Fukushima - Lessons learned and issues

Policy implications and research needs

Dr Maria del Rosario Perez

Radiation Programme

Department of Public Health, Environmental and Social Determinants of Health

World Health Organization

Fukushima scenario: a combined (triple) disaster

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WHO's definition of health

*"**Health** is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

(*WHO Constitution,1948*)

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Health is a human right

Health promotion

- **Health promotion** is the process of enabling people to increase control over, and to improve, their health.

- It includes improvement of **individual behavior**, as well as a wide range of **environmental and social interventions** to promote and sustain health (education, housing, energy, food, employment, air quality, water quality, sanitation, chemical safety, radiation safety, …)

Immediately after the Fukushima Daiichi NPS accident WHO activated its emergency response plan

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WHO's short-term actions

- **Trigger emergency SOPs**
  - **Monitor** situation (Western Pacific Regional Office, Kobe Centre, ENAC, social media,…)
  - **Activate** relevant expert networks (REMPAN, INFOSAN)
- **Implement** inter-agency coordination plan (IAEA, WMO, FAO, ICAO, IMO, EC, UNEP, CTBTO, OCHA, OECD/NEA, …)
- **Assess health risks** (IHR, PHE, FOS, other programs, relevant experts)
- **Provide technical advice** to national authorities (food, water, travel, transport, trade, mental health, …)
- **Provide information** to the public (website, media statements, press conferences, social media, fact sheets, FAQs, …)
  - To inform decision-making *(e.g. travel, trade),* prevent risky reactions *(e.g. self-administration of potassium iodide),* allay unnecessary fears *(e.g. breastfeeding),* advocate healthy behaviours *(e.g. children and pregnant women), ….*

WHO's longer term actions

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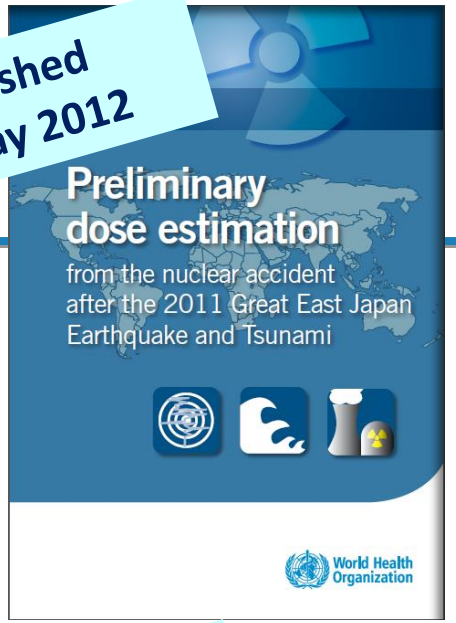

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NOTE

WHO's public health agenda in response to the Fukushima Daiichi nuclear accident

Emilie van Deventer[1], Maria del Rosario Perez[1], Angelika Tritscher[2], Kazuko Fukushima[2] and Zhanat Carr[1]

[1] Department of Public Health and Environment, World Health Organization, Geneva, Switzerland
[2] Department of Food Safety and Zoonoses, World Health Organization, Geneva, Switzerland

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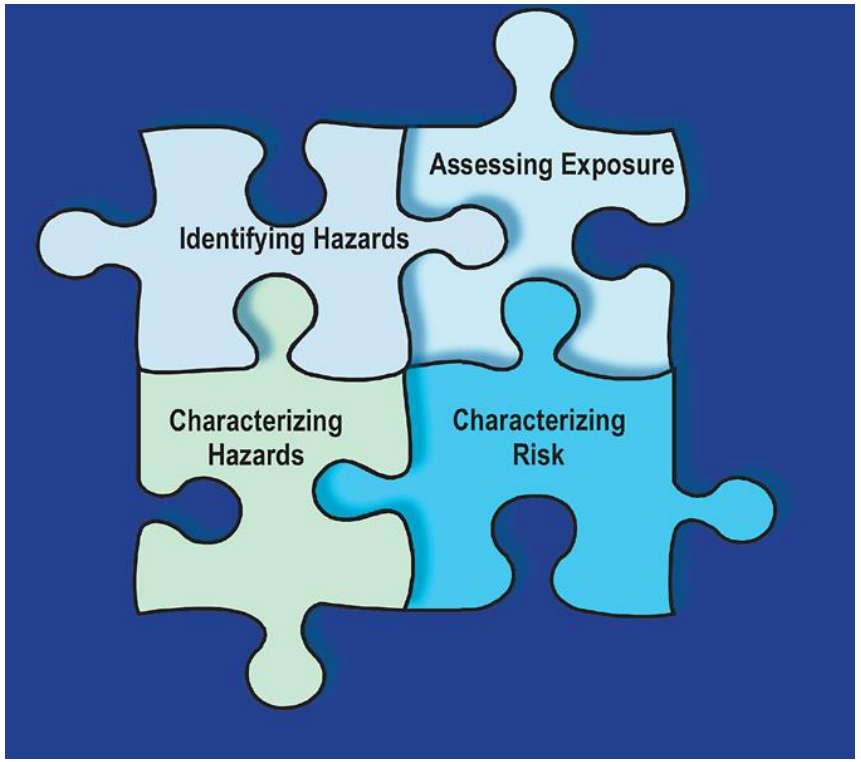
Health Risk Assessment

What is the agent and what health problems can be potentially caused by it?

What are the health problems at different exposure levels?



What exposures are likely to occur, and what is the resulting dose to humans?

What is the estimated health risk in the exposed population?

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Preliminary dose estimation

Independent experts

+

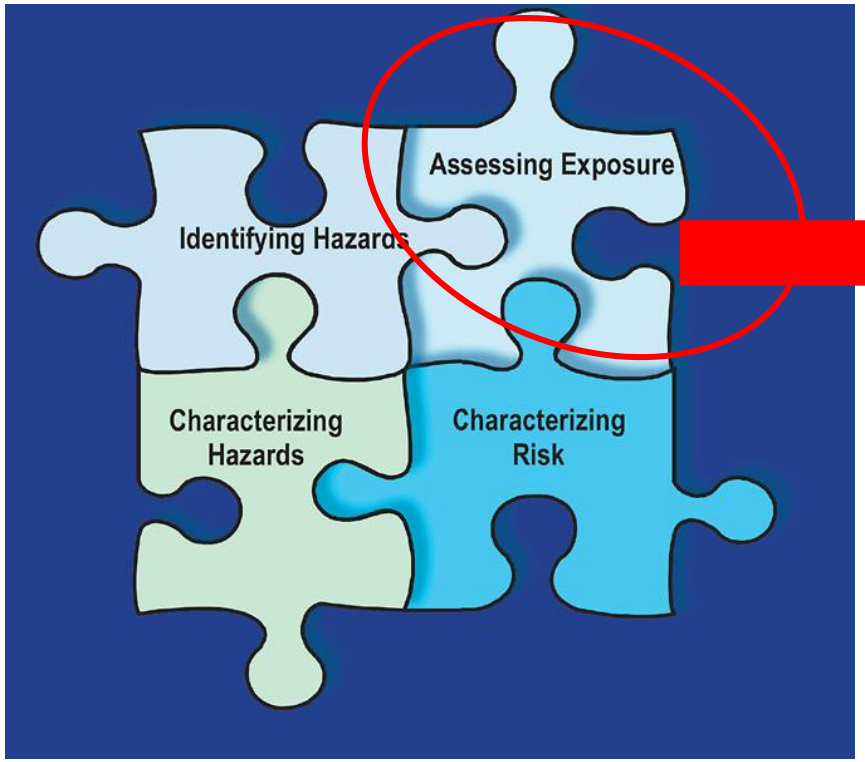
Representatives of

World Health Organization · IAEA · FAO

+

Observers

Japan · UNSCEAR



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Health Risk Assessment

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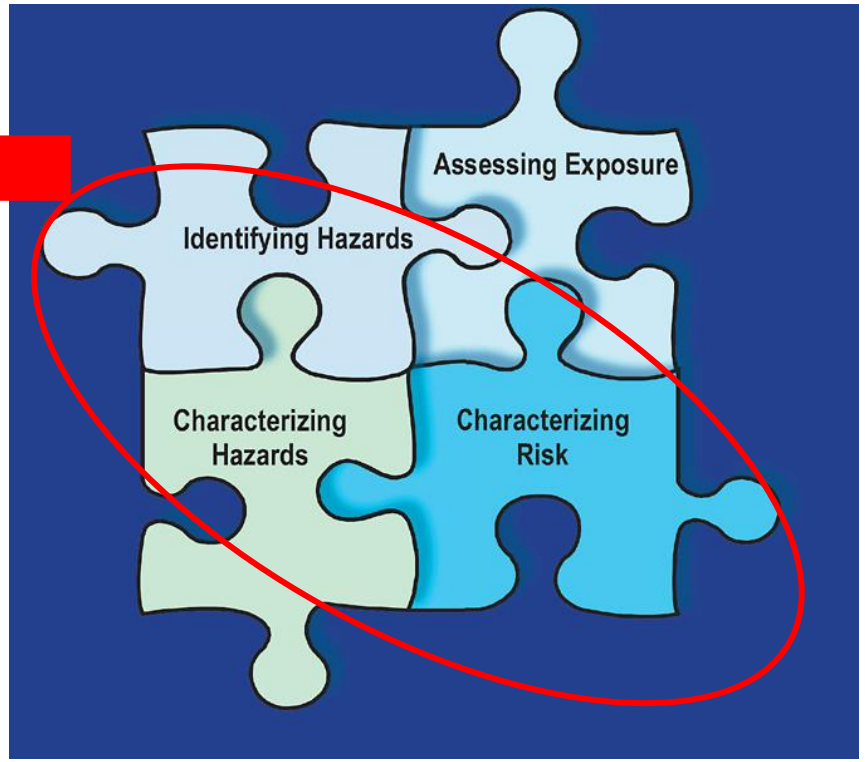

Independent experts

+

Observers

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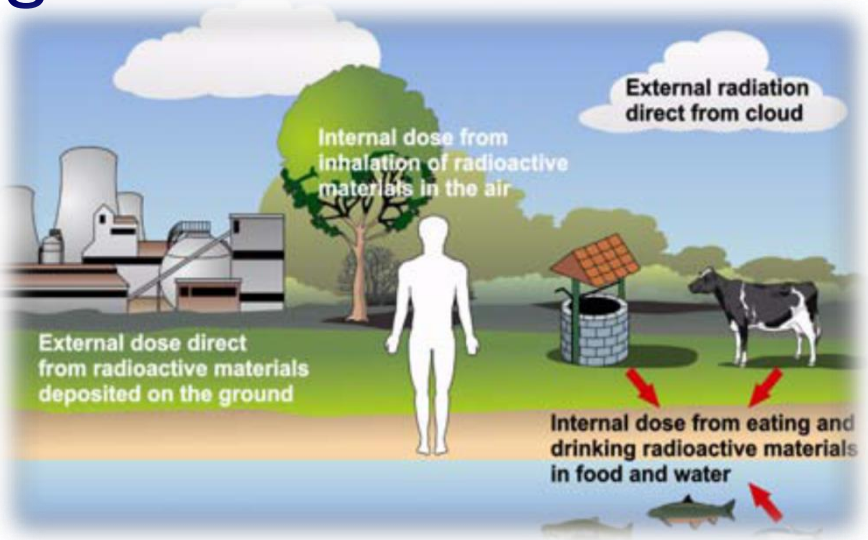
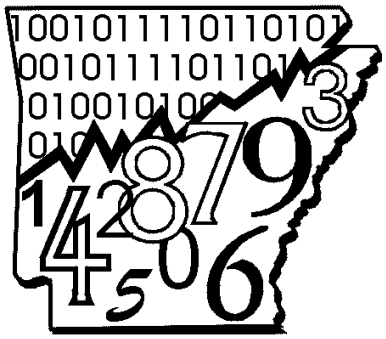
Input data: research needs

- Research to reduce uncertainties
  - Exposure data (public, workers)
  - Calculation of lifetime dose
  - Health statistics data (all cause mortality rates, LBR, healthy worker effect, incidence vs. mortality,…)
  - Adjusted survival curves?
  - International classification of diseases (ICD)
  - …..



Health Statistics Branch



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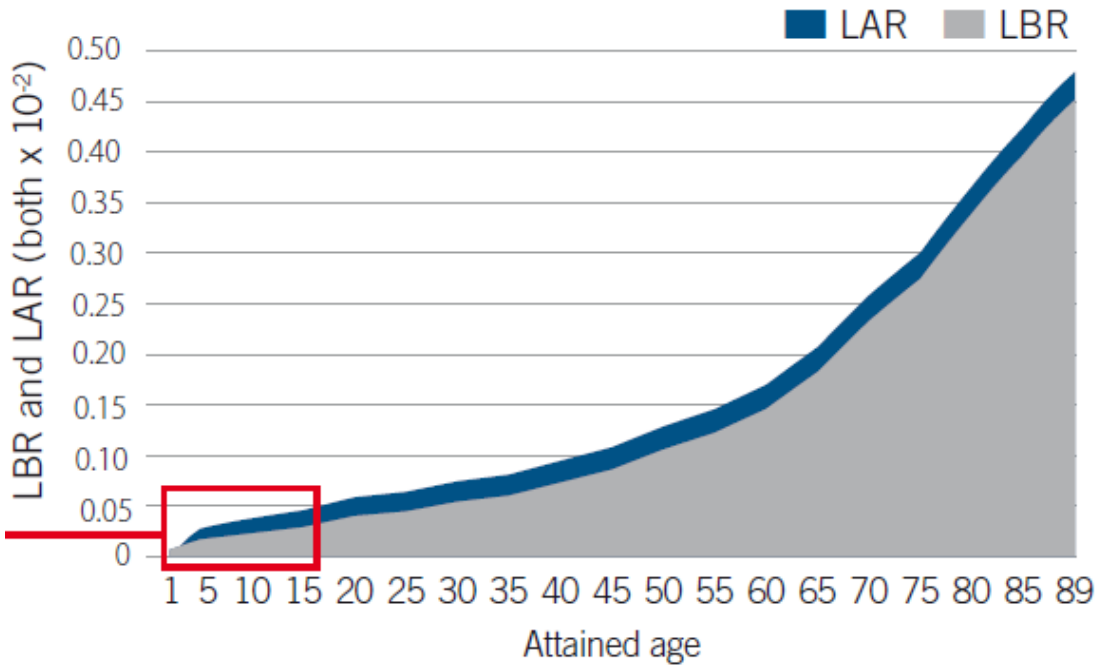
Risk models: research needs

- **Cancer incidence risk assessment** (by models)
  - Linear non-threshold (LNT) –low-dose research, DDREF (1?)
  - Selection of cancer sites (in HRA: all solid, leukaemia, thyroid, breast)
  - Risk models for each site (e.g. all solid, thyroid,)
  - Latency periods, ,all solid?
  - Age at exposure and attained age
  - Gender
  - Risk quantities (LAR, AR_{15}, AR_{30}, other/s?)
  - Risk transfer weights…..
- **Non-cancer risk assessment**
  - thyroid nodules, thyroid dysfunction, visual impairment, circulatory diseases, reproductive dysfunctions, risk to embryo and fetus

Attributable risk



LAR: over a lifetime …

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Thyroid cancer screening

- Ongoing thyroid ultrasound screening programme in children
- Likely to lead to an increase in the incidence of thyroid disease due to earlier detection of non-symptomatic cases
- Research needs: screening effect- magnitude. factors influencing its impact, how to deal with it, …

Framework for estimating cancer risks

RADIATION RESEARCH **182**, 000–000 (2014)
0033-7587/14 $15.00

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Health Risk Assessment Framework

A Framework for Estimating Radiation-Related Cancer Risks in Japan from the 2011 Fukushima Nuclear Accident

L. Walsh,[a,1] W. Zhang,[b] R. E. Shore,[c] A. Auvinen,[d] D. Laurier,[e] R. Wakeford,[f] P. Jacob,[g] N. Gent,[b] L. R. Anspaugh,[h] J. Schüz,[i] A. Kesminiene,[i] E. van Deventer,[j] A. Tritscher[j] and M. del Rosario Pérez[j]

[a] BfS – Federal Office for Radiation Protection, Radiation Protection and Health, Neuherberg, Germany; [b] Health Protection Agency, Centre for Radiation, Chemical and Environmental Hazards; Radiation Protection Division; Epidemiology Section, Chilton, Didcot, Oxfordshire, United Kingdom; [c] Radiation Effects Research Foundation, Chief of Research, Hiroshima, Hiroshima; [d] Radiation and Nuclear Safety Authority and University of Tampere, Finland; [e] Institut de Radioprotection et de Sûreté Nucléaire, Fontenay-aux-Roses, France; [f] The University of Manchester, The Dalton Nuclear Institute, Manchester, United Kingdom; [g] Helmholtz Zentrum München – German Research Center for Environmental Health and Institute of Radiation Protection, Neuherberg, Germany; [h] Radiobiology Division, University of Utah, Salt Lake City, Utah; [i] International Agency for Research on Cancer, Section of Environment and Radiation, Lyon, France; and [j] World Health Organization, Geneva, Switzerland

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Psychological impact

- The **psychosocial impact** is one of the major consequences of nuclear emergencies
- The **psychological impact** may outweigh other health consequences
- Soon after the accident, WHO recommended improving availability and access to **community mental health services** in the affected areas
- This still remains as a **challenge** that may have an impact at all levels of society

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Emergency Response Framework (ERF, 2013)

- The ERF provides a common approach for WHO's work in emergencies.
- To act with urgency and predictability to **best serve** and **be accountable** to populations affected by emergencies.
- Multiple dimensions of the impact of emergencies: **public health, social, economic, political, …**

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ERF | EMERGENCY RESPONSE FRAMEWORK

Executive summary

WHO's Member States face a broad range of emergencies resulting from various

can have extensive political, economic, social and public health impacts,

emergency. They may be caused by natural disasters, conflict, disease outbreaks, food contamination, or chemical or radio-nuclear spills, among other hazards. They can undermine decades of social development and hard-earned health gains, damage hospitals and other health infrastructure, weaken health systems and slow progress towards the Millennium Development Goals (MDGs). Preparing for and responding effectively to such emergencies are among the most pressing challenges facing the international community.

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Policy implications: multidisciplinary approach

- To integrate the **multiple dimensions of the impact** when planning and implementing response strategies
  - *Radiation-related health risks*
  - *Psychological impact*
  - *Social and economic impact*

- This applies to **actions** such as evacuation, relocation to temporary housing, permanent resettlement, food and agricultural restrictions, long-term follow-up of populations …

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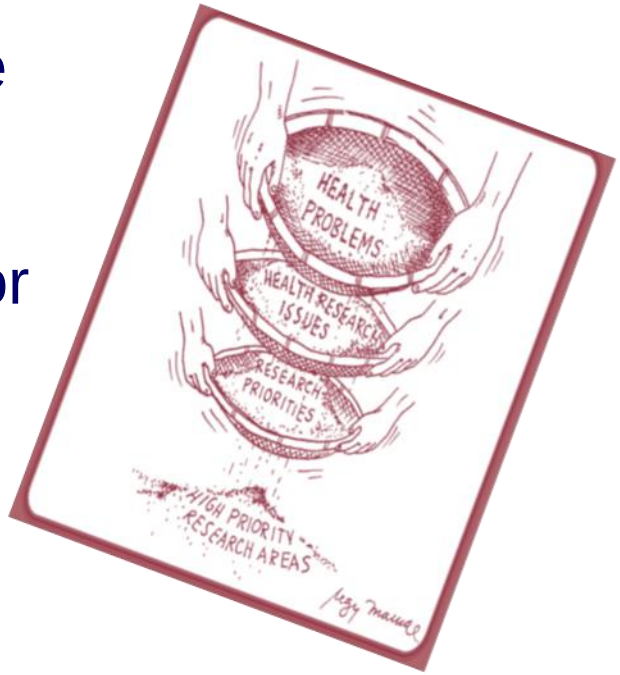
Final considerations

- The assumptions used in the WHO HRA assessment were deliberately chosen to minimize the possibility of underestimating health risks. The HRA framework may be used to refine risk estimates as more precise dose estimations become available

- This HRA provides information for setting priorities for population health monitoring, as has already begun with the *Fukushima Health Management Survey.* It also helps identify **research needs**.

- **Priority setting** will allow to develop a strategic research agenda (**SRA**) to review evidence and translated it into policy and actions.



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Thank You

http://www.who.int/ionizing_radiation/