

Influence evaluation on the radiation after operating local exhausters in the Reactor Building of Unit 2 at Fukushima Daiichi Nuclear Power Station

We have been improving the work environment in order to make it possible for workers to enter and work in the reactor building by operating the local exhausters since 12 pm on June 11th. We have also evaluated the influence of emission of radioactive materials that will be caused when we open the airlock, for further work, by evaluating the density of the radioactive materials in the reactor building at 16:00 on June 18th, 170 hours after operating local exhausters.

We have reviewed the density of radioactive materials in connection with the conditions such as climate condition assumed in the report to the reporting obligation ("report on June 15th"), expected the density around the surface of the ground and exposure dose and evaluated the density limit in the air outside the periphery areas and the influence of the instrument readings of the monitoring posts in comparison of exposure dose limitation per year for the general public.

1. Conditions of evaluation

The conditions other than the density of radioactive materials in the reactor building of Unit 2 are the same as the ones in the report on June 15th (see the Reference).

- (1) Climate conditions of emission
- (2) Height of emission
- (3) Volume of emission
- (4) Density of radioactive materials in reactor building of Unit 2
- (5) Evaluation model

2. Prediction result of density

We have calculated the maximum density around the site borders and compared it with the one in the air outside periphery areas. The result is shown in the Reference paper, that is, it has been confirmed that it is below the density limit in the air outside the periphery areas.

3. Prediction result of exposure dose

We have predicted the distribution and the maximum value of exposure dose. The result is shown in the Reference paper, that is, it has been confirmed that it is below the exposure limit per year for the general public (1mSv) .

4. Comparison with the instrument readings of monitoring posts

We have evaluated the influence on the instrument readings of monitoring posts

based on the evaluation result of external exposure dose. The result is shown in the Reference paper, that is, it has been confirmed that it is not the level that changes the current instrument readings of monitoring posts of several dozen $\mu\text{Sv/hr}$

END

Reference

The result of influence evaluation after air infiltration in the reactor building of Unit 2

	Item of evaluation	Evaluation on density in the building on June 18 th (taken at 4 pm)
Density of radioactive materials inside the building (after operating local exhausters)	I-131	4.9E-3 Bq/cm ³
	Cs-134	9.6E-3 Bq/cm ³
	Cs-137	9.7E-3 Bq/cm ³
Emission conditions	Volume of infiltration	8,100 m ³ /h
	Duration of infiltration (rate of emission is constant during constant)	8 hours 00 minutes
	Height of emission (not considering the height of blowing up)	29.9m
Climate conditions	Wind direction	E
	Wind speed	1.0m/s
	Atmospheric stability	F
Exposure dose result (maximum on the land side though the points are inside the site)	Internal exposure by breathing (effective exposure) I-131	3.6E-4 mSv
	Cs-134,137	6.5E-4 mSv
	External exposure by the atmosphere (effective exposure) I-131	7.8E-8 mSv
	Cs-134,137	3.4E-6 mSv
	External exposure by the surface of the ground (effective exposure) I-131	1.1E-6 mSv
	Cs-134,137	6.4E-6 mSv
	Total (effective exposure)	1.0E-3 mSv
	Ratio of space exposure	1.4E-3 μSv/h
Density result	Density around the site borders I-131	7.7E-7 Bq/cm ³
	Cs-134	1.5E-6 Bq/cm ³
	Cs-137	1.6E-6 Bq/cm ³
	Averages in March (ratio to the density limit) I-131	2.9E-9 Bq/cm ³ (0.00058)
	Cs-134	5.6E-9 Bq/cm ³ (0.00028)
	Cs-137	5.9E-9 Bq/cm ³ (0.00020)
	Sum of the ratios	0.00106