

Investigation of the amount of dispersion dust during outdoor works such as waste landfill disposal

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1. Landfill disposal work

A study by Matsufuji et al. indicated that dust concentrations were significantly higher during landfilling work of the incinerated ash than at other times; 0.1-0.2 mg/m³ as shown below.

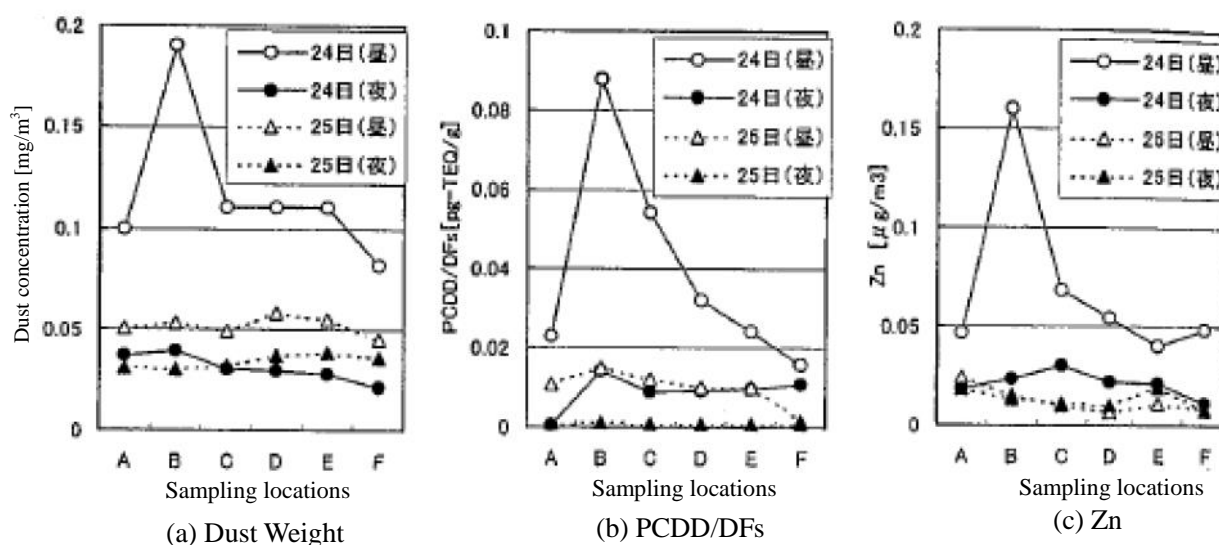


Figure 3 Analysis of dust collected with the air sampler

Source: Matsufuji et al., "Study on dispersion of dust at municipal waste final disposal site", Proceedings of 11th Annual Conference of the Japan Society of Waste Management Experts (2000), pp.1129-1131.

According to the report, "Final Waste Disposal Facility and Practices of Actions against Dioxins" (2004) issued by the Japan Waste Management Research Foundation, the dispersion of dust was observed not only when dropping the waste but also when leveling and compacting the waste. But the dust concentration was as small as **0.3 mg/m³** when dropping dry ash at the vicinity of the drop point where the highest concentration was observed.

Source: Japan Waste Management Research Foundation, "Final Waste Disposal Facility and Practices of Actions against Dioxins", 31 May 2004.

* The ordinance of the Ministry of Environment to be formulated pursuant to the Act on Special Measures Concerning the Handling of Waste Contaminated with Radioactive Substances is going to specify that the incineration ash containing highly radioactive materials (which falls under the category of designated waste) shall be disposed of by putting it into a container after cement solidification to prevent dispersion.

2. Dismantling work of buildings

The study on dust concentration during the dismantling of damaged buildings conducted as part of the pilot project for the removal and treatment of disaster waste by the Japan Waste Management Consultant Association under the contract with the Ministry of the Environment (2011) indicated that dust concentration increased by 0.1-0.4 mg/m³ at the site boundary compared with that before the dismantling as shown in the tables below.

Table: Dust concentration before the dismantling of buildings

Item \ Measurement location	West side of the site boundary (Downwind)			East side of the site boundary (Upwind)		
	Total dust			Total dust		
Measured date	22 July (Fri)	23 July (Sat)	24 July (Sun)	22 July (Fri)	23 July (Sat)	24 July (Sun)
Weather	Cloudy	Cloudy partly rain	Cloudy	Cloudy	Cloudy partly rain	Cloudy
Vacuum volume (m ³)	27.8	28.2	28.4	30.9	31.1	30.7
Filter paper wt. before sampling (mg)	146.47	141.41	140.36	145.28	149.82	143.90
Filter paper wt. after sampling (mg)	147.15	142.00	141.14	145.90	150.29	144.76
Dust wt.(mg)	0.68	0.59	0.78	0.62	0.47	0.86
Dust conc.(mg)	0.024	0.021	0.027	0.020	0.015	0.028

(Note 1) The vacuum volumes are based on measured volumes obtained using a volume meter.

(Note 2) The filter paper weights are the total of those measured during 12-hour periods: 11:00 to 23:00 and 23:00 to 11:00.

Table: Dust concentration during the dismantling of buildings

Item \ Measurement location	Northwest side of the site boundary				Southwest side of the site boundary			
	Total dust				Total dust			
Measured date	2 Aug.	17 Aug.	17 Aug.	18 Aug.	2 Aug.	17 Aug.	17 Aug.	18 Aug.
Measured time	8:00-17:00	8:00-12:00	13:00-17:00	8:00-17:00	8:00-17:00	8:00-12:00	13:00-17:00	8:00-17:00
Vacuum volume(m ³)	11.6	4.8	4.6	10.9	11.5	4.9	4.9	10.9
Filter paper wt. before sampling (mg)	71.01	65.61	74.92	71.49	70.12	69.99	69.89	71.41
Filter paper wt. after sampling (mg)	71.37	65.90	75.60	71.83	70.54	70.38	71.96	72.02
Dust wt.(mg)	0.36	0.29	0.68	0.34	0.42	0.39	2.07	0.61
Dust conc. (mg/m ³)	0.031	0.061	0.147	0.031	0.037	0.080	0.419	0.056

(Note) The vacuum volumes are based on measured volumes obtained using a volume meter.

Source: Japan Waste Management Consultant Association, "Guideline on the Removal and Treatment of Disaster Waste", October 2011.

3. Others

The dust concentration was 0.4-0.6 mg/m³ around the area where excavated waste was sorted using a trommel (Sotaro Higuchi, et al., "Development of integrated technologies to recover a landfill site" (2002)). The dust concentrations in some crushing sorting system installed in a building were several times larger than that in the outdoor sorting system (unpublished source).