

Sampling for Radioactive Air at MDA-R

Preliminary results are reported for radioactive-air sampling at Material Disposal Area MDA-R from 5-June-2000 through 16-June-2000. No radioactive emissions were detected.

The Cerro-Grande fire burned through MDA-R on or about May 12 or 13 and the area continued to smolder for several weeks. On June 5, work began to uncover and extinguish the smoldering debris. During this work, ESH-17 personnel placed two high-volume (40 cfm) air samplers as close as possible to the work area, one <50 m to the east and the other <50 m to the west. The following table reports the preliminary results from these air samplers.

Usually, the samplers were set to run for 24 hours. For example, the samplers were set to run on 5-June-2000 with an end date of 6-June-2000. On the first day, the East sampler ran for only 3.1 hours before the GFCI tripped during a rain storm; similarly, on 6 June it ran for 12.3 hours. Thereafter, the samplers ran for the expected time.

Preliminary data were obtained by gross-alpha and gross-beta counting with an Eberline SHP380AB alpha-beta probe. Background was subtracted, resulting in negative numbers when the count from the filter was less than background.

The gross-alpha and -beta counts were converted to air concentrations (fCi/m³) by dividing by the air flow, 40 cfm for the time stated, and correcting for the size of the SHP380AB probe relative to the size of the filter.

The dose rate (mrem/h) and dose (mrem) were calculated by multiplying by the dose conversion factors (DCF) for plutonium (alpha) and cobalt-60 (beta) from Table 5-1 of the Environmental Protection Agency's "Manual of Protective Actions", EPA-400-R-92-001. Plutonium and cobalt-60 were chosen as worst-case examples.

The one-standard-deviation uncertainties (s.d.) are in the adjacent columns. The variation of the data is generally smaller than the standard deviation because the uncertainty in the background is common to all data in a column.

In conclusion, the measured radioactivity is less than the minimum detectable activity. Measurable radioactivity was not expected, and the results confirm this.

Table: Preliminary air monitoring results for gross alpha and beta measurements for MDA-R from 5-June-2000 through 16-June-2000.

Site	end date	hours	alpha fCi/m3	s.d.	alpha mrem/h	s.d.	alpha mrem	s.d.	beta fCi/m3	s.d.	beta mrem/h	s.d.	beta mrem	s.d.
East	6-Jun	3.1	17	171	0.009	0.089	0.03	0.28	855	771	0.00023	0.00021	0.001	0.001
West	6-Jun	22.7	-9	22	-0.005	0.012	-0.11	0.26	-222	97	-0.00006	0.00003	-0.001	0.001
East	7-Jun	12.3	-30	39	-0.016	0.021	-0.19	0.25	39	190	0.00001	0.00005	0.000	0.001
West	7-Jun	22.3	-4	23	-0.002	0.012	-0.04	0.27	-18	104	0.00000	0.00003	0.000	0.001
East	9-Jun	24	2	22	0.001	0.011	0.03	0.28	44	98	0.00001	0.00003	0.000	0.001
West	9-Jun	23.6	-21	20	-0.011	0.010	-0.26	0.25	119	101	0.00003	0.00003	0.001	0.001
East	12-Jun	71.8	-3	7	-0.002	0.004	-0.11	0.26	62	34	0.00002	0.00001	0.001	0.001
West	12-Jun	71.8	4	8	0.002	0.004	0.17	0.29	25	33	0.00001	0.00001	0.000	0.001
East	13-Jun	23.6	8	23	0.004	0.012	0.10	0.28	112	101	0.00003	0.00003	0.001	0.001
West	13-Jun	23.6	13	24	0.007	0.012	0.17	0.29	-10	98	0.00000	0.00003	0.000	0.001
East	14-Jun	25	-15	19	-0.008	0.010	-0.19	0.25	89	94	0.00002	0.00003	0.001	0.001
West	14-Jun	25	2	21	0.001	0.011	0.03	0.27	14	93	0.00000	0.00002	0.000	0.001
East	15-Jun	24.3	-10	20	-0.005	0.010	-0.12	0.25	62	96	0.00002	0.00003	0.000	0.001
West	15-Jun	23.8	-21	19	-0.011	0.010	-0.26	0.24	-187	92	-0.00005	0.00002	-0.001	0.001
East	16-Jun	23.7	2	22	0.001	0.011	0.03	0.27	-72	96	-0.00002	0.00003	0.000	0.001
West	16-Jun	22.4	8	24	0.004	0.012	0.10	0.28	-104	101	-0.00003	0.00003	-0.001	0.001