



Investigation of Secondary Off-site Radiological Effect due to Living Activities after Fukushima Accident

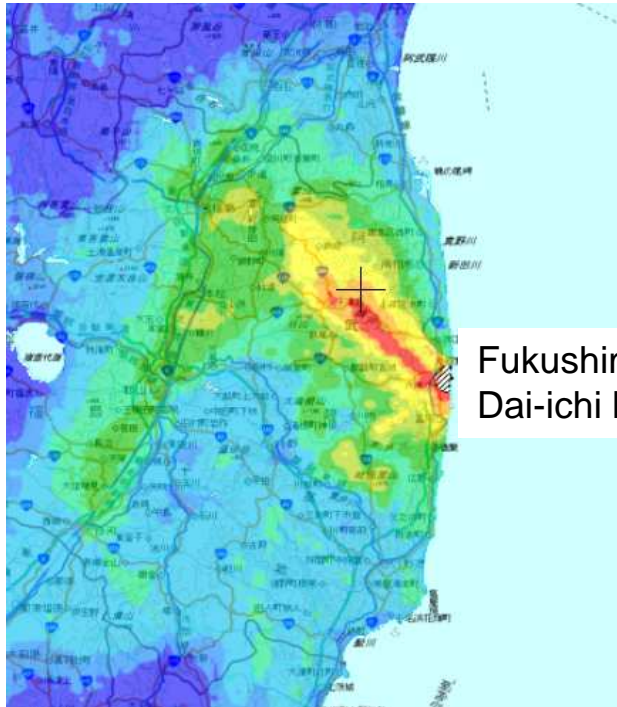
29 January 2013

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Secondary Off-site Radiological Effect due to Living Activities after Fukushima Accident



Fukushima Dai-ichi NPS

Accident

Contamination

Living activities

Disaster debris, Cars, Wild fire, Transportation, Factory products, Repair of Infrastructures, etc.

Secondary Dispersion of Contaminant

Decontamination

Dose reduction
•Evaluation of dose
•Implementation of counter measures for preventing or mitigating

Exposure of local resident

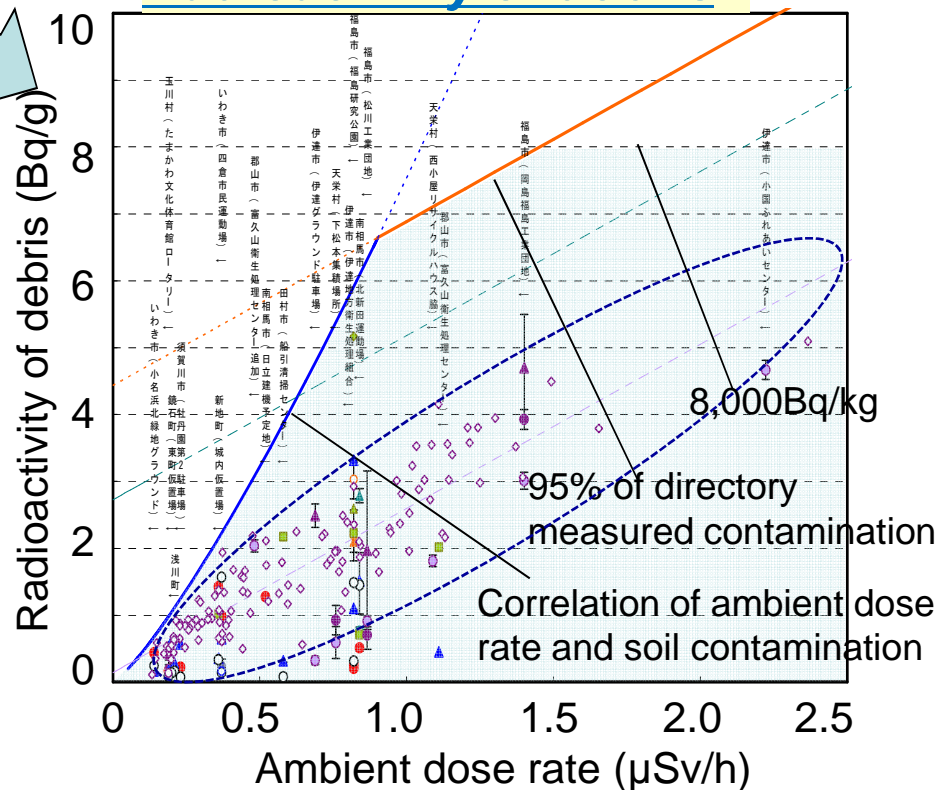
Survey of radioactive contamination of disaster debris

Disaster debris of earthquake and tsunami



(1) Correlation of ambient dose rate, soil contamination and radioactivity of debris

Radioactivity of debris



(2) Measurement of debris by In-situ Ge detector method and sampling



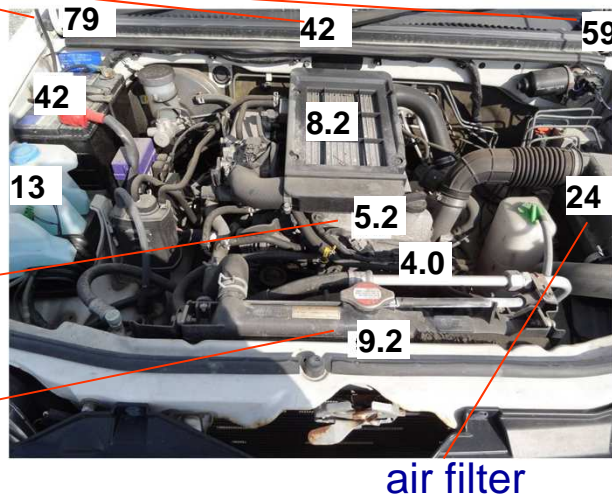
Exposure of drivers or car mechanics by cars from evacuation areas

Dose rate in engine room ($\mu\text{Sv/h}$)

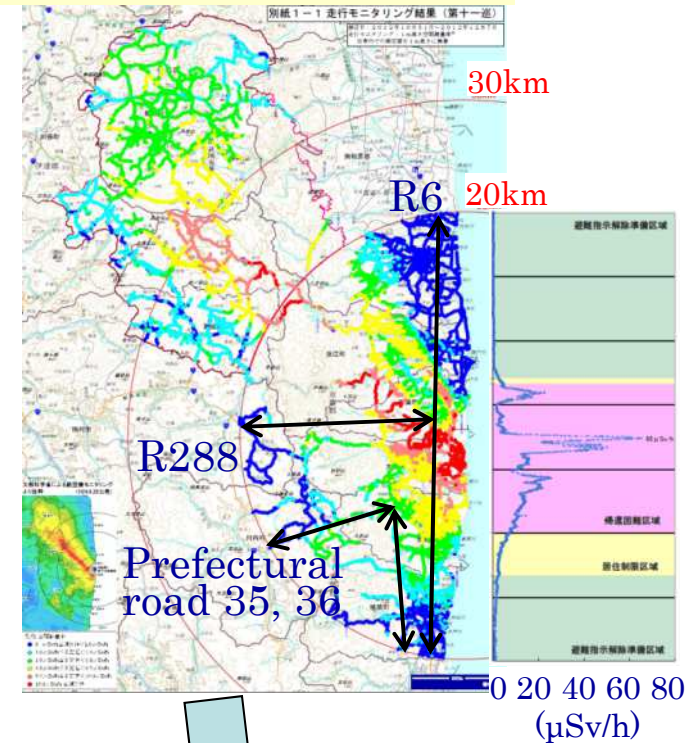
drainage path

engine

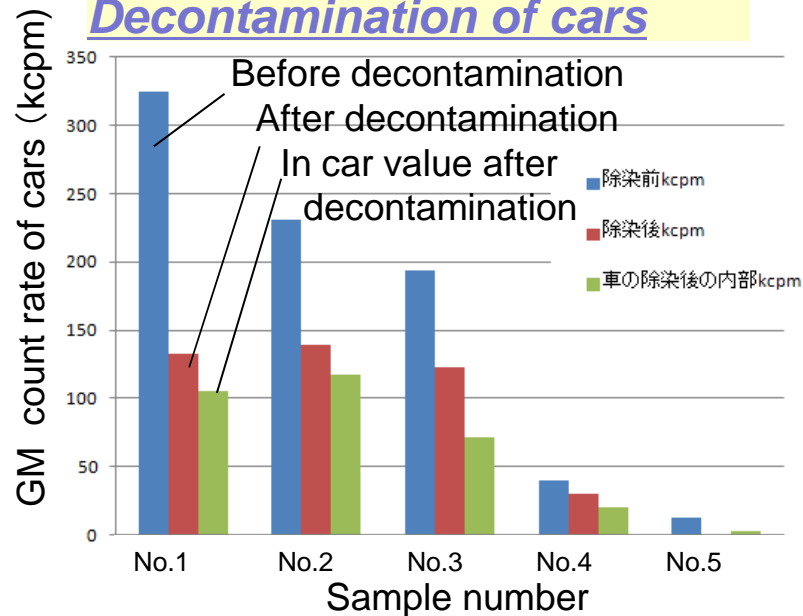
radiator



Dose rate on the road



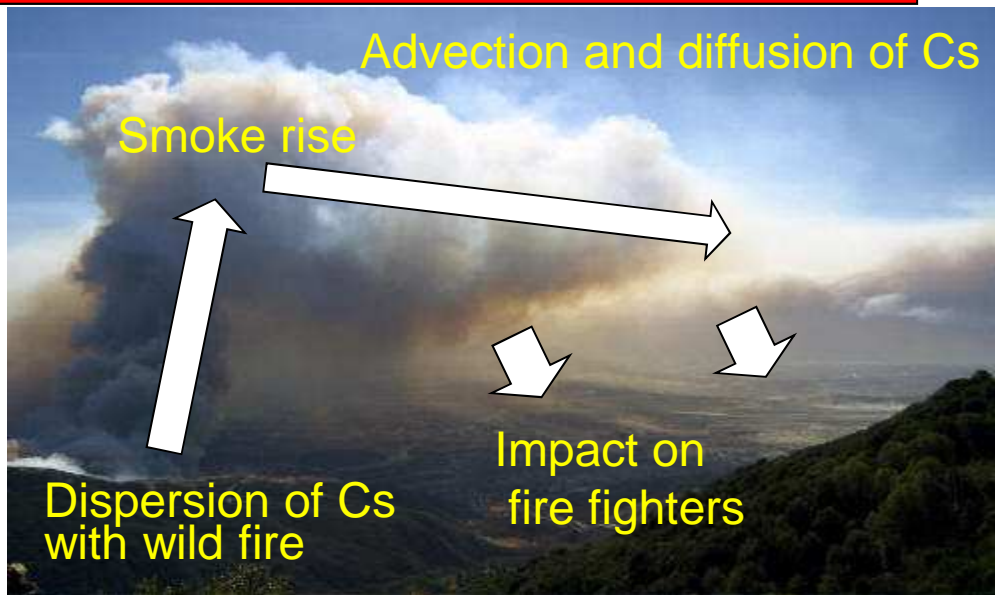
Decontamination of cars



Exposure of drives and car mechanics

Exposure dose due to large scale fire in evacuation areas

Investigation of contamination status in forest

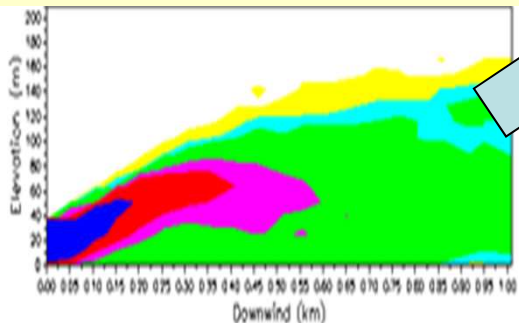


Simple and quick evaluation tool

Investigation after wild fires

$$\text{Exposure dose} = \text{Radioactive material concentration} \times \text{Terrain indicator} \times \text{Land use indicator} \times \text{Protective mask indicator} \times \text{Wind velocity indicator} \times \text{Wind direction indicator}$$

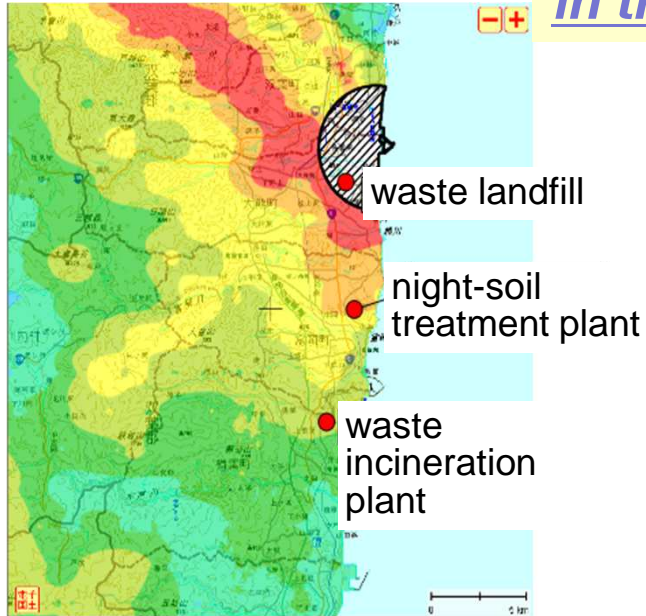
Modeling of plume



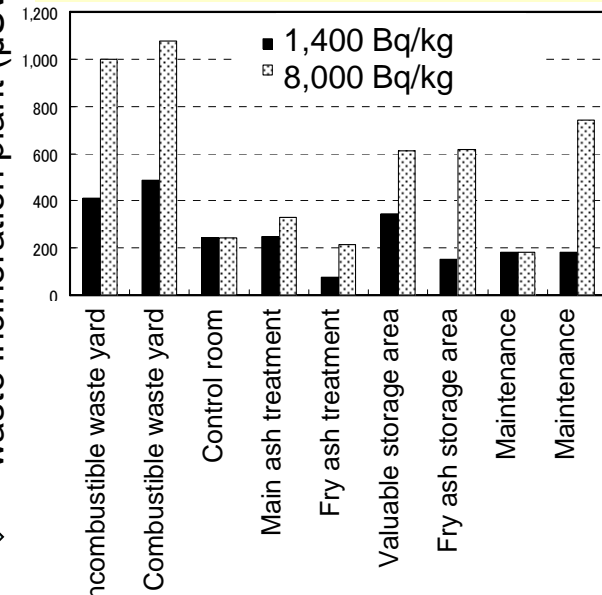
Exposure dose of workers of infrastructures

Survey of infrastructures in the evacuation area

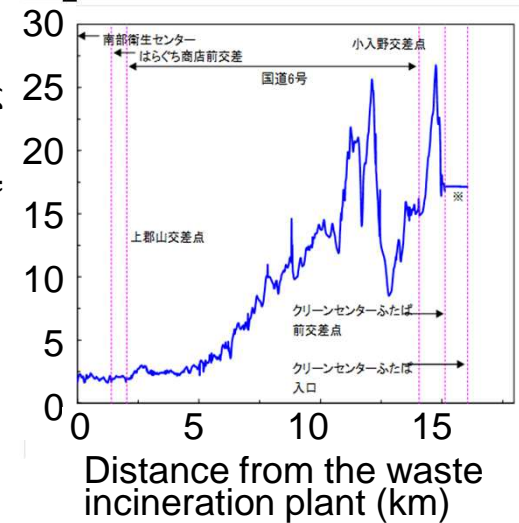
Estimation of exposure dose of workers



Exposure dose of worker of waste incineration plant ($\mu\text{Sv/y}$)

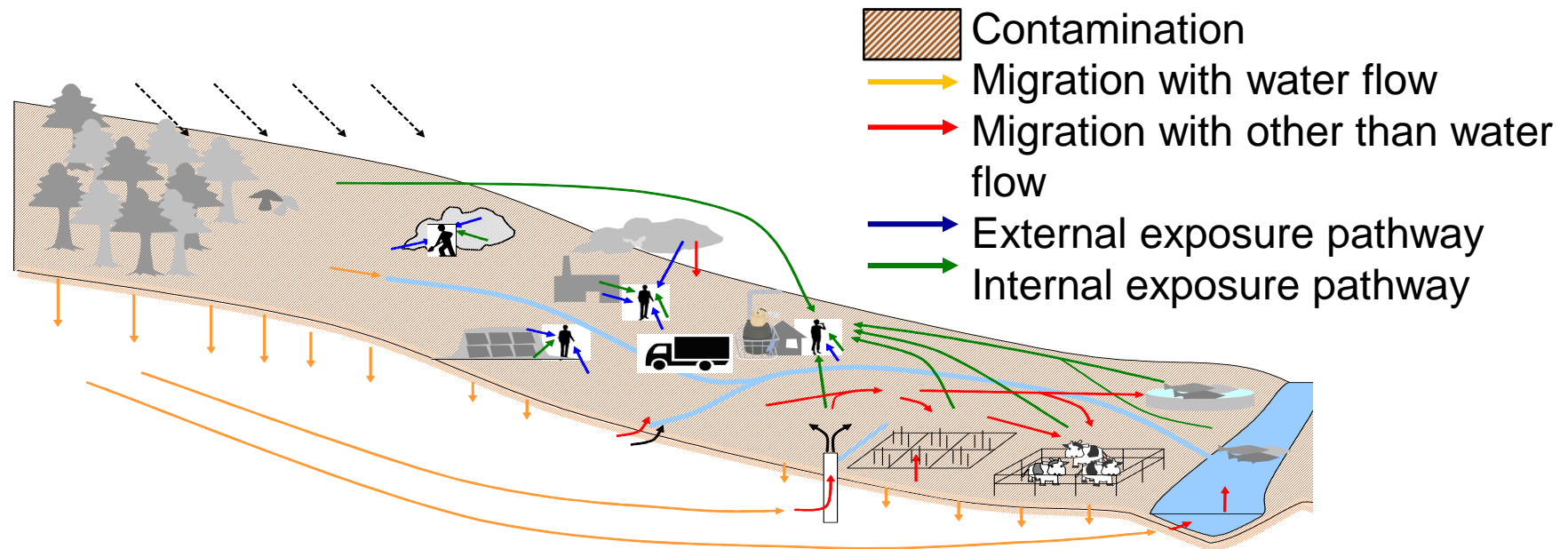


Ambient dose on the pathway to the waste landfill ($\mu\text{Sv/y}$)



Exposure dose evaluation of local residents (1/2)

- Existing exposure dose of local residents depends on life style.
- Evaluation of exposure dose for each exposure pathway is essential for dose evaluation of various life styles.
- Evaluation tool is under development.

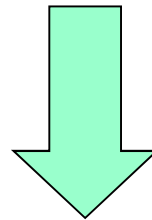


Exposure dose evaluation of local residents (2/2)

- Analyze life style of local resident
- Define exposure scenario
- Define exposure pathway of representative person

- Develop evaluation model
 - Migration of radioactive material
 - Exposure dose of each person

- Establishment of parameters
 - Field data if available
 - From existing data base if not (Existing data will be replaced by field data when available)



Exposure dose evaluation of local residents for future