

Investigation of Radiological Effect due to Living Activities after Fukushima Daiichi-NPS Accident

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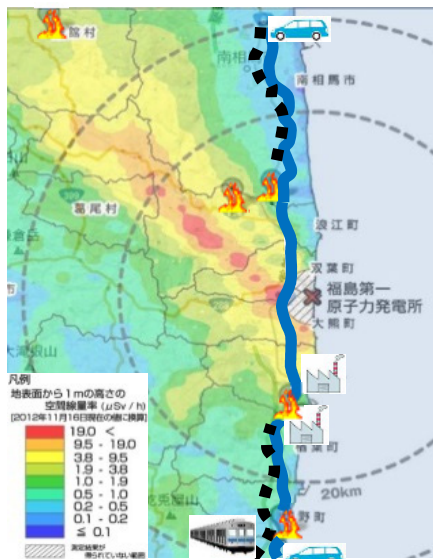
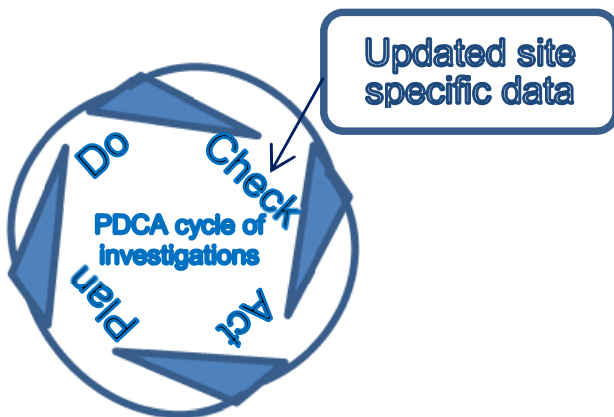
Background

Radioactive materials were discharged to the environment in the accident at Fukushima Daiichi nuclear power site (NPS). These situations potentially cause that living activities and restoration activities after the earthquake and/or tsunami pose secondary dispersions of radioactive materials.

Japan Nuclear Energy Safety Organization (JNES) conducts several investigations of those effects such as contamination of disaster waste, exposure of drivers, car mechanics, fire fighters, operators of infrastructures, workers on tracklayers and so on.

The countermeasures against radiological effects in early stage were decided taking into consideration of those investigations conducted with general data and initial monitoring data. Investigations were updated from year to year with updated site specific data.

Two typical results are presented below.

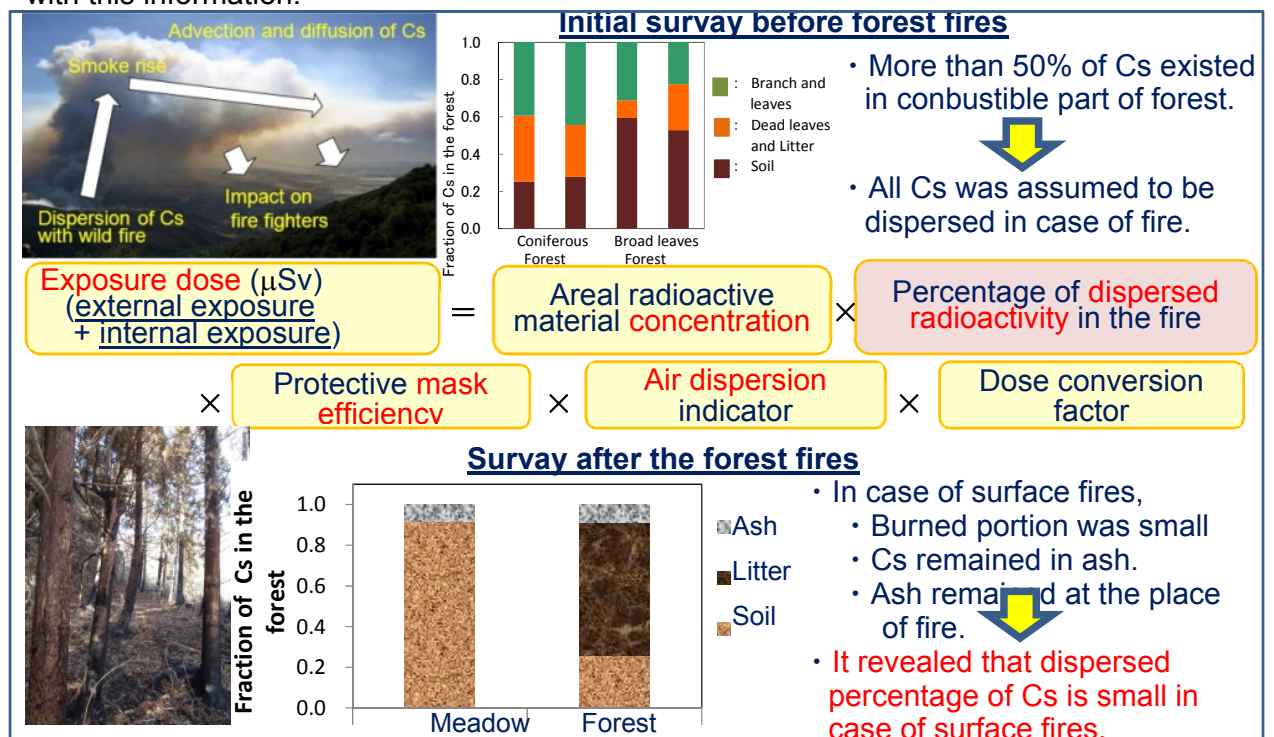


- : forest fire
- : Joban line (rail way)
- : route 6
- : incineration plant, sewage plant

Major investigation items by JNES

1. Exposure doses due to large scale fire in evacuation areas

About 70% of Fukushima prefecture is forest and about 100 forest fires occur there in a year according to the statistics. In a large fire, radioactive materials suspended by the fire might cause the secondary exposure of firefighters and/or surrounding people. In order to provide proper information to those people in the early phase of large fire, an evaluation tool to predict exposure dose was developed. The tool is a simple computer program to predict dose using data of radioactive concentration in forest or ground, wind speed, scale of fire, land-use etc.. Though the first version of the tool assumed that most of radioactive materials suspend due to the heat of fire, the results of the investigations for forest fires in the evacuation area after the accident showed that, the portion of radioactive materials suspended was small and most of them remain on the ground. JNES is modifying that tool with this information.



2. Exposure dose of tracklayers

In the future, the recovery of the local infrastructure in the evacuation areas will be important to lift the evacuation. Before the restoration of the railway in this area, JNES had conducted survey and sampling of the contamination of the track. Though there are data about the concentration profile of radioactive materials in soil of farmland, park, garden, school yard and so on, there wasn't a data in gravel before this investigation.

Radioactive concentrations of gravel were decreased as the depth was increased. Radioactive concentration of roadbed soil was less than detection limit. This indicated that radioactive Cs was sorbed on the surface of gravel and remained in that layer. Radioactive concentration in the air during restoration activity of the track was below the regulation limit.

