinion.

Ethos (ἦθος)

Listener's impression of speaker

(speaker's personal character)

- "We believe good men more fully and more readily than others." *Rhetoric* (excerpted from translation by W. Rhys Roberts)
- The reverse is *ad hominem* (character attack)
- "I don't like that person (for some reason), so I don't want to agree with his/her opinion." Judgment without considering the content of the argument.
- Three keywords: wisdom, virtue, and goodwill

Logos（λόγος）
Persuasion by proof

- Fukushima Prefecture, Ministry of Environment, and Ministry of Economy, Trade and Industry:
  - Not using logos at all
  - Early assumptions remain and propagate without verification
- Fukushima Medical University, Nagasaki University, and National Institute of Radiological Sciences:
  - Keep repeating, “Based on ICRP and UNSCEAR,” but no explanation is given as to where the basis is, and it can hardly be said that the basis holds.
- By the way, I have:
  - offered explanations based on references and data analysis (i.e. medical evidence), kept polishing up the argument through exchanges with international researchers, and received no effective counter arguments at this point.

Pathos（πάθος）
Listener's emotions are moved

- Fukushima Prefecture, Ministry of Environment, and Ministry of Economy, Trade and Industry:
  - Do not have it, but perhaps administrations can't help it…
  - Aroused opposition due to mishandling of media response, but that's an issue of ethos.
- Fukushima Medical University, Nagasaki University, and National Institute of Radiological Sciences:
  - Appear to be making efforts.
  - Insufficient explanation while the audience was suffering created a feeling of opposition, leading to negative consequences.
- By the way, I have:
  - made some efforts in this respect at first. But I am not trying for it now since my enthusiasm has dissipated and also because I am busy with other work.

Ethos（ἦθος）

Listener's impression of speaker (speaker's personal character)

- Fukushima Prefecture, Ministry of Environment, and Ministry of Economy, Trade and Industry:
  - Early mishandling of media response was crucial.
  - Not ensuring protection of health and wealth of residents as the administrative goal.
- Fukushima Medical University, Nagasaki University, and National Institute of Radiological Sciences:
  - Synchronized with mishandling of media response by Fukushima Prefecture
  - Prioritize academic meetings over information disclosure to residents
- By the way, in my case:
  - My weakness might be my personal character… I will pursue wisdom, virtue and goodwill.
  - Just because my opinion is different, those who are convinced I have ties with "Goddamn leftist," "anti-NPP group," and "anti-establishment group" do not appear to want to listen to me.

A two-sided cold war structure still remains in Japan, with an atmosphere of not listening to the other side at all.

Lack of information exchange & loss of opportunity for persuasion

- Examples:
  - "An answer to how to deal with radioactive contamination in Fukushima Prefecture is not as simple as "evacuation" as I wrote yesterday. Quite a few have died due to evacuation or suicides. Many deaths are related to decontamination work. It is meaningless to discuss only cancer rates when it comes to the radiation disaster in Fukushima Prefecture."
  - After all what we can do now is to continue the screening. This is what Professor Tsuda says in the article below, and what I have been saying. http://www.ourplanet-tv.org/?q=node/1806
  - I would like to bring this to a close.
- "This must be what they mean." "This opinion is out of question." "That's why I am right." "Now It is 'closed' beyond this."
  - No direct confirmation; assuming they are wrong by guessing on the meaning of their statement; no opportunity given for others to point out misunderstanding or a chance for counter point; and closing the issue.
  - Complete denial of information exchange, causing their own ideas to go out of control.
  - Isn't this type of discussion widespread in Japan?

Letter from the ISEE (International Society for Environmental Epidemiology) President

"Have a thorough discussion!" referring to a Japanese ancient leader, Shotoku Taishi (574-622):

- "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."

- This dialogue is critically absent in regards to radiation health effects in current Japan.
  - Why so?

Final words – persuasion continues

- Unfortunately, so-called radiation experts in Japan appear to have very little knowledge of radiation health effects or how those effects become elucidated specifically.
  - No opportunity for me to engage in direct dialogue with them…
- Even worse for government officials and politicians who are involved in decision-making.
- Rather than calling them "Nuclear Village folks" and giving up on them, let us continue earnest persuasion.
  - Please keep in mind this particular point: This issue is testing wisdom within every Japanese citizen.
  - Thank you for your attention! ΣΠA南無神変大菩薩

    (Socrates, Plato, Aristotle, En no Gyōja)