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WASTE-04

# Decontaminating Cesium-Contaminated Soil (Non-Acid)

RADIATION &  
ENVIRONMENT  
DEPT.

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This technology recovers the environment by decontaminating radioactive cesium from the soil contaminated from a nuclear power plant accident. This method produces minimum waste by restoring most of the soil back to the environment through the process of separation and classification of micro-soil cesium from the soil. It can be applied to the nuclear decommissioning when decontaminating the plant site.

- Landfill to keep and dispose these contaminated soil is not spacious enough. A technology to reduce a large amount of waste is needed. In addition, the same technology can be useful to decontaminate the soil when decommissioning the nuclear power plant.

### \* Purpose and Necessity

- Soil decontamination technology for a large amount of contaminated soil is required in preparation for national radiation disaster accidents
- Decontamination technology of the contaminated soil at the nuclear dismantling site is needed according to the domestic nuclear dismantling market visualization

### \* Technology Principle

- Technology principle for the decontamination of contaminated soil : Cesium, radioactive material,

## Description

### \* Background

- The Fukushima Nuclear Disaster produced cesium-contaminated soil all over the Fukushima area, Japan, the contaminated soil is being collected and stored temporarily for decontamination.



< Pilot equipment of decontaminating a contaminated soil >

is absorbed with soil and the majority is associated with micro-soil having the feature of not dissolving in the water. Considering this feature, by physical method, separate micro-soil as well as micro soil, plus the big particle-size one, from the original one to remove only contaminated micro-soil. Therefore, restore uncontaminated soil for the environment by this technology.

- ※ Radionuclide investigation and decontamination verification test for NPP site soil
- \* Domestic clearance level : Cs-134, 137(0.1Bq/g less)

## Distinctiveness

### \* Characteristics

- Easy reuse of waste solution and minimization of waste by non-acid decontamination method during the soil decontamination
- Capability for large amount of contaminated soil

### \* Benefits

- About 80% polluted soil restoration for the environment (general soil basis)
- Reduction of the radioactive waste disposal cost according to the waste volume reduction

## Experience

- N/A

## Deliverables

- Design and construction of decontamination equipment for the contaminated soil
- Decontamination services for the contaminated soil
- Report regarding to the decontamination services for the contaminated soil

## TECHNOLOGY READINESS LEVEL(TRL)

- Prototype validation in relevant environment

## BUSINESS MODEL

Technology Transfer

Licensing

Joint search

Service Execution

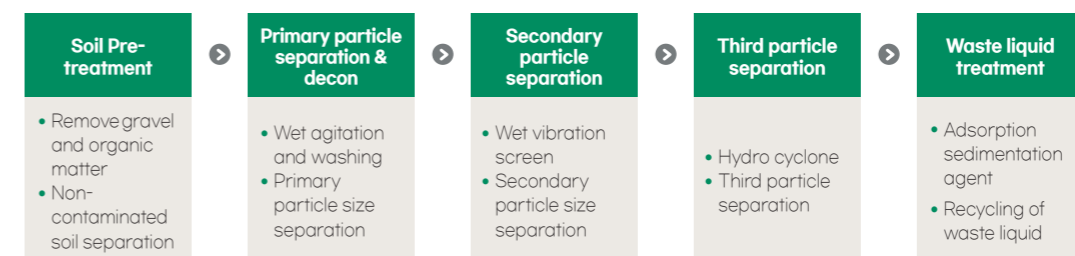
Others

### \* System Configuration

- Soil pre-treatment process
  - Screen and wet debris separator to remove organics such as a large gravel, a tree roots in soil, etc.
  - Separation of contaminated soil and non-contaminated soil
- First separation and decontamination of soil : Separation of fine grains by stirring and friction in the wet condition after separating by a certain grain size for soil decontamination
- Secondary separation process : Separation by particle size using a wet vibration screen
- Third separation process : Separation of fine particles and final particle size by hydro-cyclone
- Waste liquid treatment process : Separation of fine particles from the waste-water mixed with fine particles for waste treatment and waste liquid recycling for the process water

### \* Service Range

- Pre-treatment and decontamination of the soil contaminated with cesium
- Pre-treatment and decontamination of the contaminated soil in the nuclear dismantling site



< Decontaminating process of the contaminated soil >



< Major equipment >