

# ***Radiation Disaster Medicine Education*** **Revisited within Post-Fukushima Context:**

## **The IAEA's Initiative**

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# IAEA Action Plan on Nuclear Safety

(September 2011)

- “*Capacity building: Ensure the on-going protection of people and the environment from ionizing radiation following a nuclear emergency*”
- For NAHU “capacity building” means: Education and research in *radiation disaster medicine*

<http://www.iaea.org/newscenter/focus/actionplan/reports/actionplanns130911.pdf>

# Practical arrangements between IAEA/FMU

December 2012

- Health Management Survey
- Capacity building and research on **human health**
- Enhancement of public awareness of radiological effects and addressing “radiation fear” and PTSD
- Exchange of experts and information related to aforementioned activities

## Strategic Response

- NAHU revisited *Radiation Disaster Medicine Education*
- Consultancy meeting (Oct/Nov 2012) on “*Global radiation medicine: Educational challenges for academia*”.

# Meeting on “Global Radiation Medicine: Educational Challenges for Academia”

29 Oct-Nov 2, 2012

Interdisciplinary meeting with international experts from radiation medicine, social sciences and humanities aiming at using STS approach.

# “Global Radiation Medicine: Educational Challenges for Academia” Vienna



## Purposes of the meeting

- Experts from various fields share knowledge & experience.
- Analyse the complex issues related to Fukushima accident as based on different perspectives through formal presentations.
- Discussion with view to identify emergent problems and knowledge gaps.
- Reach a consensus

## Purposes of the meeting

Propose appropriate academic responses through innovative education and research programmes on “*radiation disaster medicine*” within a broader perspective of :  
“*Radiation-Society Interaction*”



## Who were the experts?

- Radiation medicine physicians
- Historian and philosopher of medicine
- Historian of science (Earthquake in Japan)
- Disaster expert (Earthquake/Tsunami from Indonesia)
- Curriculum experts
- STS experts

## Topics presented:

Cultural History, Philosophical and ethical perspectives

- Natural disasters and STS approach. NUS
- “Radiation-society interaction” context.  
Ulm University

## Topics presented:

Global radiation health challenges and practices

- Fukushima Medical University
- Hiroshima University
- Nagasaki University
- NIRS

## Other topics presented:

- Roles of university in natural disasters management: The Indonesian experience. Gadjamada University
- Medical response to nuclear incidents: Experience from NIRS
- Professional recognition of medical physicists: Challenges and opportunities. IAEA

## Discussion

- The emergent problem is the “**crisis in expertise**”
- The key issues
- **Knowledge gaps** identified by academic community
- Academic responses: Innovation solutions proposed by academic institutions in form of curricular and education programmes

## The emerging problem: “The Crisis in Expertise”

- Only superficial knowledge about radiation protection and radiation health effects
- Exacerbated by lack of trust of expert advice
- Internet and ubiquitous of social media means no central source of trusted information lead to rumors and misinformation that spread widely and quickly

**Risk communication and public  
information pose immense  
challenges!**

## Key issues identified

- Diversity of expert of opinion typical of post-disaster scenarios.
- Lack of training/preparation by health professionals in communicating scientific knowledge to the public.
- Disaster medicine is not part of traditional radiation medicine curriculum.
- Lack of public understanding of the boundaries between scientific certainty and uncertainty



**What are the existing academic responses to those knowledge gaps?**

## **Phoenix Leader Education Program for Renaissance from Radiation Disaster, Hiroshima University**

- Knowledge gaps:
  - “Radiation disaster is the subject that cannot be solved by only narrow academic fields. It requires knowledge of varied academic fields” (K. Kamiya, Programme Coordinator)
- Academic response:
  - PhD programme in “radiation disaster recovery studies”

## **Phoenix Leader Education Program for Renaissance from Radiation Disaster, Hiroshima University**

- New multi-disciplinary PhD (4 to 5 years)

Phoenix leaders “to protect:

- human lives from radiation hazards
- the environment from radioactivity
- the human society from radioactivity”

# Fukushima Medical University

- Knowledge gaps: “Small number of medical staff capable:
  - To respond to the needs of Fukushima residents
  - To address radiation and disaster issues, psychological and social problems.”
- Academic response:
  - Creation of the Education Centre for Disaster Medicine

# **Education Centre for Disaster Medicine, Fukushima Medical University**

## Fukushima Disaster Medical Seminars

- Short-term aim: Developing radiation-related knowledge among existing medical staff and students at Fukushima hospitals.
- Long-term aim: Populating Fukushima with doctors, well-trained in disaster management and radiation issues.

# **Fukushima Disaster Medical Seminars Goals**

- Radiation medicine: Diagnosis and treatment of radiation injuries and psychological problems
- Radiation survey
- Risk communication
- Inspection and interview on-site
- etc.

# **Atomic Bomb Disease Institute, Nagasaki University**

- Wealth of data and experience A-bombing diseases in Japan, but also the Chernobyl nuclear accident site in the Ukraine and Belarus.
- Branch campus in Minsk, Belarus.
- Master's course in radiation nursing
- Assisted Fukushima in managing the accident

# Nagasaki University

- Masters course in radiation nursing was established in 2011 (*83<sup>rd</sup> Global COE Seminar, Jan 2011*)
- Nurses from the masters course participated in the medical relief team during the Fukushima crisis



## National Institute of Radiological Sciences

- **Knowledge gaps:** “this nuclear disaster has revealed that basic knowledge and experience in radiation protection — vital for appropriate response to a nuclear disaster — are not adequately widespread, apart from some exceptions among people involved”.
- **Academic response:** Reference Document on Education and Self-Study Related to Radiation Medicine in Medical Education

# National Institute of Radiological Sciences

## *Model Core Curriculum for Medical Education – Guideline for Medical Education –*

- Published by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) of Japan on March 2001
- Reference for medical school curricula
- *Revised on **March 31, 2011**, just after the earthquake*

# Revising the model core curriculum for medical schools in Japan

## *Rationale for this revision*

Physicians need to know:

- Humans are constantly being exposed to natural radiation in nature
- The impact of the use of ionizing radiation for medical purposes
- Radioactive materials are ubiquitous, thus increasing radiation exposure chances.

## National Institute of Radiological Sciences

*“Reference Document on Education and Self-Study Related to Radiation Medicine in Medical Education”*. April 2012

- About “radiation exposure and protection” curriculum for Medical Education in Japan.
- In any *medical curriculum* or for *self-learning* tool for medical students.

# Consensus that emerges

The Fukushima accident accelerated the emergence of a new academic field: **“radiation-society interaction”** and triggered an intense response from universities and research institutions in Japan and abroad.

# Consensus that emerges

A field that required:

- True *interdisciplinary* education & research
- Building on “*Science & Technology Studies*” **(STS)** approach
- Incorporating “*Disaster Studies*”

# What is STS?

Science & Technology Studies

Or

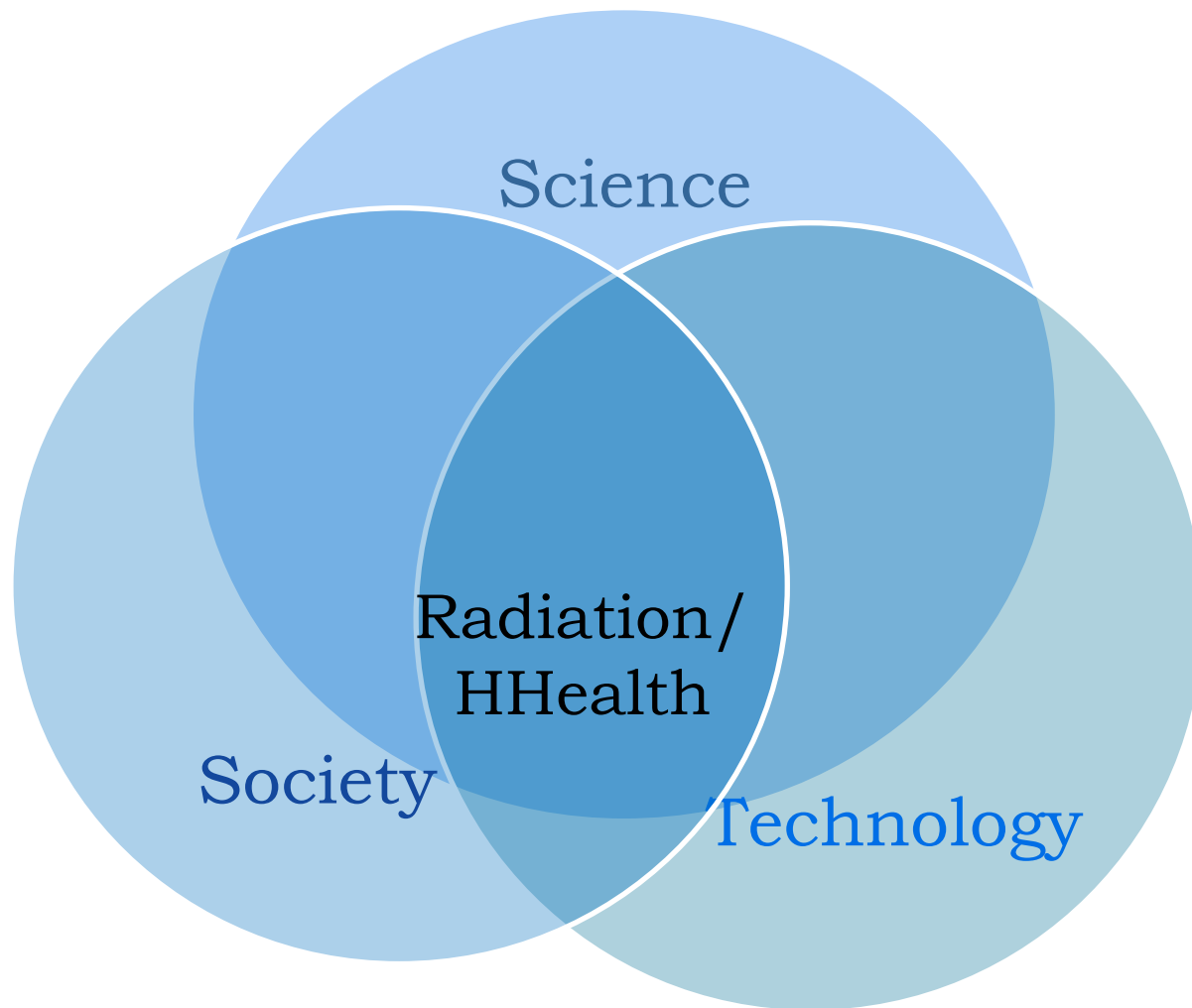
Science, Technology and Society

## What is STS?

- STS scholars focus on research and teaching about scientific knowledge and technology in its **social context**.
- STS scholars examine S&T both in contemporary societies and through **historical** investigations



# STS



# The Fukushima nuclear accident is

- Complex issue that involves science, technology and society: **“Radiation-Society interaction”**
- The academic inter-disciplinary approach that best analyses and addresses this complex issue is **STS**.
- The academic response would be to train and educate **radiation disaster specialists** with a broader knowledge of the impact of nuclear **S&T on Man and Society**.

**Based on that consensus,**  
*two projects were submitted via NSAP and **Funded***

- Enhancing radiation disaster medicine **education** by building capacity of health professionals and students (NA9/16)
- Strengthen **research** cooperation in radiation disaster medicine including post-traumatic stress disorders (NA9/17)

# Uniqueness of the IAEA's Initiative

Addressing the need for education and research in *radiation disaster medicine* in order to identify more innovative solutions to contribute to the Fukushima recovery efforts.











# 2013-2014 Implementation Schedule

