

Decommissioning Process **“Processing/Disposal/Environment Remediation (including Wastes containing Alpha Nuclides originating from Fuels)”**  
Investigation Subject **“Environmental remediation”**  
Issue **“Site decontamination and dose rate reduction”**

## Needs

### 1. Decontamination and reducing the dose rate

#### Desired state and reasons for it

- It is desirable to develop more efficient, effective, and economical decontamination technologies considering the environmental dynamics of radioactive materials, by accurately and promptly understanding the contamination status and dose rate at the site.
- It is desirable that site decontamination is promoted by technologies such as soil clean-up and improvement and asphalt pavement clean-up, and that site dose rates is reduced accordingly.
- A measurement technology that can quickly grasp the contamination status on site is desirable.

#### Current state against ideal

- As analytical research on environmental dynamics of radioactive cesium outside of the site, it has been developed and organized river-basin dynamics model, river system dynamics model, dose rate evaluation model, depth migration model and evaluation model of the migration to agricultural, forestry, and marine products. By selecting or flexibly combining these models according to the purpose, it has been implemented the prediction of the distribution of radioactive cesium and air dose rates over the medium and long term, the evaluation of the amount of radioactive cesium outflowed from rivers to the sea, the evaluation of the behavior of radioactive cesium in rivers and dam lakes during heavy rainfall, and the evaluation of the influence of the dynamics of radioactive cesium in the environment on the concentration of radioactive cesium in agricultural, forestry, and marine products.
- In off-site analytical research on the environmental dynamics of radioactive cesium, we have developed and maintained a watershed dynamics model, a water area dynamics model, a dose rate assessment model, a depth transfer model, and an assessment model for the transfer of agricultural, forestry, and fishery products. The models are used to predict the distribution of radioactive cesium and air dose rates over the medium to long term, evaluate the amount of radioactive cesium discharged from rivers into the sea, evaluate the behavior of radioactive cesium in rivers and dam lakes during heavy rainfall, and evaluate the effect of the dynamics of radioactive cesium in the environment on the concentration of radioactive cesium in agricultural, forestry, and marine products.
- It is necessary to investigate how to combine decontamination technologies in order to reduce the site dose rate.
- For rapid and accurate understanding of contamination status on site, the development of measurement technology using plastic scintillation fiber and the on-site demonstration tests are proceeded.

## Issues to be resolved

- It is necessary to continue analytical studies and impact assessments on various dynamics, such as environmental dynamics and also advance to be able to cope with the special environment of the Fukushima NPP premises. Furthermore, it is necessary to consider the changes that have occurred over time since the accident.
- With regard to the reduction of site dose rates, it is necessary to investigate the perspective of efficiency, effectiveness, and economy as issues.

## Relevant Issues

- CWM-102 "Understanding current status of underground and buildings"
- CWM-202 "Ensuring structural integrity"