

Decommissioning Process “Processing/Disposal/Environment Remediation (including Wastes containing Alpha Nuclides originating from Fuels)”Investigation Subject “**Disposal concept**”Issue “**Establishing disposal concept**”

Needs

1. Clarifying the disposal concept

Processing/Disposal/Environment Remediation : [Long 2]

Desired state and reasons for it

- In order to improve the safety, efficiency, and reliability of accident waste disposal, it is desirable to clarify the disposal concept of accident waste that have different properties from existing wastes.
- In order to enhance the reliability of the disposal concept, it is desired to evaluate the feasibility of the disposal concept based on the investigation of the long-term transition behavior of the disposal facility considering the characteristics of solid waste, which should be reflected into the investigation of disposal concept.

Current state against ideal

- In order to establish measures to address the needs required for the disposal concept, a survey of the necessary information and knowledge is being conducted for the waste that the investigation of its waste stream is being proceeded.
- For solid waste disposal, the establishment of a storyboard of critical event progress at disposal facilities has been initiated to extract key scenarios.

Issues to be resolved

- Radioactive wastes are disposed of by either geological disposal, intermediate depth disposal, or near surface disposal (pit or trench) and each concept of these disposal methods has been established.
- Compared with existing wastes, accident waste has features such as large amount, different nuclide compositions, uncertainties in nuclide composition, and uncertainties in waste package performance, etc. Considering them, it is necessary to clarify whether the existing disposal concept can be applied as it is, it is necessary to add something, it is required to have a completely new disposal concept, there is a more desirable disposal concept and what it is like.
- At the same time, it is necessary to clarify issues related to the application of the current legal system and identify improvement proposals.
- In order to enhance the reliability of the disposal concept, the feasibility of the concept will be evaluated based on a study of the long-term transition behavior of the disposal facility, taking into account the characteristics of solid waste.
- In order to appropriately assign waste to a disposal concept that has been shown to be feasible, it is important to expand knowledge of the sensitivity structure of these scenarios and parameters to dose and to present safe and reasonable disposal option proposals through repeated trials in which the characteristics of the waste, changes in environmental conditions in

and around the disposal facility, and other factors are appropriately reflected in the scenarios and parameters of dose assessment.

- Furthermore, it is necessary to broaden the scope of the waste stream to reflect this disposal option, to examine a set of disposal options that encompass the entire solid waste of the Fukushima Daiichi Nuclear Power Plant, and to contribute to the overall consideration of appropriate measures for the specific management of solid waste in conjunction with knowledge obtained in areas other than disposal, such as the accuracy required for characterization and the presentation of waste body performance targets.
- It is anticipated that an investigation of fuel debris treatment methods will be conducted in the future. Since the disposal concept of fuel debris is closely related to the treatment method, it should be investigated together with the treatment methods.

Relevant Issues

- PDR-101 "Characterization"
- PDR-102 "Waste strategy"
- PDR-201 "Reuse and volume reduction"
- PDR-202 "Waste conditioning method"
- PDR-204 "Performance assessment"
- PDR-302 "Disposal technology according to disposal concept"
- BST-006 "Risk assessment"