Summary of Laws and Regulations for Nuclear Emergency Preparedness

[Reactor Regulation Act]
○ Prevention of disasters by regulations for operation, etc. of reactors and securing of public safety

• Order of Article 64 of the Reactor Regulation Law

[Basic Act on Disaster Control Measures]
○ Basics of emergency preparedness mainly for natural disaster and promotion of comprehensive and planned disaster management by government
○ Preparation of disaster prevention plan
○ Disaster prevention measures, disaster emergency countermeasures (mainly by municipal and prefectural administrations), disaster recovery measures

[Special Law of Nuclear Emergency Preparedness]
○ Clarification of responsibility and liability of licensees
○ Clarification of the role and response in emergency of the national government
○ Stipulation of special provisions considering the particularity of nuclear disaster (establishment of Offsite Center, etc.)

Emergency Preparedness Guides
(Nuclear Safety Commission)

technical items

Basic Plan for Emergency Preparedness (Volume on nuclear disaster countermeasures)
○ Basic plan for emergency preparedness
(Stipulates specific operation of the Basic Act on Disaster Control Measures)

Licensee's Emergency Preparedness Action Plan
○ Preventive measures, emergency countermeasures and follow-up measures by **licensees**

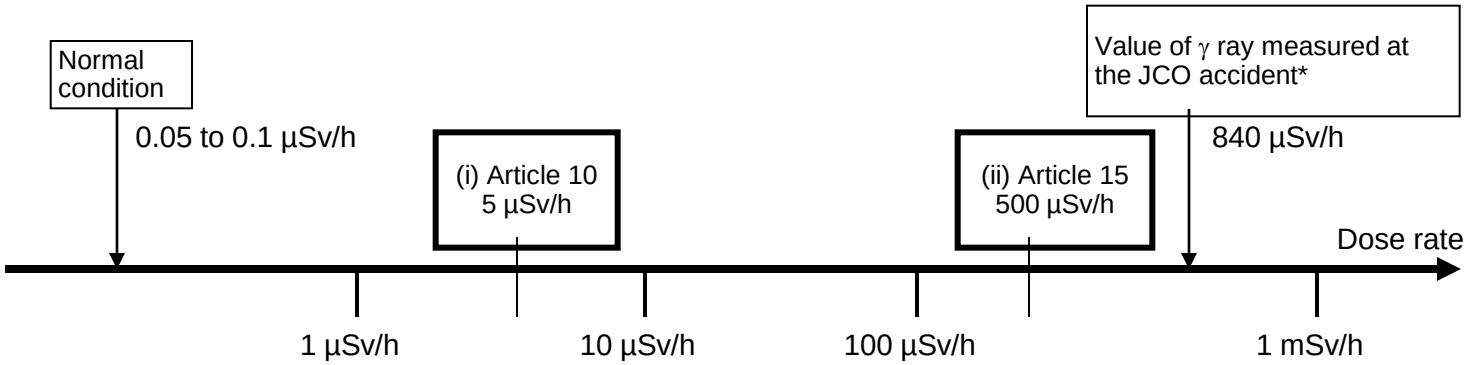
Emergency Preparedness Action Plan
○ Plans of **related government ministries and agencies** for emergency

Regional Plan for Emergency Preparedness
○ Plans of **prefectural and municipal administrations** for emergency

* Reinforcement of ability to respond to nuclear emergency by coordination of related agencies through emergency drills and other activities

Dose rate standard and response to progress of the situation based on the Special Law of Nuclear Emergency Preparedness (after accident)

(Articles 10 and 15 of the Special Law of Nuclear Emergency Preparedness)



(Unit) Sievert (Sv)
The energy absorbed by human body when radiation hits a material object calculated by multiplying correction coefficient according to the radiation type.

(Effect to human body (acute disorder))

100% Death	7,000 mSv
Nausea	1, 000 mSv
Temporal decrease of lymph cell	250 mSv

(Reference)
Fluctuation of dose rate around the site boundary

(1) In rain:	About 0.2 μSv/h
(2) In lightning:	100 μSv/h (momentary)
(3) Passing of container:	About 20 μSv/h (few minutes)
(4) Others (Passing of a person who received RI):	About 100 μSv/h (momentary)

* Measurement value of γ ray detected simultaneously as the emission of neutron ray.

Emergency Preparedness for Nuclear Facilities (Emergency Preparedness Guide)

Volume on Nuclear Emergency Preparedness of Basic Plan for Emergency Preparedness (excerpt)

○ **The emergency preparedness guide "Emergency Preparedness for Nuclear Facilities", defined by the Nuclear Safety Commission should be fully respected** for technical items.

○ The area to establish the Volume on Nuclear Emergency Preparedness of Regional Emergency Plan should be stipulated considering the surrounding natural and social conditions to have **"areas with intensified emergency preparedness centering on nuclear installations" described in the abovementioned guides**.

Items to be stipulated on the Emergency Preparedness Guide

○ Areas with intensified emergency preparedness (EPZ)
○ Guides for implementation of
○ immediate actions (Protective measures)
○ Environmental radiation monitoring in emergencies
○ Emergency medical treatment for radiation exposure and others

Background of preparation of Emergency Preparedness Guide

○ Summarized results of studies of technical items prompted by the accident of the Three Mile Island Nuclear Power Station in March 1979 to smoothly implement emergency preparedness in the vicinity of nuclear power stations focusing on the events unique to nuclear emergency.

○ Revisions have been made since then. (Below are major revisions)

May 2000	- - -	Addition and revision based on the Special Law on Nuclear Emergency Preparedness established after JCO accident in September 1999
June 2001	- - -	Revision for effective emergency medical treatment for radiation exposure learned from the emergency medical treatment for radiation exposure provided to exposed patients by the JCO accident
April 2002	- - -	Revision for protective measures related to preventive dose of stable iodine tablet
November 2002	- - -	Revision for mental health measures in nuclear emergency
July 2003	- - -	Revision for setting regional system for emergency radiation exposure medical treatment

“Emergency Preparedness for Nuclear Facilities” Nuclear Safety Commission

Areas with intensified emergency preparedness : EPZ (Emergency Planning Zone)

Facility type		Approx. distance of EPZ (radius)
Nuclear power plants, reactors in research and development stage and nuclear reactors for purposes of testing and research that are larger than 50 MW		Approx. 8 to 10 km
Nuclear fuel reprocessing facilities		Approx. 5 km
Nuclear reactors for purposes of testing and research (50MW or less)	Thermal output ≤ 1 kW	Approx. 50 m
	1 kW < Thermal output ≤ 100 kW	Approx. 100 m
	100 kW < Thermal output ≤ 10 MW	Approx. 500 m
	10 MW < Thermal output ≤ 50 MW	Approx. 1500 m
	Facilities with special facility conditions, etc.	Decided individually
Fabricating facilities and facilities using nuclear fuel materials for the amount of critical mass or more	Facilities that use nuclear fuel materials (exclude those stored statically in conditions with strict criticality prevention measures of mass control, shape control, geometrically safe placement and others) for the amount of critical mass or more and are of either shape described below ● Facilities that handle material in indeterminate form (solution, powder, gas) and indefinite form (physical and chemical processes) ● Facilities that handle uranium with enrichment of 5% or more ● Facilities that handle plutonium	Approx. 500 m
	Other facilities	Approx. 50 m
Disposal facilities		Approx. 50 m

“Emergency Preparedness for Nuclear Facilities” Nuclear Safety Commission

Guidelines for staying in-house and evacuation

Predicted dose (unit: mSv)		Content of protective measures
Effective dose by external exposure	Equivalent dose by internal exposure ● Equivalent dose to infantile thyroid by radioactive iodine ● Equivalent dose to bone surface and lung by uranium ● Equivalent dose to bone surface and lung by plutonium	
10 to 50	100 to 500	Residents should stay in-house or in a building and keep air tightness by closing windows and other openings. However, take shelter in a concrete building or evacuate when neutron ray or gamma ray is emitted directly from a facility following the direction if any.
50 or more	500 or more	Residents should stay in a concrete building or evacuate following the direction.