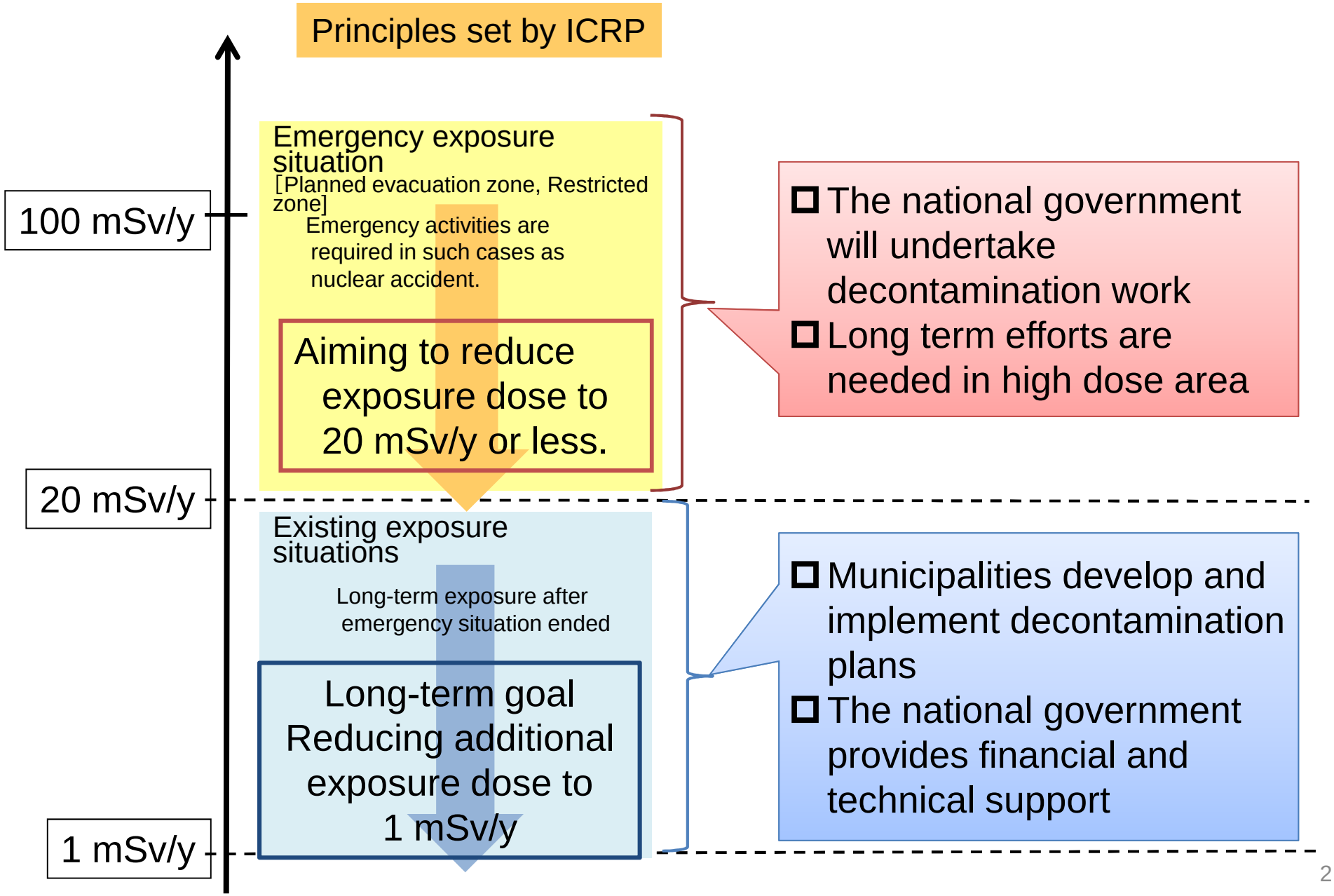
Japan: Standard for Remediation

Ministry of the Environment, Japan

Basic Approach of Decontamination Work

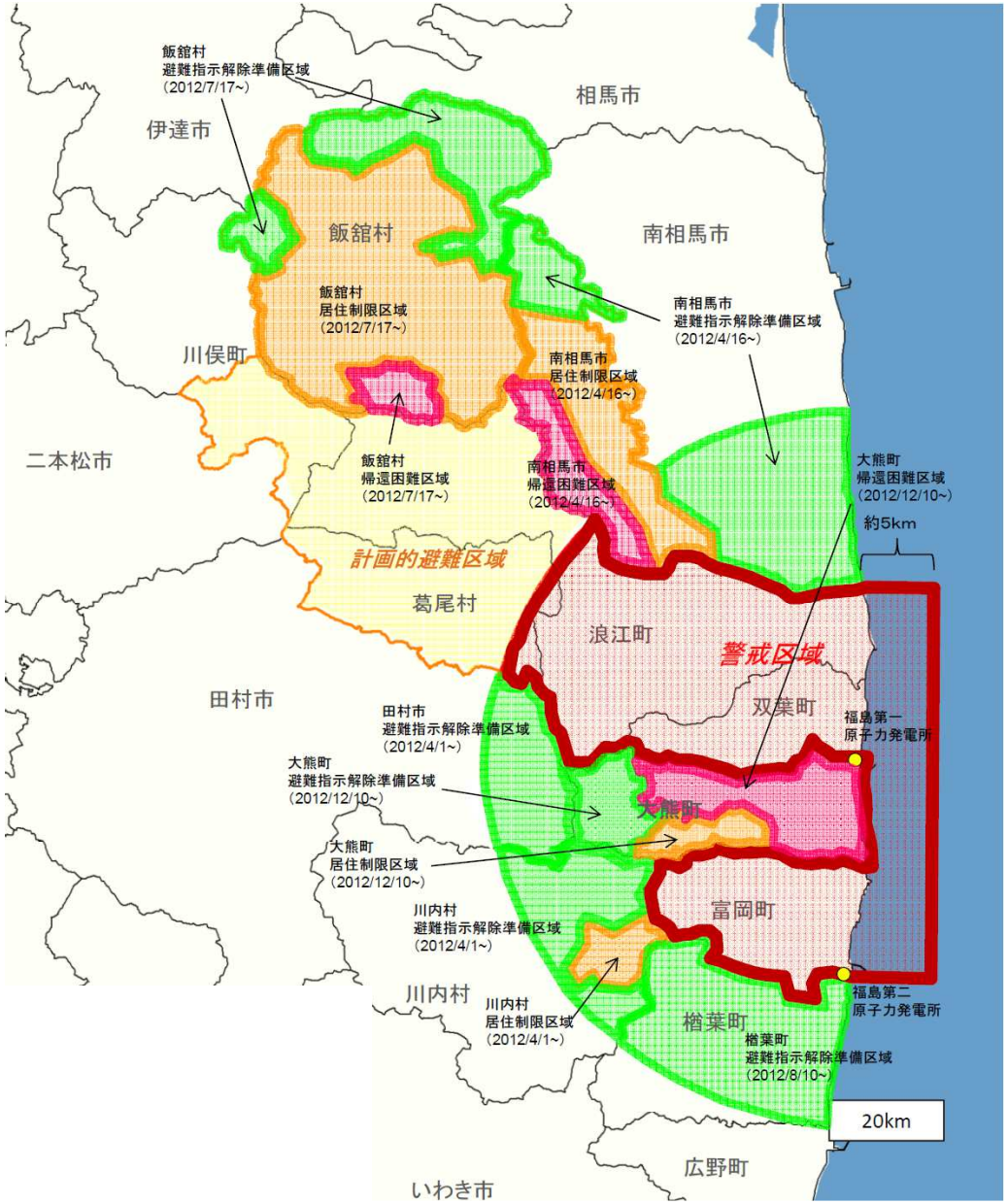


Zones of Evacuation Instruction (as of March 30, 2012)

Restricted Area
Deliberate Evacuation Area

Nuclear Emergency Response Headquarters(March 30, 2012)

Zones of Evacuation Instruction (as of December 10, 2012)



Restricted Area

Deliberate Evacuation Area

⇩ rearrangement

Area 1: <20mSv/yr

Evacuation orders are ready to be lifted

Area 2: 20 – 50 mSv/yr

Areas in which residents are not permitted to live

Area3: >50 mSv/yr

Residents will face difficulties in returning for a long time

Nuclear Emergency Response Headquarters(November 30, 2012)

Basic Principles under the Act
Targets of the Decontamination

Additional * exposures over 20mSv/y

- Aim at stepwise and rapid reduction of those areas based on the ICRP Recommendation (2007).

  * 'additional' means beyond natural background and medical exposure

Additional exposures < 20mSv/y

- As a long term goal, aim at reducing to 1 mSv/y or less

General Public

- Reduce estimated annual exposure of the general public by 50 % in 2 years (by Aug 2013)

by radioactive decay, decay by natural factors and by decontamination

Children

- Reduce estimated annual exposure of children by 60 % in 2 years (by Aug 2013) by thorough decontamination of their living environment.

by radioactive decay, decay by natural factors and by decontamination

- The goals will be reviewed periodically

Decontamination Policy for Special Decontamination Area

Policy in FY 2012 and 2013

Decontamination should be implemented taking into account the level of air dose rate.

- ◆**Area less than 20mSv/year**: Aiming for reducing additional exposure dose less than 1mSv/year as long-term goal.
- ◆**Area from 20～50mSv/year**: Aiming for reducing exposure dose in residential and farmland area less than 20mSv/year by the end of FY 2013.
- ◆**Area more than 50mSv/year**: Demonstration projects will be implemented. Lessons learnt will be reflected into future decontamination policy.

Policy After FY 2014

- ◆ Aiming for reducing additional exposure dose less than 1mSv/Y as long-term goal
- ◆ Check and evaluate two-year decontamination results, consider proper actions, and revise implementation plans as needed.

Landfill Disposal of Incinerated Ash According to the Act on Special Measures Concerning Management of Radioactive Contamination

	8,000 Bq/kg or under		8,000～100,000 Bq/kg	Exceeding 100,000 Bq/kg
	Other (Criteria of Waste Management Act)	Specified Domestic Waste & Specified Industrial Waste※2		
Structure of landfill site	Controlled type landfill site※1(Landfill site equipped seepage control work and drainage treatment)			Isolated type landfill site (Landfill site equipped outer intercept)
Preventive measures against leaching of radioactive material	None	*Installing the soil layer *Prevention of rainwater penetration into fly ash	*Cement solidification *Installing the soil layer *Establishing the impermeable soil layer	None (No Leaching of Radioactive Material due to Water Blocking)
Monitoring of radioactive material	None	*Discharged water *Groundwater *Air dose rate in the vicinity		*(Non-existence of discharged water) *Groundwater *Air dose rate in the vicinity

*1 Isolated type of landfill site is possible to be used.

*2 Incinerated ash, sewerage sludge, etc, generated from areas with possible contamination with accident-origin radioactive materials near 8,000 Bq/kg .

Radiological Protection for Decontamination Workers

- Dose Limit at Decontamination Work Areas:

  100mSv in 5 years and 50mSv in 1 year

  *female radiation workers: 5 mSv quarterly

  *pregnant female workers: 1 mSv in the whole pregnancy period

  NB: Employers need to combine exposure with other occupational exposure.

- External Exposure Monitoring:

  -Wearing personal dosimeter

  (Average ambient dose rate is over 2.5 μSv/h)

  -Estimation from exposure of representative person, or Exposure evaluation from ambient dose rate and working hours

  (Average ambient dose rate is 2.5 μSv/h or below)

- Internal Exposure Monitoring

	Level of activity of contaminated soils, etc	
Concentration of ambient dust	Over 500,000 Bq/kg	500,000 Bq/kg or below
Over 10mg/m^3	Internal Exposure Monitoring every 3 months by WBC	Screening
10mg/m^3 or below	Screening	Screening

Radiological Protection for Decontamination Workers

- Personal protective equipment

	Level of activity of contaminated soils, etc	
Concentration of ambient dust	Over 500,000 Bq/kg	500,000 Bq/kg or below
Over 10mg/m^3	Respiratory protective equipment with a filtration efficiency of 95% or more, HAZMAT suits over long sleeve shirts, Rubber gloves and Rubber boots	Respiratory protective equipment with a filtration efficiency of 80% or more, Long sleeve shirts, Rubber gloves and Rubber boots
10mg/m^3 or below	Respiratory protective equipment with a filtration efficiency of 80% or more, Long sleeve shirts, Rubber gloves and Rubber boots	Respiratory mask made with non-woven textiles, Long sleeve shirts, Cotton gloves and Rubber boots