



Current Status of Strategic Plan for Solid Waste Management of Fukushima Daiichi

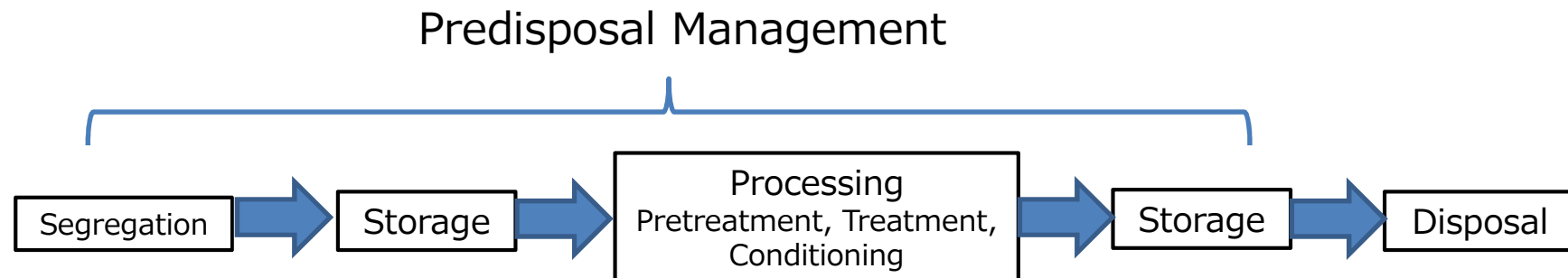
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International safety principles on radioactive waste management

- All steps prior to disposal (predisposal) shall be managed safely and securely to ensure the safe disposal of waste.
- Processing shall be based on appropriate consideration of the characteristics of the waste and of the demands imposed by the different stages in its management (pretreatment, treatment, conditioning, transport, storage, and disposal).
- If waste processing is performed before the waste disposal requirements are set, it must be remaining possible to process the waste in a way which meets those requirements once they have been set.

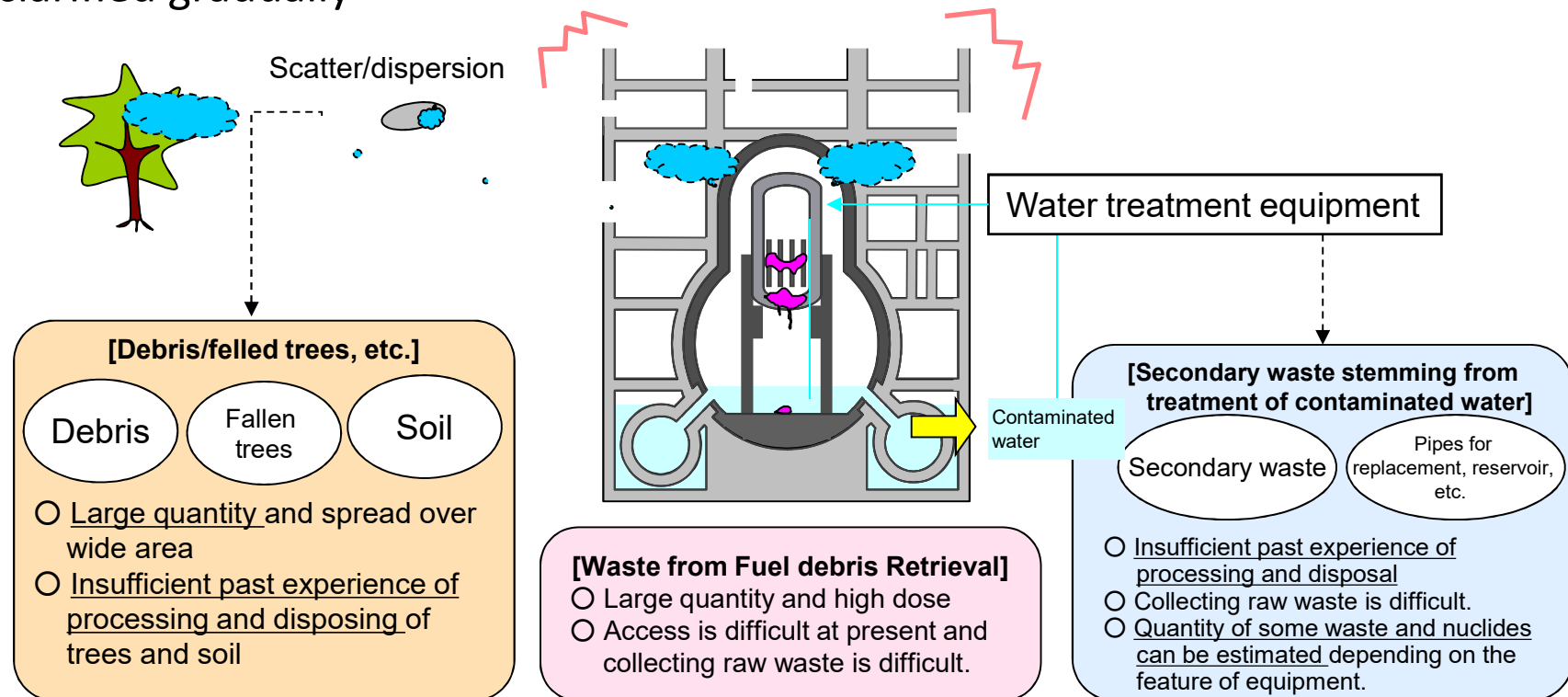


Recent Advances in Solid Waste Management

- Reduction of solid waste generation is continued. Incineration of used protective clothing in Incinerator started to reduce storage volume.
- Waste management plan is reviewed regularly.
- Waste characterization based on collected analytical data.

Solid Waste arising from Accident at Fukushima Daiichi

- Waste Characteristics; Different from ordinary waste due to accident
⇒ Characterization is important
- Limited Data (especially for long-lived nuclides) is available because of contamination over wide area and high dose environment
- Forecast of waste generation is difficult because decommissioning activities will be clarified gradually



Temporary storage volume of rubble etc. (As of April 30, 2017)

Rubble

Surface dose rate (mSv/h)/	Measure of store	Storage Volume (m ³)	Storage Volume(m ³) / Capacity (m ³) (%)
≤0.1	Outdoor storage	147,900	147,900/214,300 (69%)
≤1	Outdoor Sheet covered storage	30,900	30,900/71,000 (44%)
1-30	Soil covered temporary storage facility, Temporary storage tent, Outdoor container storage	20,800	20,800/27,700 (75%)
>30	Container (in Solid waste storage building)	8,300	8,300/12,000 (69%)
Total		207,900	207,900/325,000 (64%)

Felled tree

Category	Measure of store	Storage Volume (m ³)	Storage Volume(m ³) / Capacity (m ³) (%)
Root	Outdoor storage	79,500	79,500/144,500 (55%)
Branch/leaves	Temporary storage pool	19,600	19,600/24,900 (79%)
Total		99,100	99,100/169,400 (59%)

Used protective clothing

Measure of store	Storage Volume (m ³)	Storage Volume(m ³) / Capacity (m ³) (%)
Container	67,500	67,500/71,200 (95%)

Temporary storage volume of Secondary Waste from Water Treatment (As of May 18, 2017)

Absorbent Columns

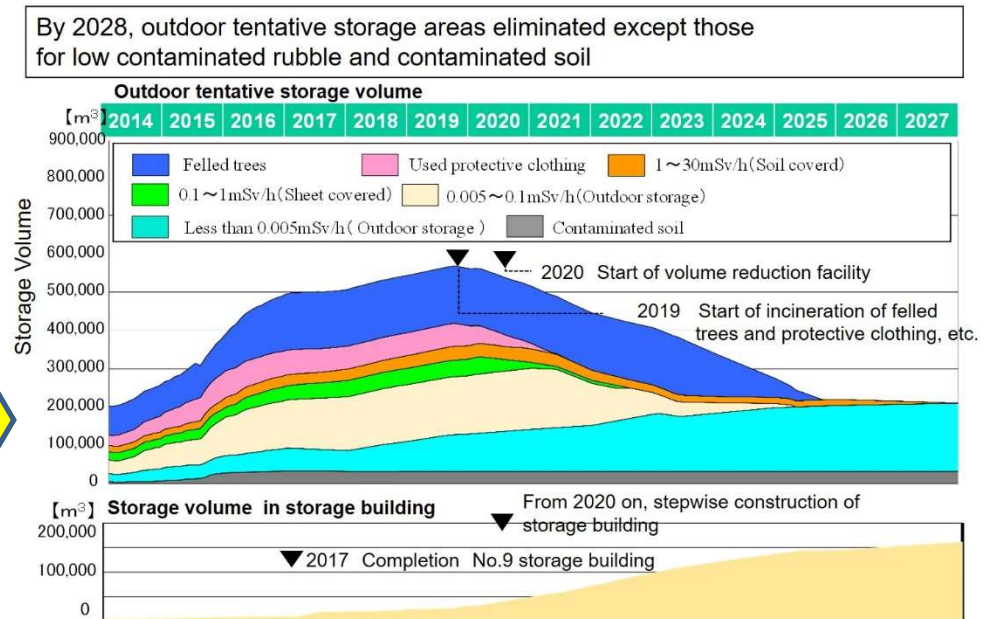
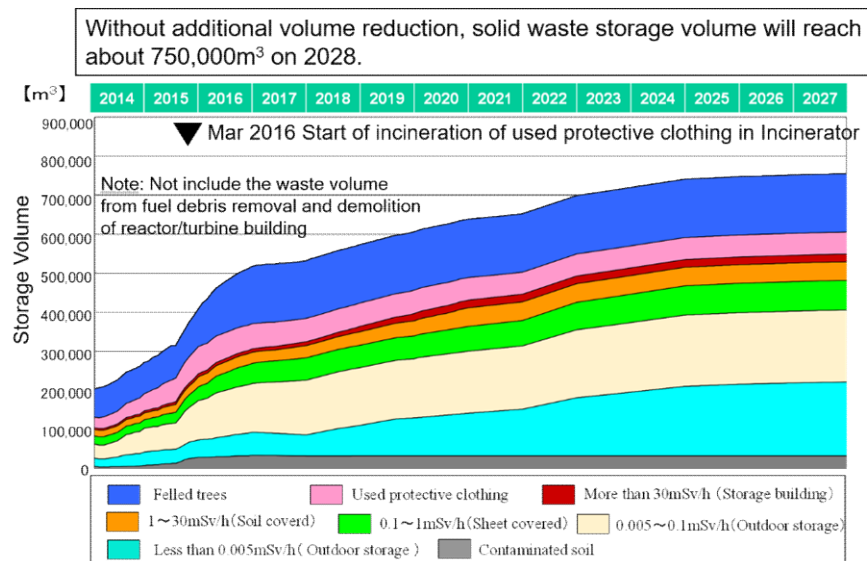
Storage place		Storage Number	Storage Number / Capacity (%)
Outdoor temporary storage area of used vessels	Cesium Absorption apparatus	758	3628/6239 (58%)
	2 nd Cesium absorption apparatus	188	
	HICs from multiple radio-nuclides removal system	1,365	
	HICs from improved multiple radio-nuclides removal system	1,044	
	Used vessels from high-performance multiple radio-nuclides removal system	73	
	Used column from multiple radio-nuclides removal system	9	
	Used vessels and filters from mobile-type strontium system	191	

Sludge and concentrated waste liquid

Name of waste	Storage	Storage Volume (m ³)	Storage Volume(m ³) / Capacity (m ³) (%)
Sludge	Sludge storage facility (Indoor)	597	597/700 (85%)
Concentrated waste liquid	Concentrated waste liquid storage tanks (Outdoor)	9,379	9,379/10,700 (88%)

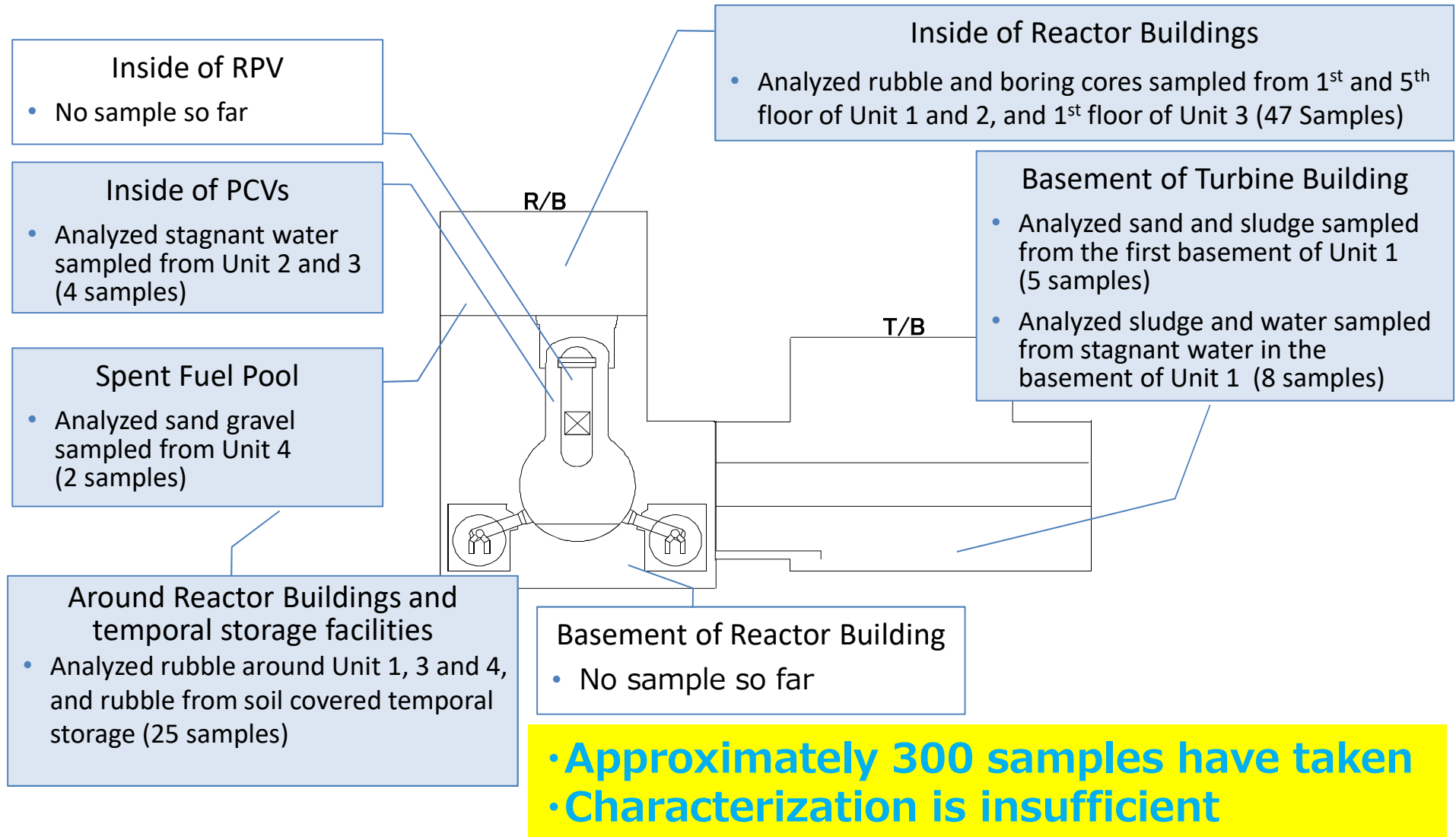
Improvement of Waste Management Conditions

- TEPCO HD made plan for Improvement of Waste Management Conditions based on forecast of waste generation during next 10 years.
- In order to reduce risks during storage, the volume of rubbles will be reduced as much as possible, then the wastes will be transferred to inside storage buildings. Finally, outdoor tentative storage will be eliminated by around 2028.

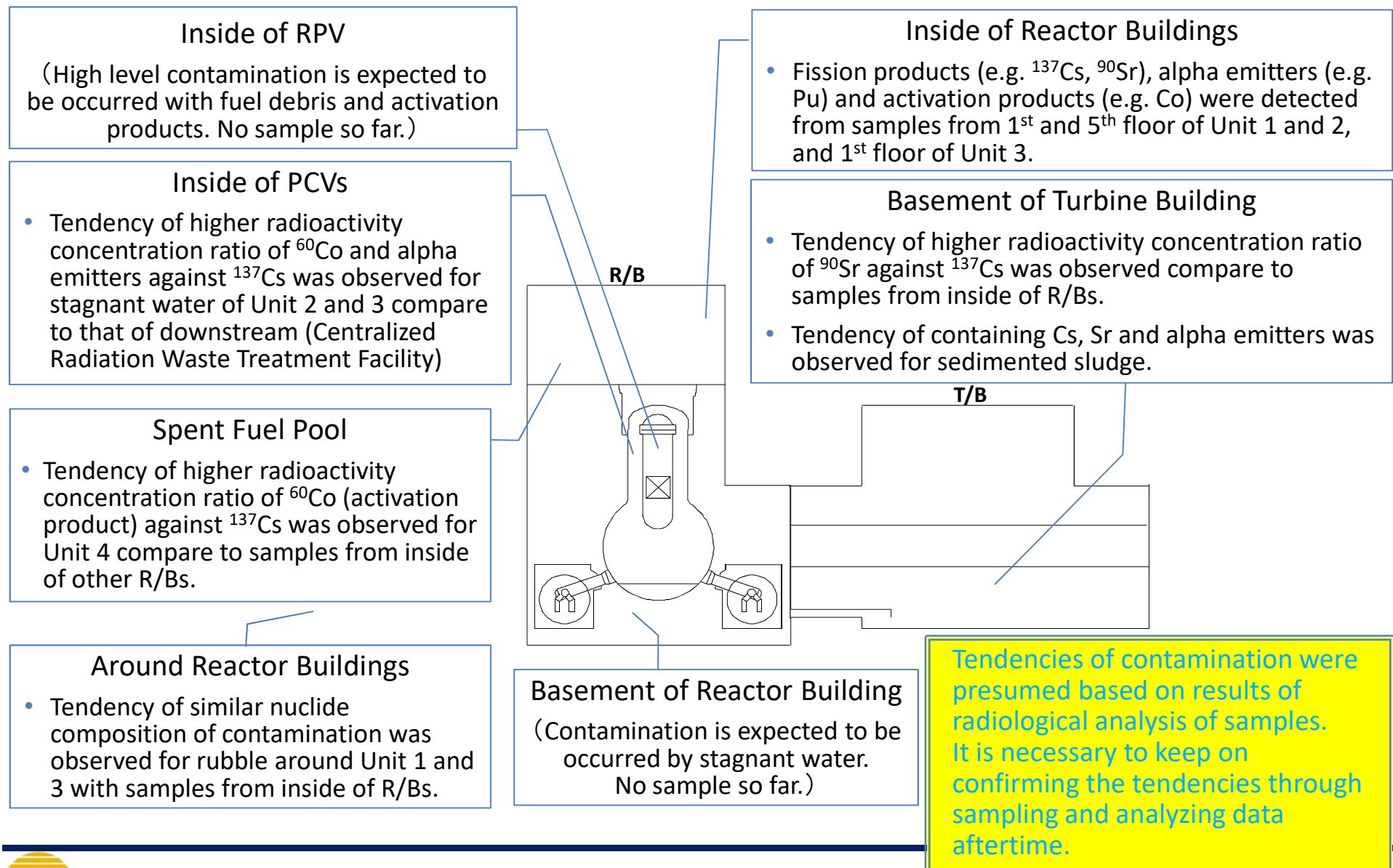


Forecast of Waste Generation

Samples from R/B and T/B have taken (results)

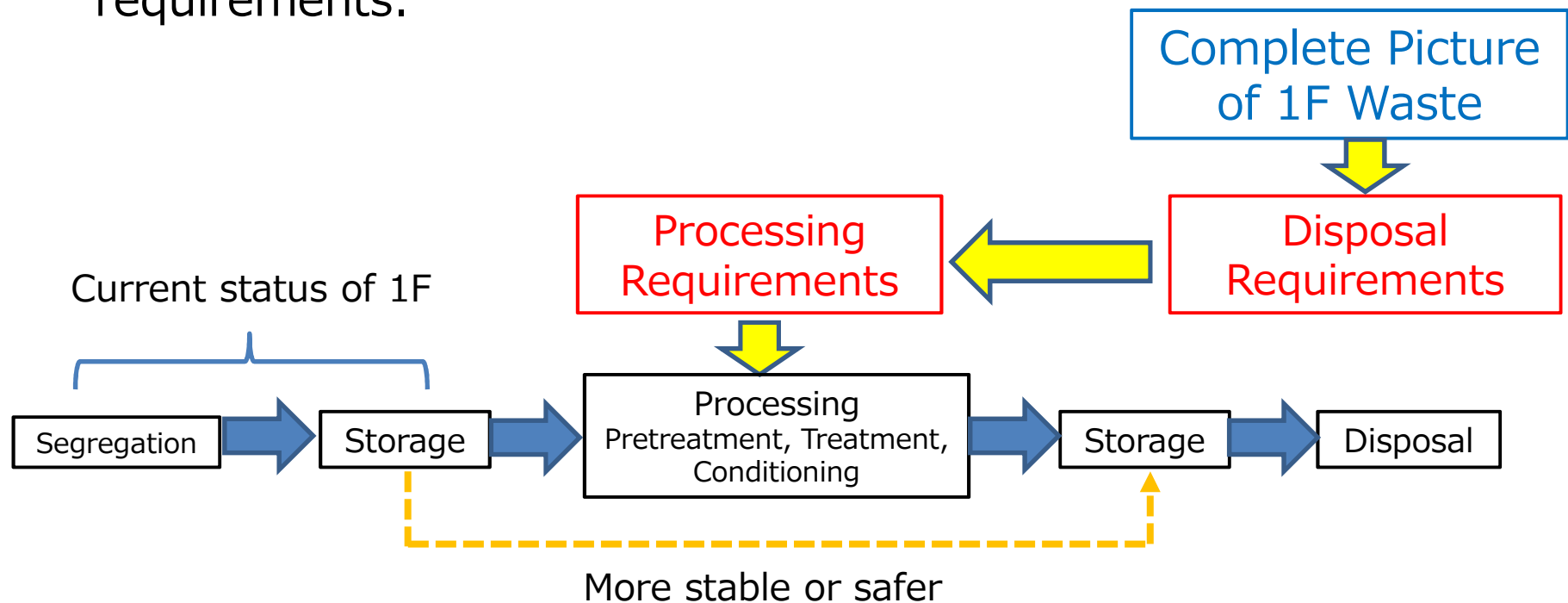


Tendencies of Contamination on R/Bs and T/B



Improvement of Predisposal Management

- Safe predisposal management is essential to ensure the safe disposal.
- Collection and storage of waste are basis.
- Stabilization of slurry, sludge etc. is favorable.
- Processing should be performed to meet waste disposal requirements.



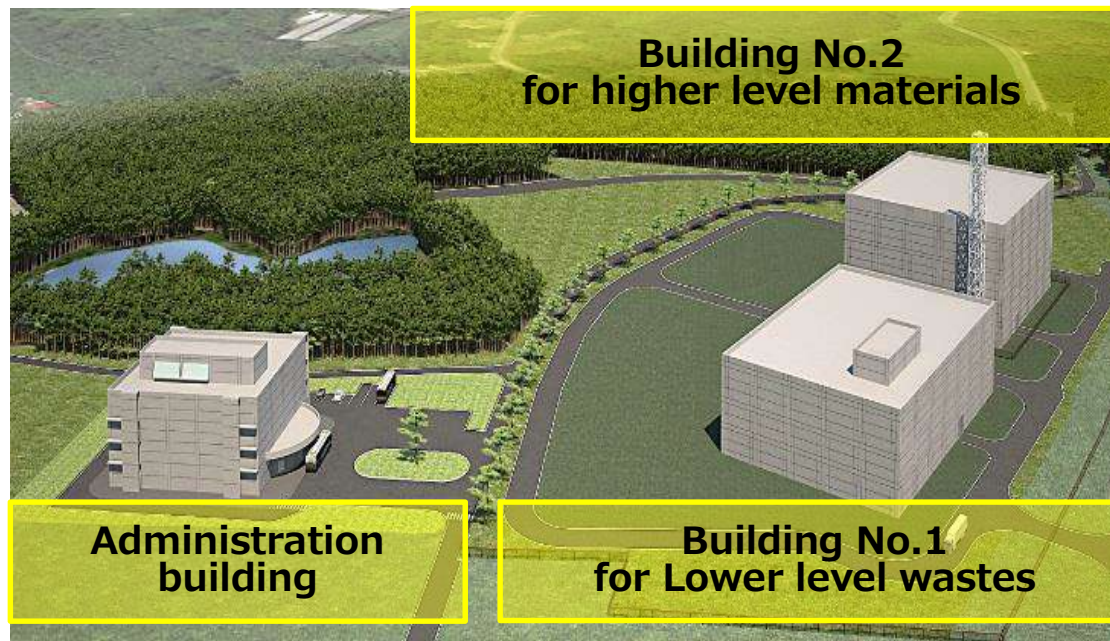
Issues to clarify Complete Picture of 1F Waste

- Promotion of Characterization
 - ◆ Continuation of Sample Collection and Analysis(sampling from high dose area)
 - ◆ Optimization of Characterization
 - ◆ Representativeness of sample
 - ◆ R&D of Analytical Method
 - ◆ Consideration of Effect by Non-radioactive Material

- Clarification of Waste Amount
 - ◆ Confirmation of Decommissioning Plan
 - ◆ Selection of Processing Method

Improvement of Analytical Capability

- Radioactive Material Analysis & Research Facility
 - ◆ Analysis facility for radioactive wastes, fuel debris, etc.
 - ◆ Installed analysis devices to obtain data that can contribute to the appropriate processing of radioactive waste.
 - ◆ Installed equipment that can obtain basic data of fuel debris, which are high level radioactive waste.



Action Policy for Solid Waste Management (draft)

- Thorough Containment and Isolation
- Processing is to ensure Safe Disposal
 - Focus on Predisposal Management because the Realization of Disposal is impossible at this time
 - ◆ Reduction of amount of solid waste
 - ◆ Promotion of characterization
 - ◆ Through storage
- Preceding Processing Technologies in consideration of Disposal
 - Stabilization & immobilization may be possibly required before the waste disposal requirements are set
 - Minimize the possibility which does not meet those requirements once they have been set.

Promotion of R&D based on Action Policy

Concluding Remarks

- Characteristics of contamination has partially estimated based on collected analytical data.
- Focus on characterization, safe storage, and preceding processing technologies until disposal would be realized.
- Propose to contribute to the basic concept of processing and disposal for radioactive solid wastes based on international safety principals and issues arising from R&D (Technical Strategic Plan 2017)



Thank you for your attention!