Chemical Biological Radiological Nuclear NaTech Environmental

IFRC

INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES

192 National
Red Cross and
Red Crescent Societies

Leaving
no one behind

Martin Krottmayer
Sr. Officer, Tech & Bio Hazards preparedness

APRU
Multi-Hazards

Disaster risk knowledge

- Are key hazards and related threats identified?
- Are exposure, vulnerabilities, capacities and risks assessed?
- Are roles and responsibilities of stakeholders identified?
- Is risk information consolidated?

Detection, monitoring, analysis and forecasting of the hazards and possible consequences

- Are there monitoring systems in place?
- Are there forecasting and warning services in place?
- Are there institutional mechanisms in place?

Warning dissemination and communication

- Are organizational and decision-making processes in place and operational?
- Are communication systems and equipment in place and operational?
- Are impact-based early warnings communicated effectively to prompt action by target groups?

Preparedness and response capabilities

- Are disaster preparedness measures, including response plans, developed and operational?
- Are public awareness and education campaigns conducted?
- Are public awareness and response tested and evaluated?

Testimonial from Japanese RC – Medical response staff

Ayumi Watanabe
JRCS Emergency nurse
Fukushima RC Hospital

"We were not at all aware of the possible damage at the nuclear power plant, and we started the treatment of tsunami survivors. But, soon after our arrival, we heard the news of the explosion, so that we had to pack up and change the location of our medical relief activities. ***"You are going to leave us!"*** *survivors said to us reproachfully. My heart was close to breaking with a mixture of guilt and fear that I wanted to evacuate from the radiation danger."*

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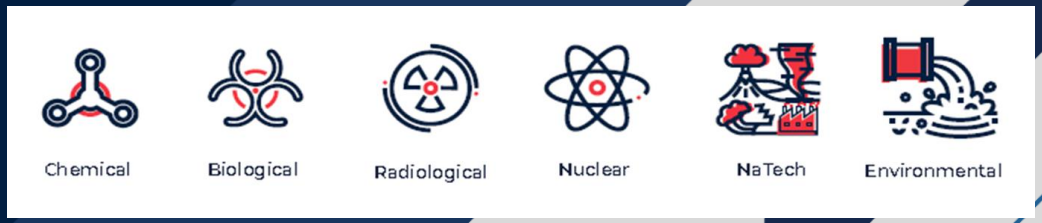
Understanding the Hazard



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Definitions

Emergency

A non-routine situation or event that necessitates prompt action, primarily to mitigate a hazard or adverse consequences for human life, health, property and the environment.

Nuclear or radiological emergency

An emergency in which there is, or is perceived to be, a hazard due to:

(a) The energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction; or

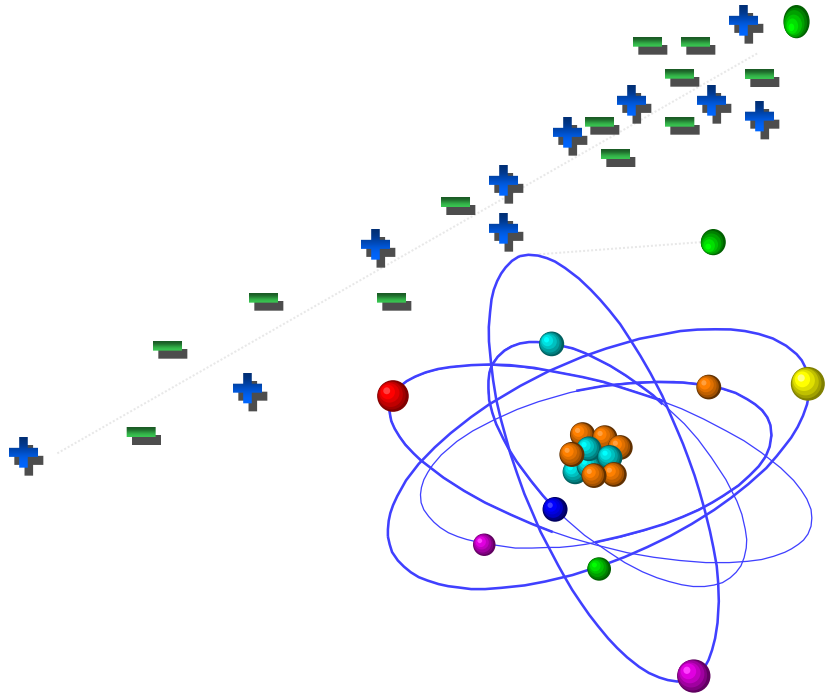
(b) Radiation exposure

Source: IAEA Safety Glossary 2018

What is Radiation?

Radiation: Energy in the form of particles or electromagnetic waves

Ionizing Radiation: Radiation with sufficient energy to remove an electron from an atom or molecule.



Radiation risks

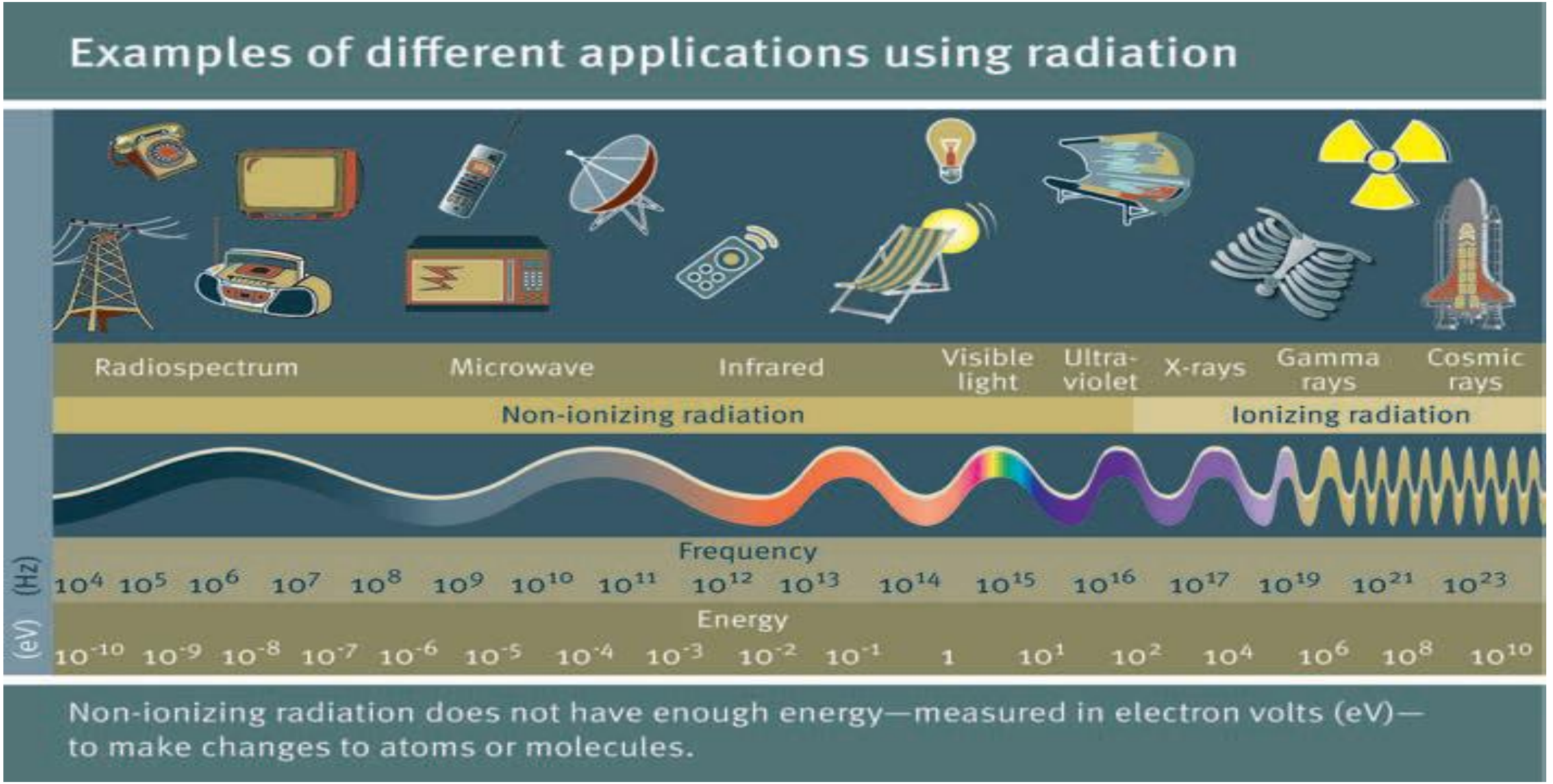
Detrimental health effects of exposure to radiation (including the likelihood of such effects occurring), and any other safety related risks (including those to the environment) that might arise as a direct consequence of:

(a) Exposure to radiation;

(b) The presence of radioactive material (including radioactive waste) or its release to the environment;

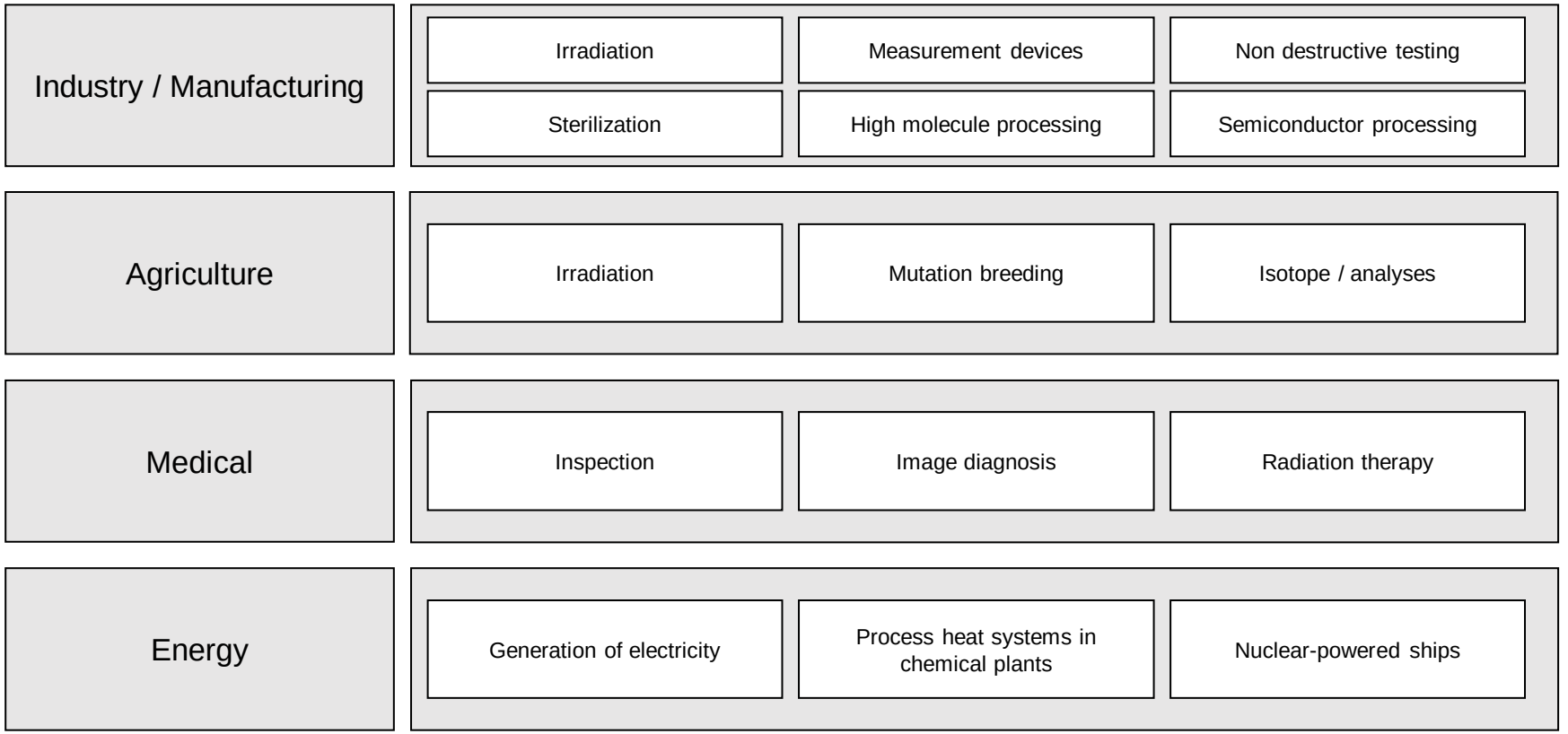
(c) A loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source or any other source of radiation.

Ionising versus Non – Ionising radiation



Peaceful uses of nuclear technology

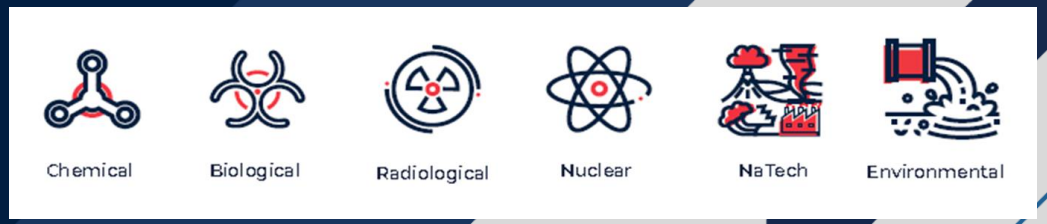
- Using nuclear technology is familiar to people.
- Nuclear technology is used in wide applications.
- The power generation sector is the largest application.



Energy is the largest application of nuclear energy usage.

Based on : JAEA ” Research report on market size for uses of nuclear technologies”

International EPR System



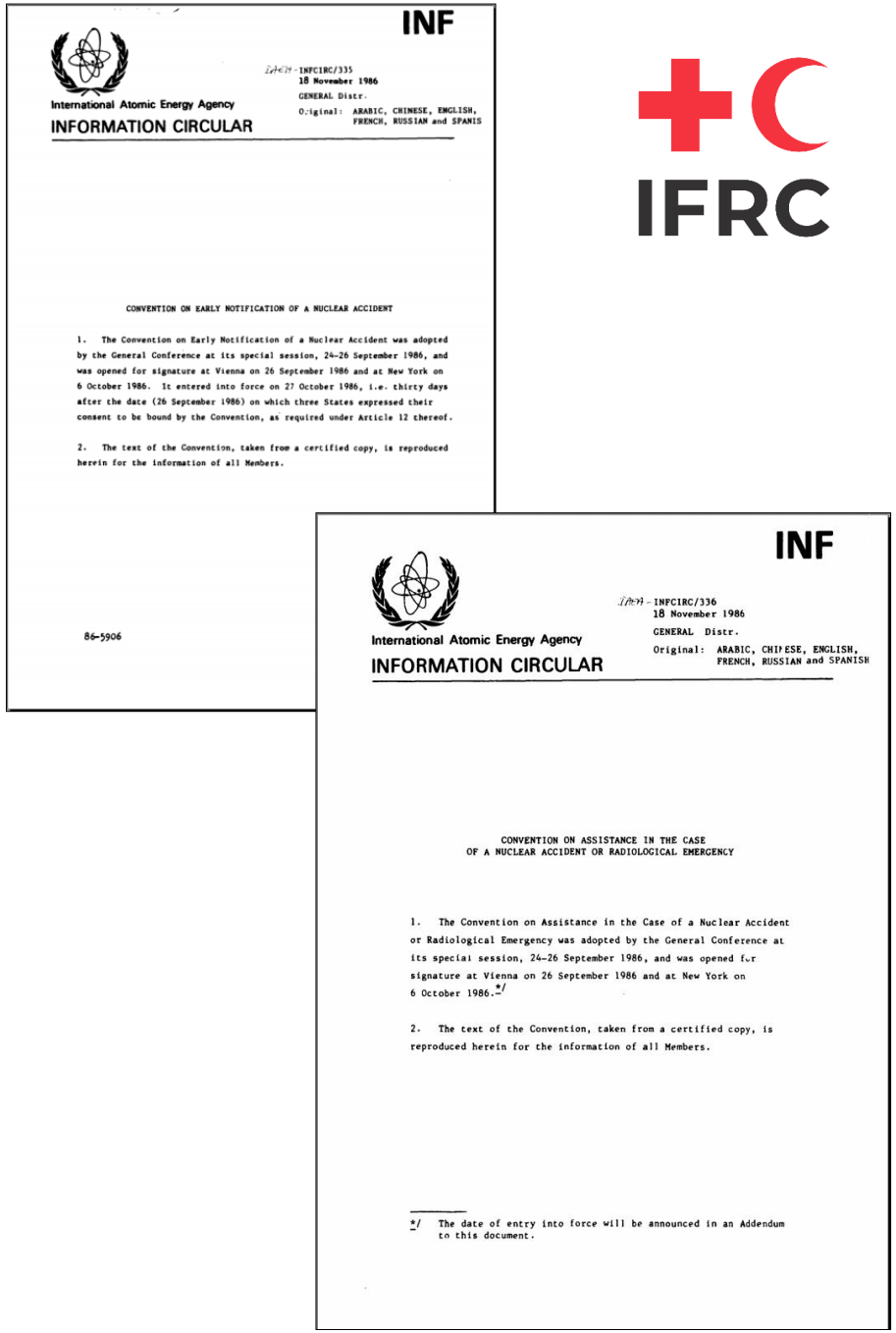
International EPR Framework

Conventions

- Convention on Early Notification of a Nuclear Accident (ENC)
  - 122 Parties – 69 signatories
  - including FAO, WHO, WMO, EURATOM

- Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency (AC)
  - 117 Parties – 68 signatories
  - including FAO, WHO, WMO, EURATOM

Both Conventions are applicable for nuclear or radiological emergency, regardless of its origin



INF

International Atomic Energy Agency
INFORMATION CIRCULAR

INFCIRC/335
18 November 1986
GENERAL Distr.
Original: ARABIC, CHINESE, ENGLISH, FRENCH, RUSSIAN and SPANIS

CONVENTION ON EARLY NOTIFICATION OF A NUCLEAR ACCIDENT

1. The Convention on Early Notification of a Nuclear Accident was adopted by the General Conference at its special session, 24-26 September 1986, and was opened for signature at Vienna on 26 September 1986 and at New York on 6 October 1986. It entered into force on 27 October 1986, i.e. thirty days after the date (26 September 1986) on which three States expressed their consent to be bound by the Convention, as required under Article 12 thereof.

2. The text of the Convention, taken from a certified copy, is reproduced herein for the information of all Members.

86-5906

INF

International Atomic Energy Agency
INFORMATION CIRCULAR

INFCIRC/336
18 November 1986
GENERAL Distr.
Original: ARABIC, CHINESE, ENGLISH, FRENCH, RUSSIAN and SPANISH

CONVENTION ON ASSISTANCE IN THE CASE OF A NUCLEAR ACCIDENT OR RADIOLOGICAL EMERGENCY

1. The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency was adopted by the General Conference at its special session, 24-26 September 1986, and was opened for signature at Vienna on 26 September 1986 and at New York on 6 October 1986.*/

2. The text of the Convention, taken from a certified copy, is reproduced herein for the information of all Members.

*/ The date of entry into force will be announced in an Addendum to this document.

Safety Standards

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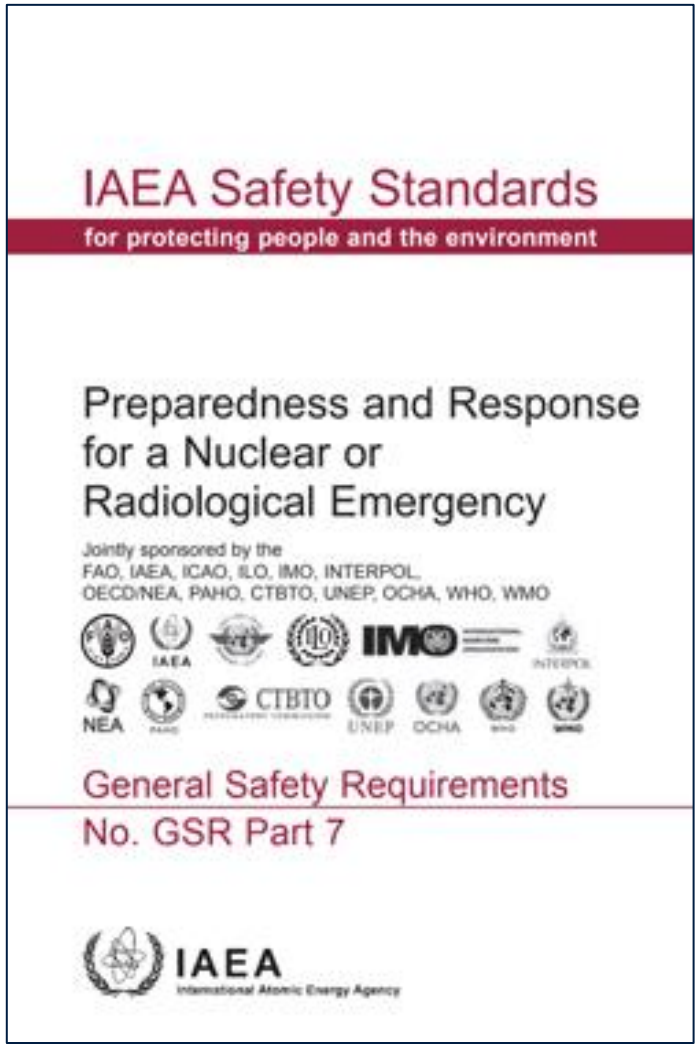
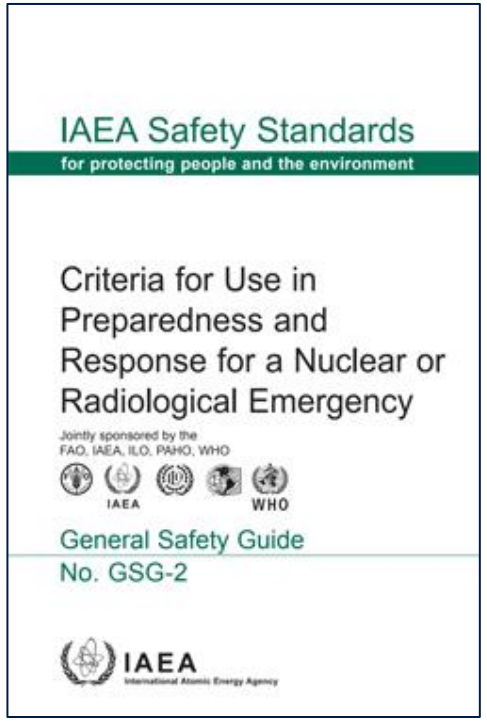
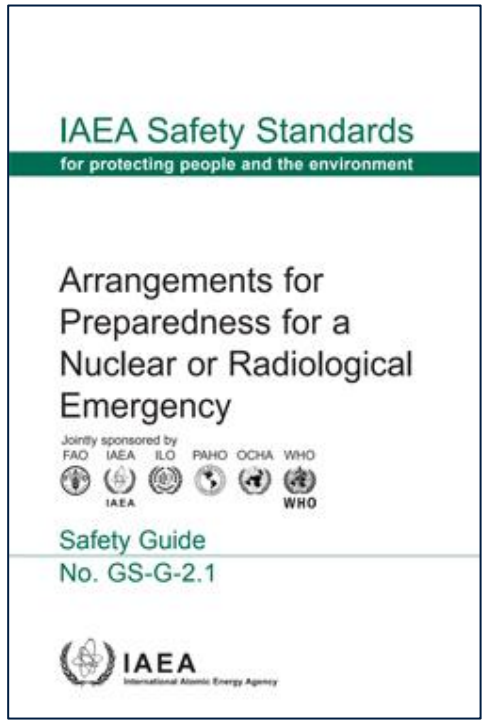
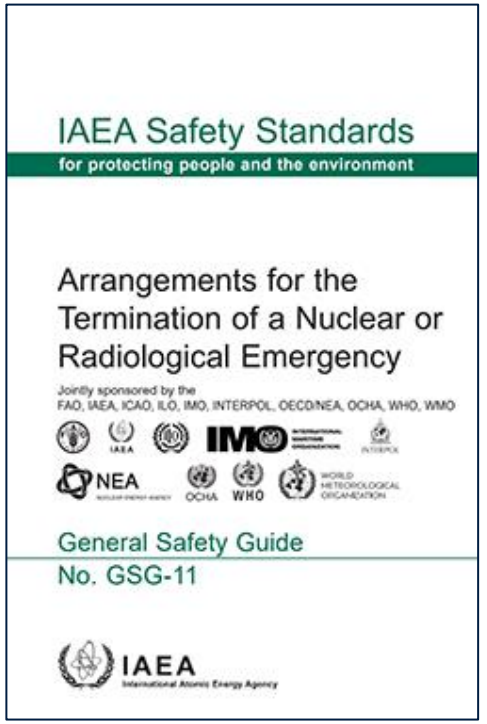
"transnational emergency"

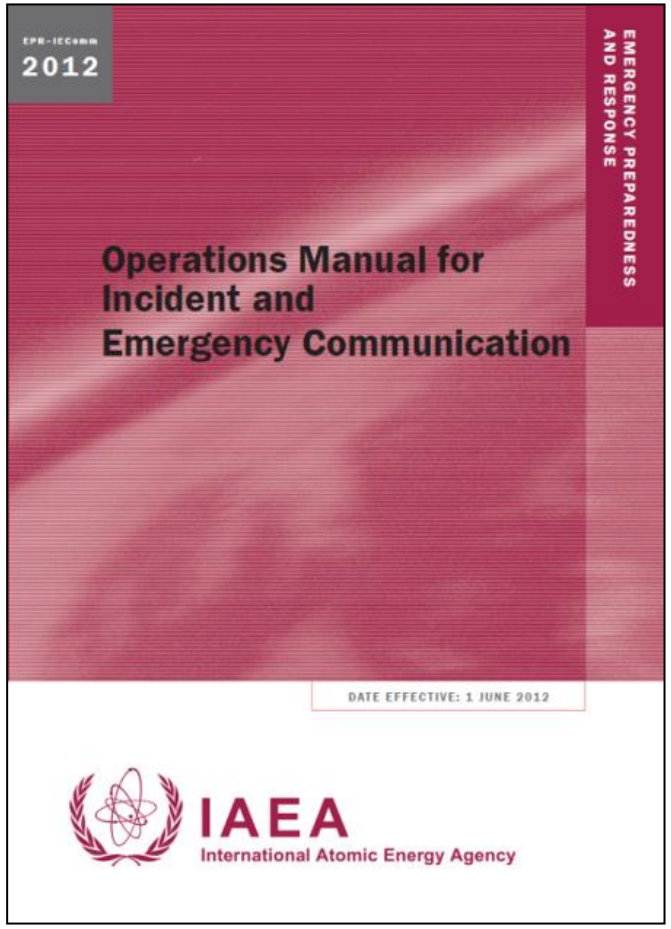


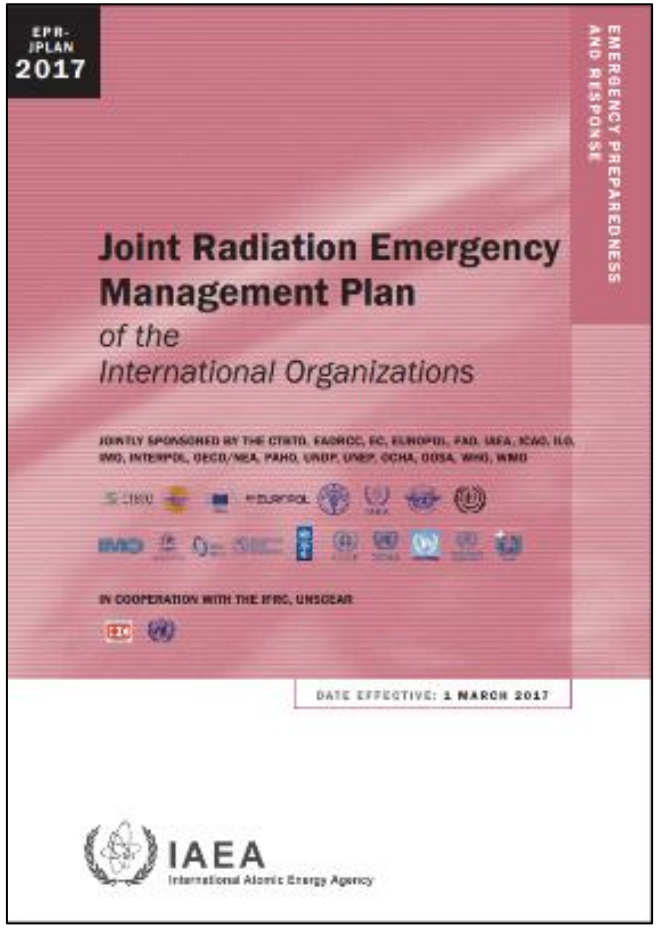


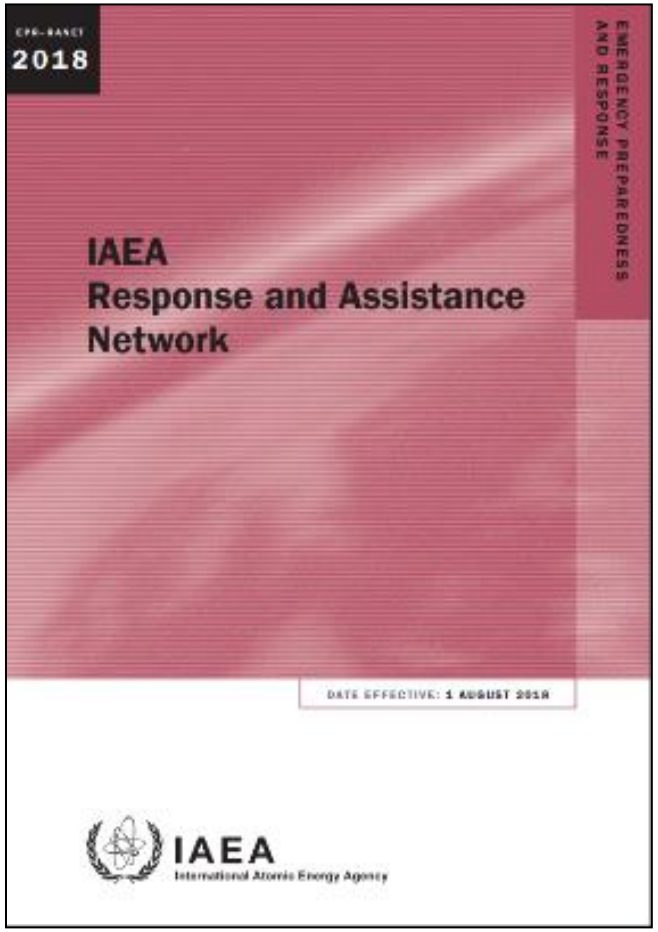




Operational Arrangements

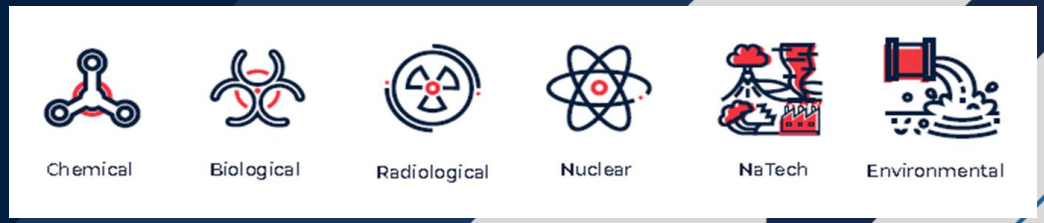






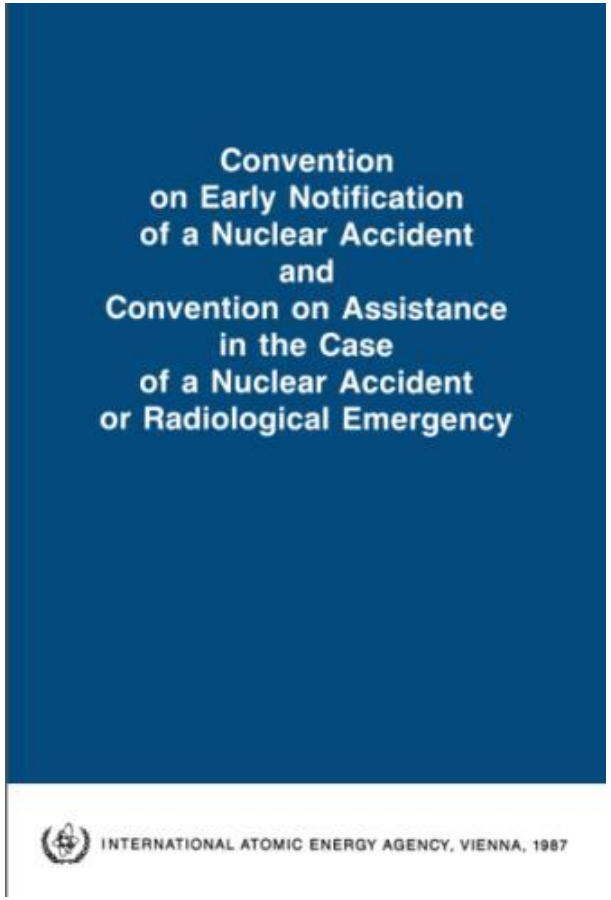
International Coordination - IACRNE

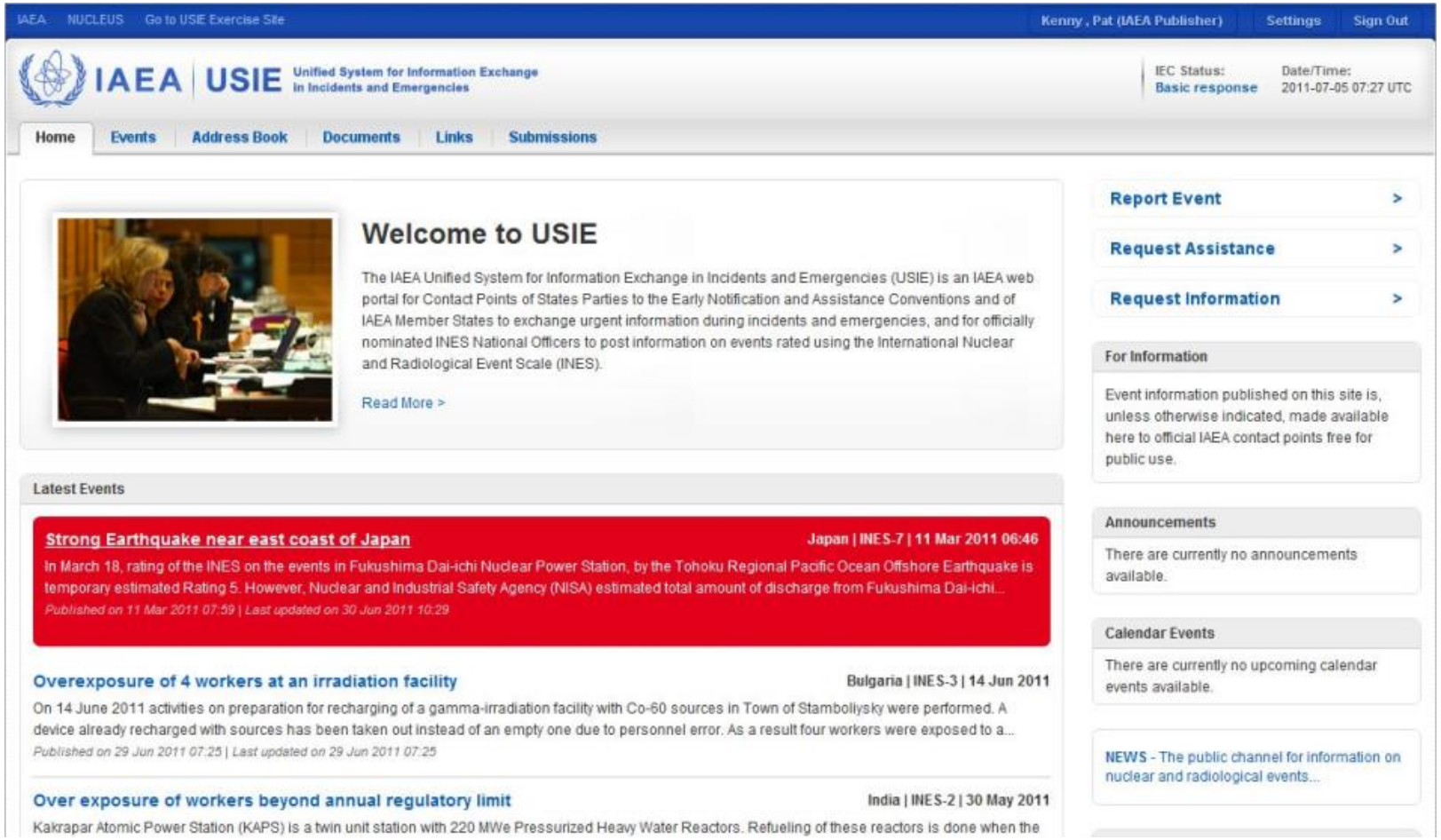
Communication / Warning System

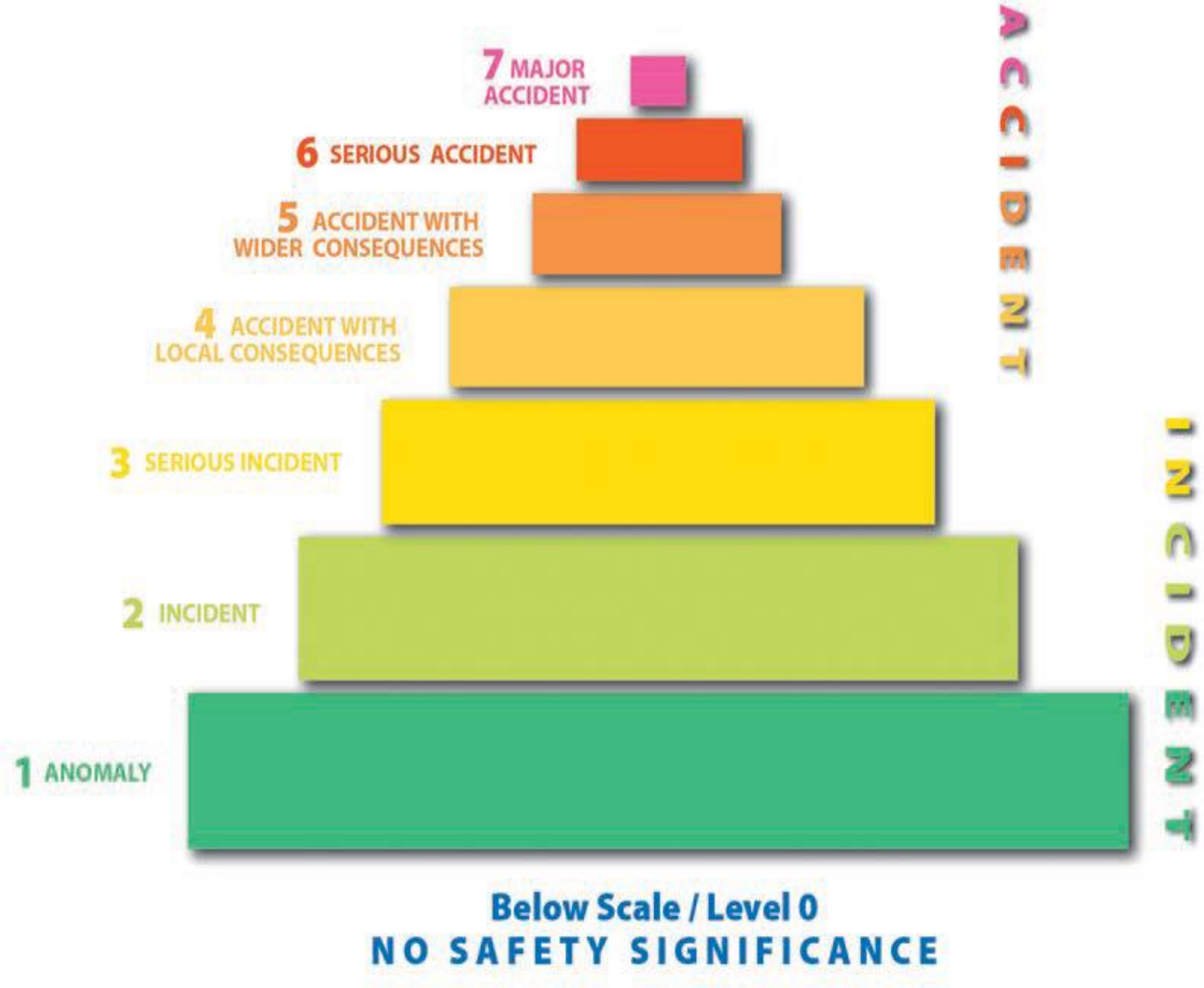


Notification and official information exchange

- Through officially designated Contact Points







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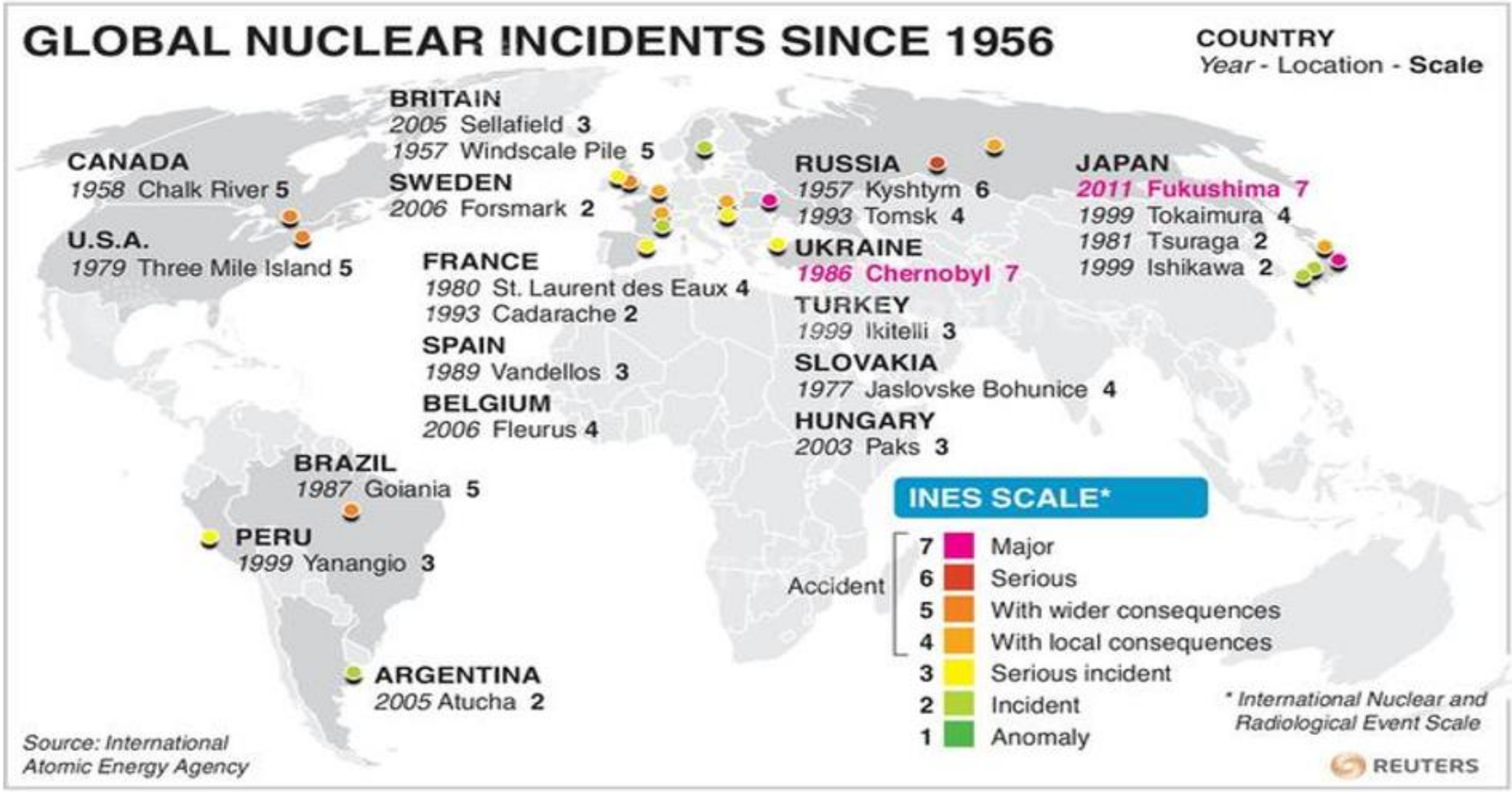
INES International Nuclear and Radiological Event Scale

GLOBAL NUCLEAR INCIDENTS SINCE 1956

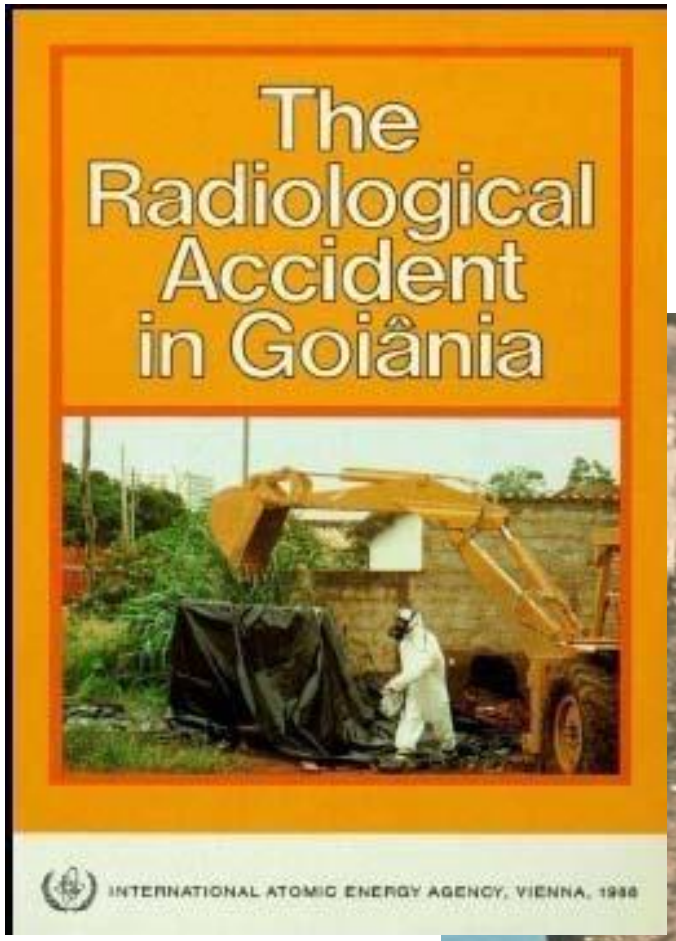


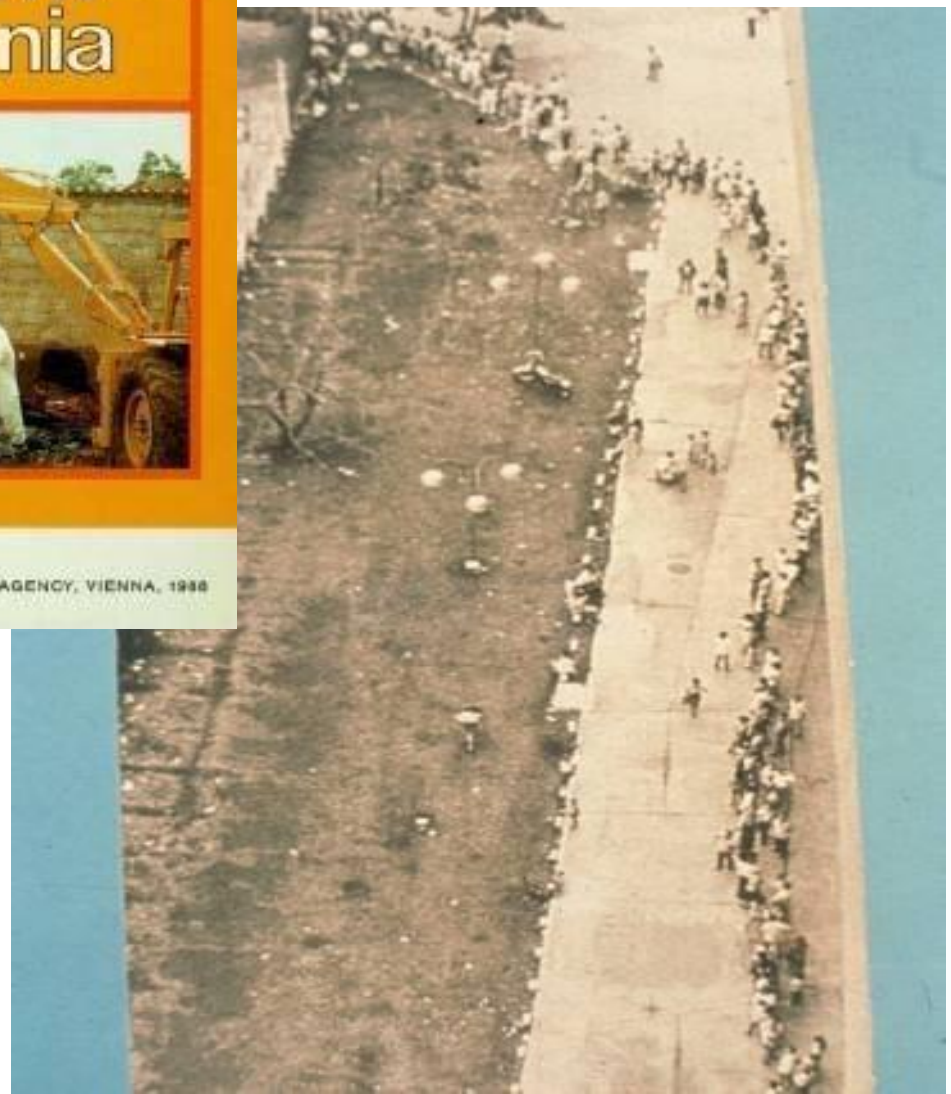
Goiania, Brazil - September 1987

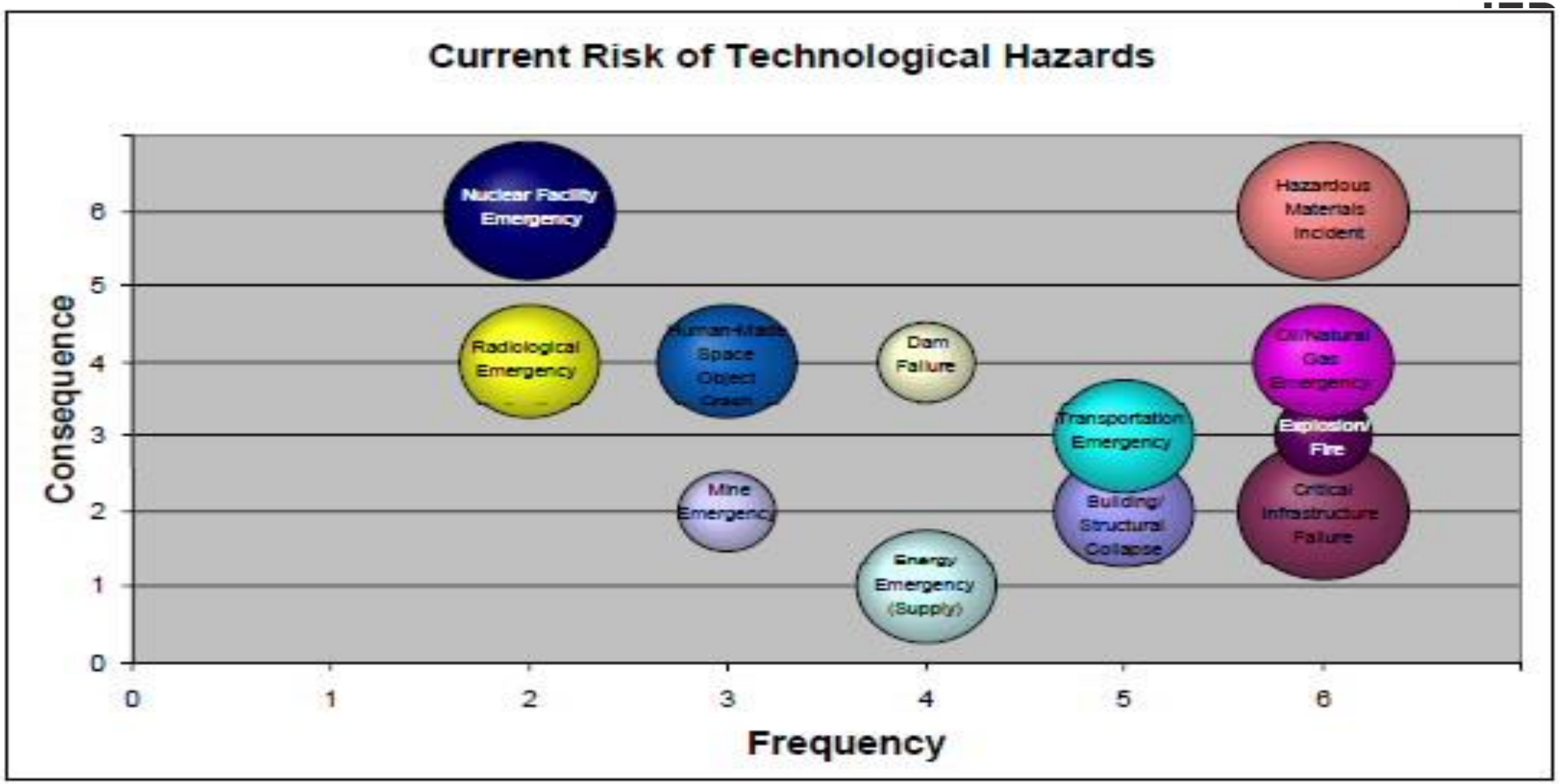
- Abandoned Cancer Clinic discarded canisters from radiotherapy machine
- Junkyard worker opened canisters revealing blue powder
- Citizens contaminated with radioactive Cesium-137

Consequences

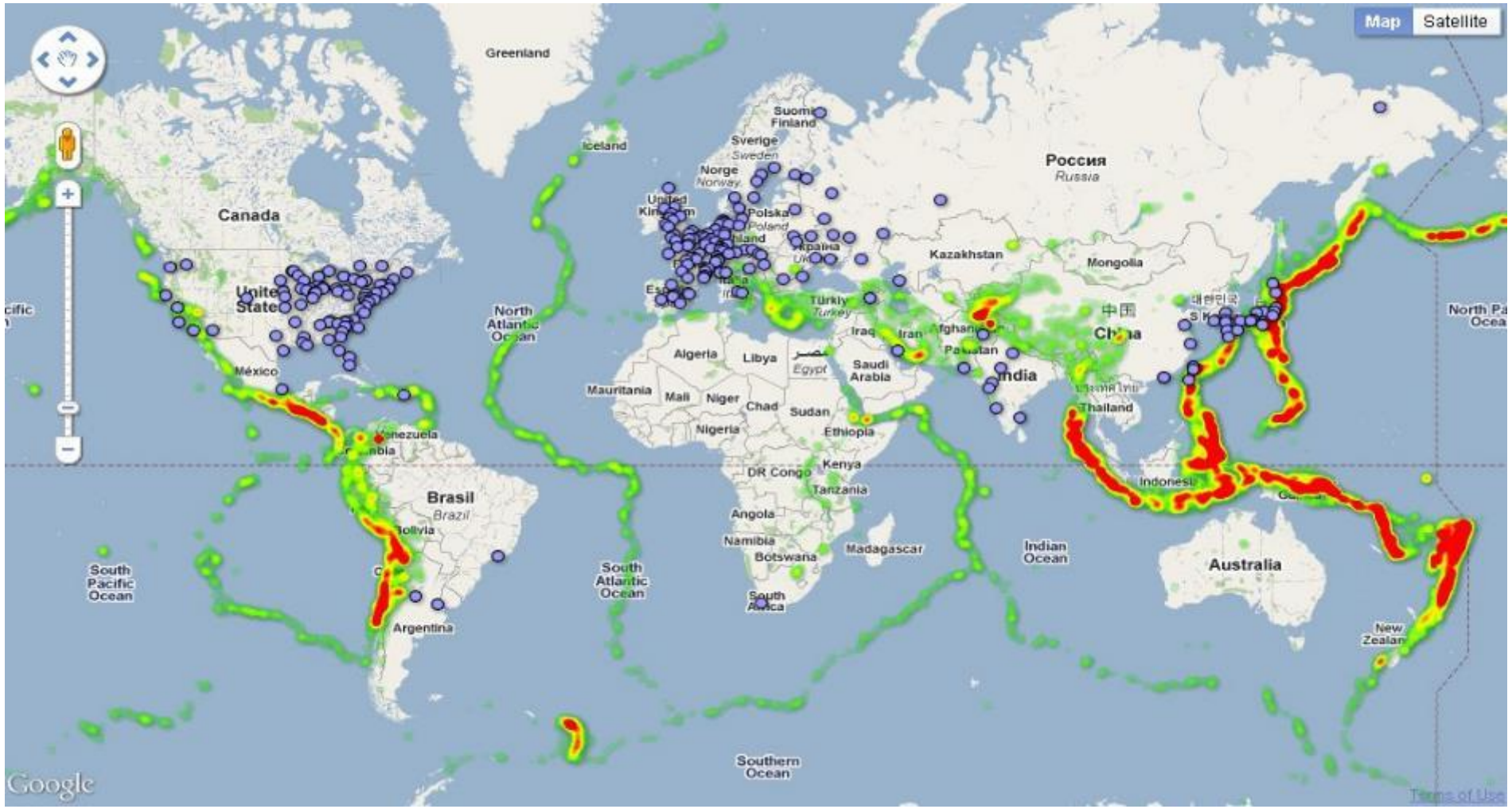
- 5 deaths (including 6-year-old girl internally contaminated)
- 28 with radiation burns
- 49 hospitalized
- 151 contaminated internally and externally
- 249 people contaminated
- Required monitoring of 112.000 persons for contamination (10% of local population)



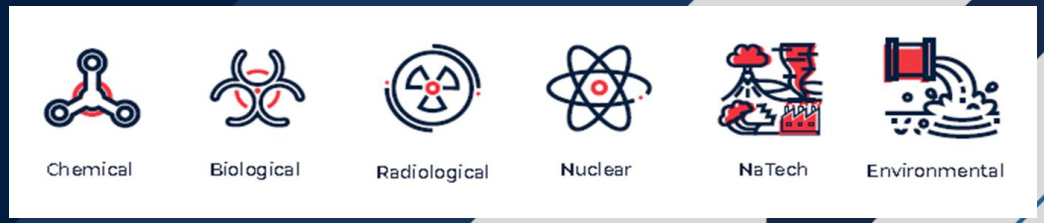




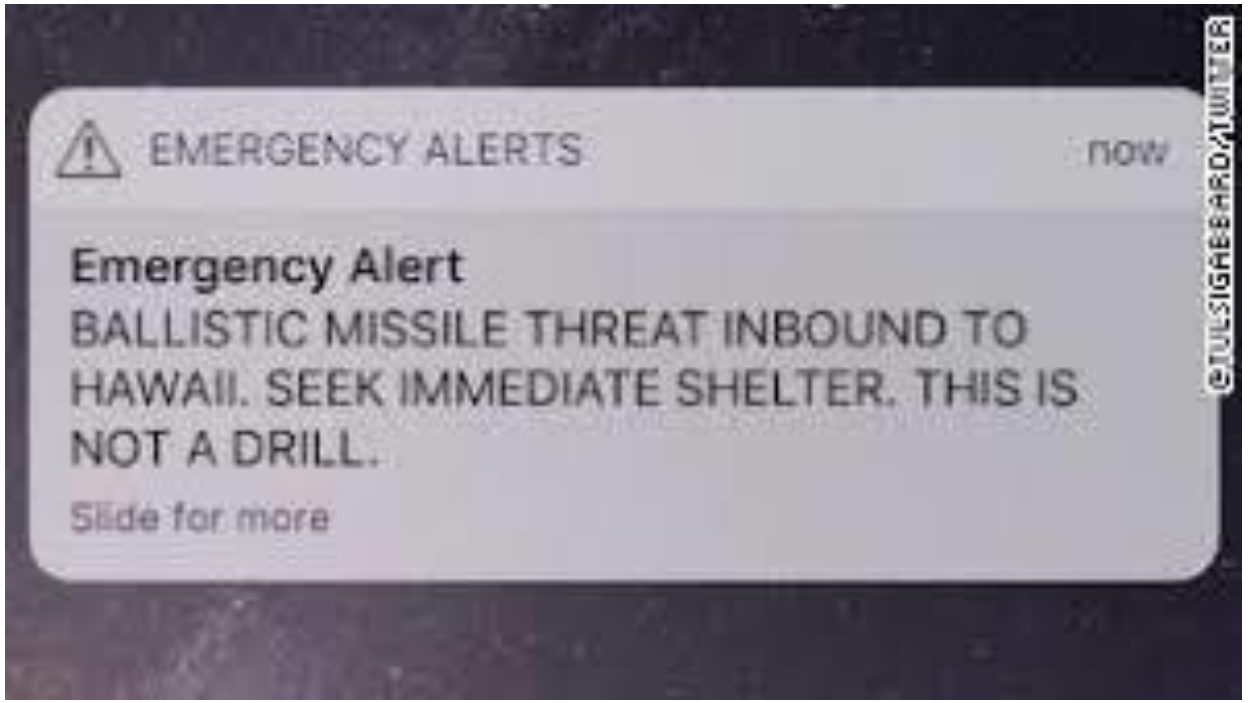
Example: Risk Assessment Canada - Ontario


Map
Satellite
Greenland
Iceland
Canada
North Atlantic Ocean
Россия
Russia
Kazakhstan
Mongolia
Suomi Finland
Sverige Sweden
Norge Norway
Polska Poland
Türkiye Turkey
Iraq
Iran
Algeria
Libya
Egypt
Saudi Arabia
Mauritania
Mali
Niger
Chad
Sudan
Nigeria
Ethiopia
Kenya
DR Congo
Tanzania
Angola
Namibia
Botswana
Madagascar
South Africa
Thailand
Indonesia
Australia
Indian Ocean
New Zealand
México
Brasil
Brazil
Argentina
South Pacific Ocean
South Atlantic Ocean
Southern Ocean
Google

Preparedness



Fiction or Reality…….



What to do in case of a nuclear, chemical or radiological event?

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IMMEDIATE RESPONSE

GET INSIDE

Go to the basement or the middle of a building.

STAY INSIDE

Plan on 12 - 14 hours unless provided updated guidance.

STAY TUNED

AM/FM radio is best, cellular and Internet if available.

Be prepared!

ifrc.org

Pickering / Toronto, Canada
12 Jan 2020

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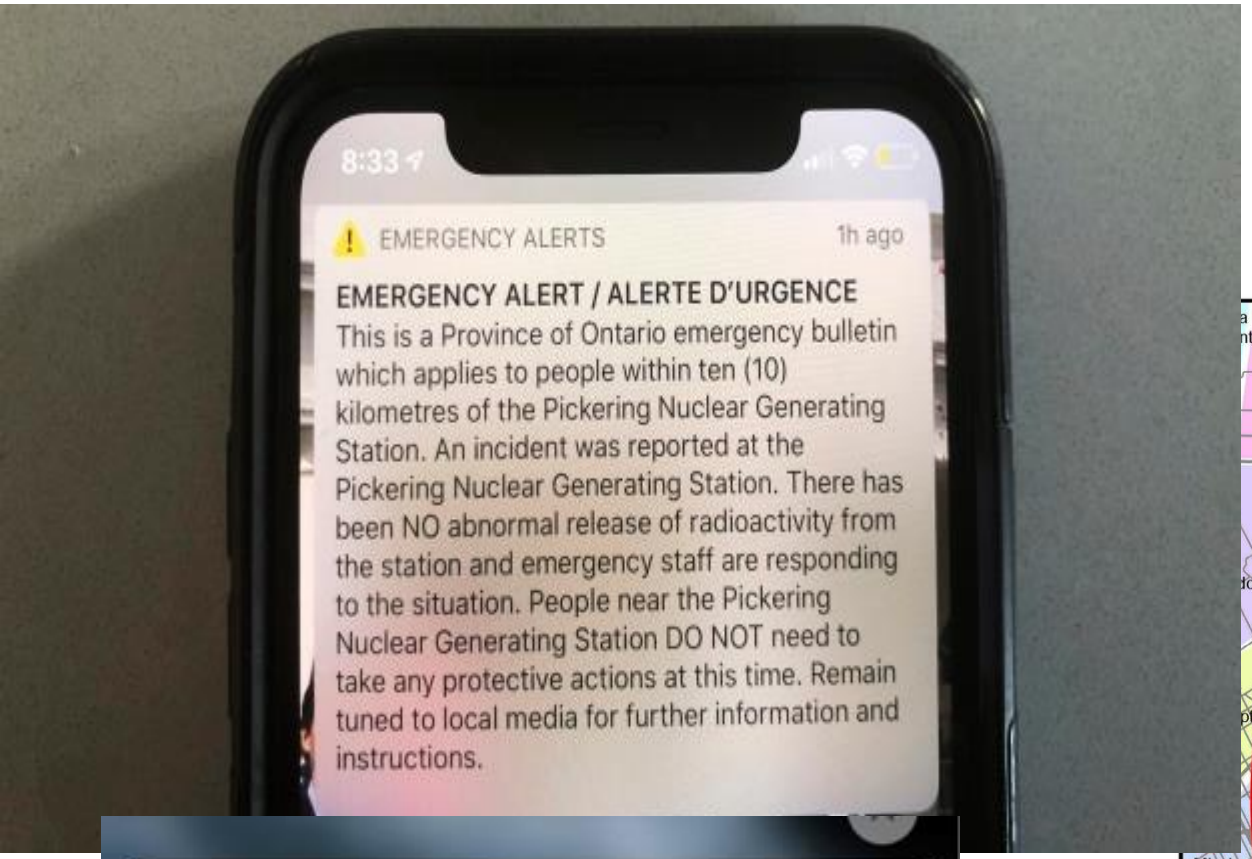

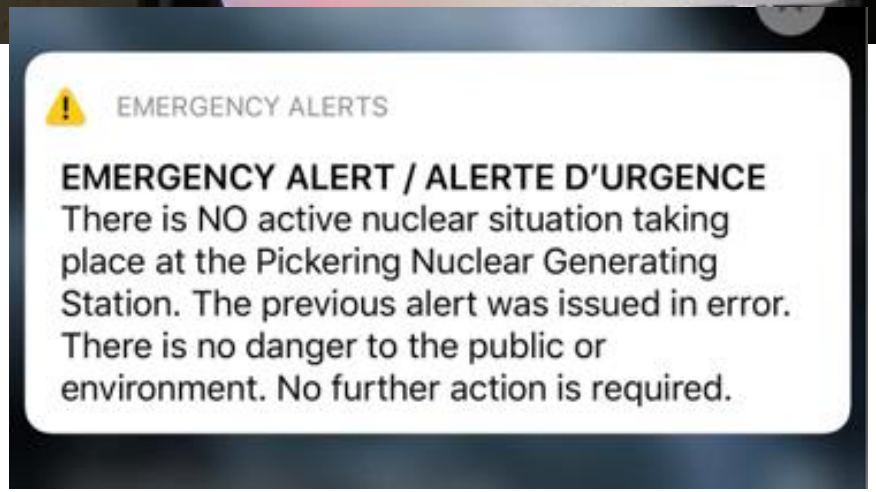

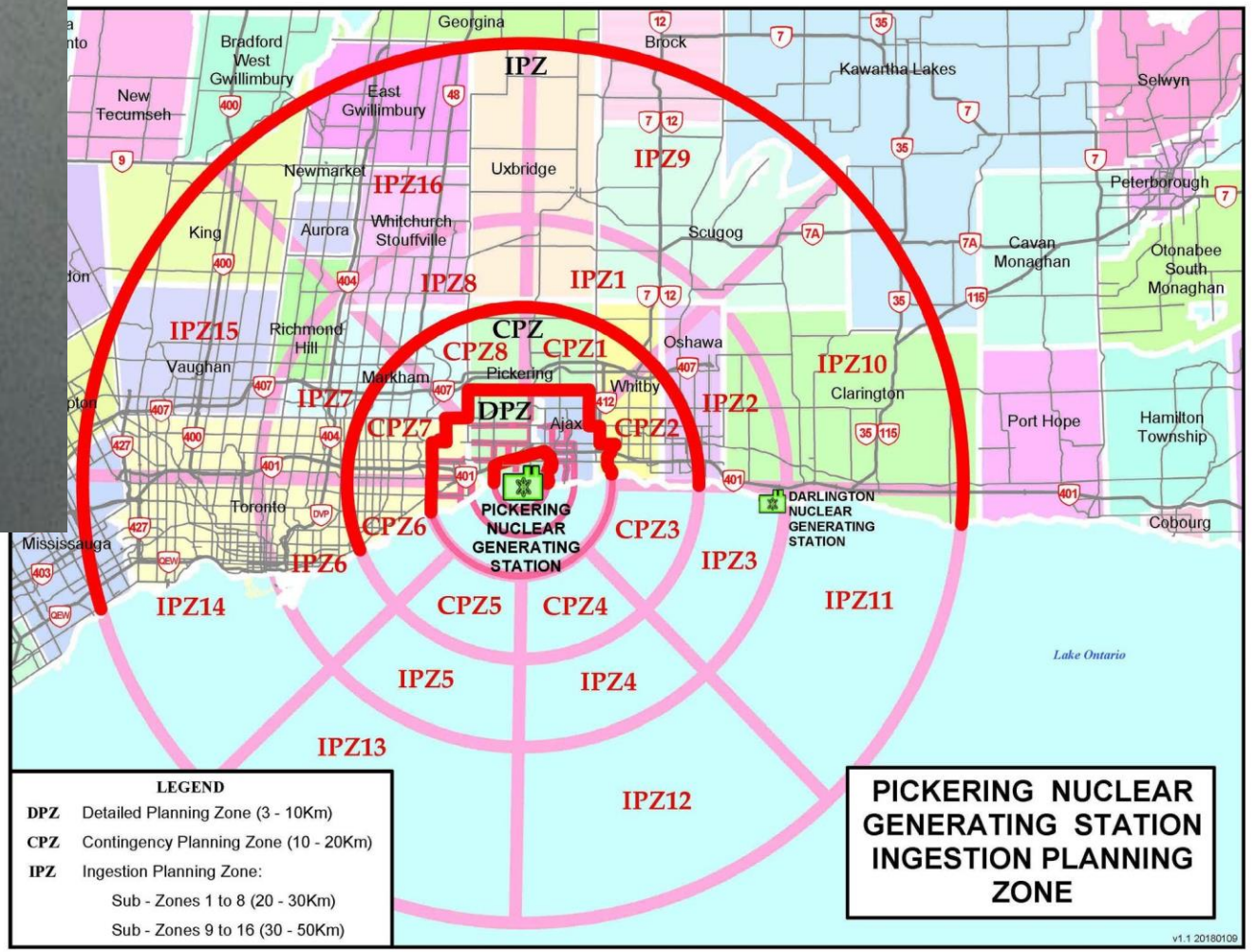

Technological hazards
Self-protection

When a technological or biological hazard happens, take the following actions:

TIME

Spend the shortest amount of time in contaminated areas

DISTANCE

Take greater distance from the source of harm and contamination

SHIELDING

Maintain significant physical barriers and shielding

Be prepared!

ifrc.org

Preparedness messages

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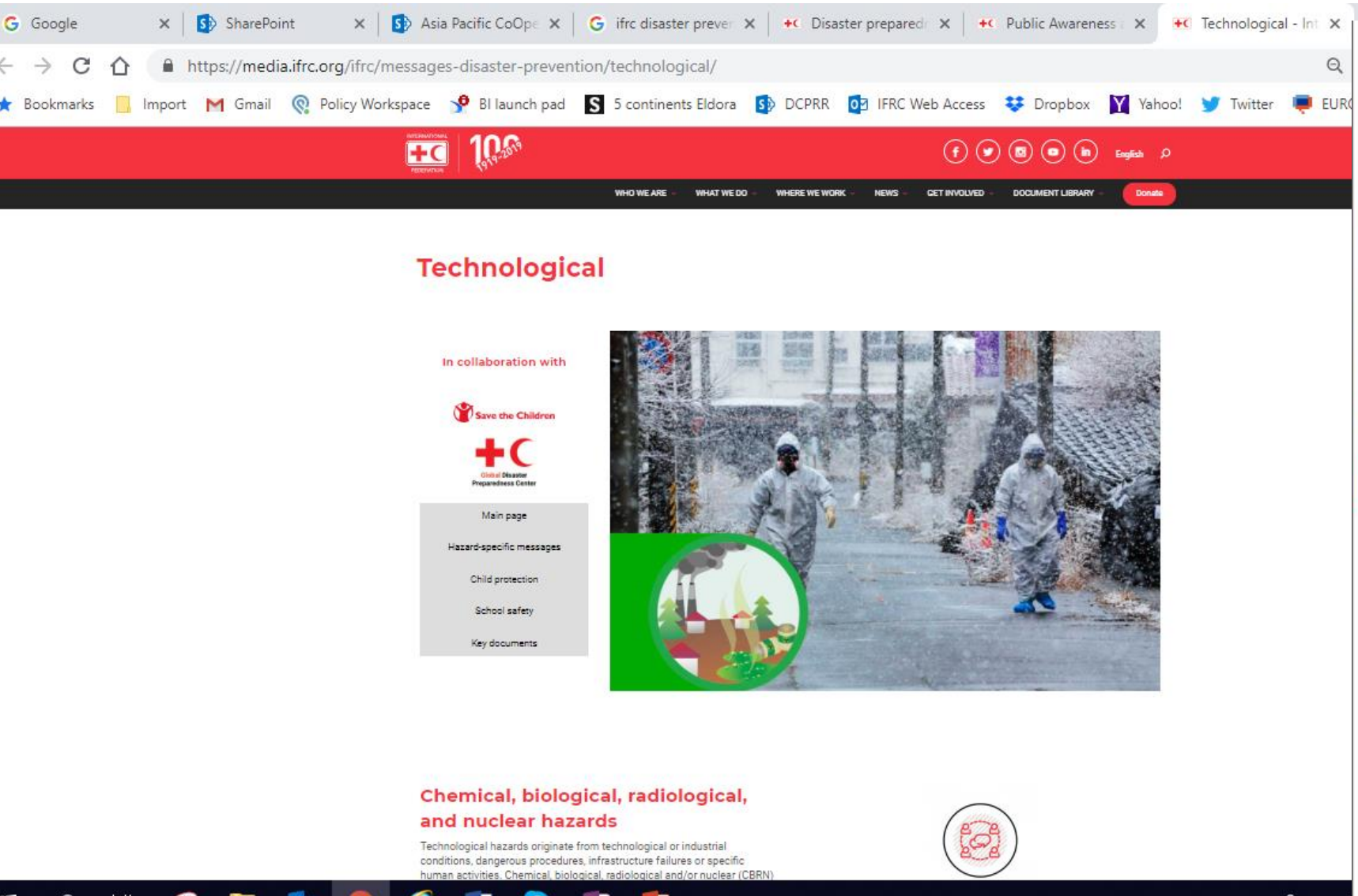

RCRC Nuclear & Radiological scope of Interventions

Preparedness	- General Information to the public - Preparedness plans -Linking with national and local authorities - Establishing a trust relationship with communities with regard to nuclear issues - Establishing partnerships - Information on specific health impact and preparedness issues, etc. -Joint messages specifically about preparedness in NR Accidents / Technological accidents - Business continuation
Response	- General needs resulting from displaced population (e.g. food, water, shelter, livelihoods) - Specific needs (e.g. contamination), - general and specific medical needs (burns, injuries etc), - Preventive health interventions - Protection of staff and volunteers - Information for the population, etc.
Recovery	-Psychosocial needs specific to nuclear crises - Social needs (livelihoods, education, resettlement), - Ongoing health needs, etc. -Lessons learned from Chernobyl & Fukushima and similar events

Awareness & Comms

Technological Hazard Preparedness

The Basics of Self-Protection

In all technological emergency situations, closely monitor and follow responsible civil authority warnings and instructions on accessing and leaving contaminated areas. Also follow any personal precaution advisories and personal protective measures issued by public health officials.

Much of the standard guidance and training for responding and reacting to hazardous material incidents builds on **three basic concepts** of time, distance and shielding.

Time

All individuals should spend the **shortest amount of time** as possible in contaminated areas to minimize exposure to the hazard. Residents should evacuate contaminated areas while emergency responders should only spend the time necessary to complete mission critical tasks.

Distance

Generally, the **greater the distance** from the source of harm and contamination, the less the degree of exposure and risk. Whenever possible distance yourself from the hazardous material source. Obey evacuation orders and advisories whenever issued by responsible civil authorities.

Shielding

While time and distance can be effective in reducing risk exposure, maintaining **significant physical barriers** between the hazardous materials provides added protection. Depending on the nature of the hazardous material shielding can take various forms: vehicles, buildings, walls, personal protective equipment etc. However, no matter how much shielding is available always take into consideration additional benefits also provided by time and distance

Technological & Biological Hazard Preparedness

WHAT ARE TECHNOLOGICAL & BIOLOGICAL HAZARDS?

Man-made hazards are defined as those "induced entirely or predominantly by human activities and choices". Technological Hazards like industrial spills, transport accidents, factory explosions are a subset of man-made hazards. They can also be triggered by natural hazards (NATECH events).

Bio-hazards include bacteria, viruses, fungi and parasites or parts thereof. Exposure in sufficient quantities and over a given duration may result in illness or injury to human health, and this can happen through natural exposure or release (intentional or unintentional) of microorganism.

WHAT IS OUR GOAL?

- Address **humanitarian consequences** of technological hazards
- Increase **knowledge** and enhance readiness and resilience
- Enhance humanitarian response following extreme events
- **Raise awareness** in communities
- Pursue greater international **cooperation for emergency planning, preparedness and response**
- **Advocate for humanitarian issues** in International radiation preparedness and response frameworks.

In the last 50 years...

124	+ 8,400	3.6 MILLION
Countries experienced industrial accidents.	Technological hazards have happened due to industrial, transportation or diverse accidents.	People have been affected by technological and biological hazards.

EM-DAT The Emergency Events Database

Technological & Biological Hazard Preparedness

MULTI-HAZARD APPROACH

The Red Cross Red Crescent National Societies addresses Technological & Biological Hazards through a multi-hazard approach.

Technological Hazards like industrial spills, transport accidents, factory explosions are a subset of man-made hazards.

Natural Hazards (NATECH) are climate related hazards that impact industrial areas, building structures, and could cause toxic waste.

Biological Hazards include bacteria, viruses, fungi and parasites or parts thereof.

Chemical · Nuclear · Radiological · Biological · NaTech · Environmental

OBJECTIVES

- Address humanitarian consequences
- Raise awareness in communities
- Increase expertise and knowledge
- Pursue greater international cooperation
- Advocate for humanitarian purposes
- Enhance humanitarian response

PREPAREDNESS

Protection
Use Personal Protective Equipment

Time
Spend the shortest amount of time in contaminated areas

Distance
Take greater distance from the source of harm and contamination

Shielding
Maintain significant physical barriers from hazardous materials

Contact details:
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martin.krottmayer@ifrc.org

https://media.ifrc.org/ifrc/techbiohazards/

Chemical · Biological · Radiological · Nuclear · NaTech · Environmental

APRU
Multi-Hazards

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Thank You!

Contact: martin.krottmayer@ifrc.org