

AMBIENT AIR

Results for 2002

The Environmental Surveillance Program measures the concentrations of radionuclides in the ambient air. Gross alpha radiation concentration (gross alpha) and gross beta radiation concentration (gross beta) data indicate levels of airborne radioactivity. Based on gross alpha and gross beta concentrations, further analyses may be conducted to determine specific alpha or gamma emitting radionuclides. Concentrations are compared to applicable Derived Concentration Guides (DCG) for the public as outlined in "Radiation Protection of the Public and the Environment" (DOE Order 5400.5).

QUICK FACTS

- 12 on-Site locations
- 5 off-Site locations
- Weekly monitoring
- Approximately 1,000 filters analyzed a year
- Concentration samples are analyzed for gross alpha, gross beta, gamma and specific radionuclides

DEFINITION

Ambient Air

Ambient air monitoring refers to the monitoring of air at remote locations where it is assumed that the material (either radioactive material or hazardous pollutants) being measured and compared to some risk-based standard is well mixed in the atmosphere and that any concentration present represents what might be inhaled by an individual. This type of monitoring is distinguished from direct monitoring of emissions of the material at the "stack" or point of release.

Calendar Year 2002 Mean Gross Alpha Concentration

Definition: gross alpha radiation is the "total" amount of alpha radiation emitted from a given sample.

Location	1st Quarter Concentration (E-15 $\mu\text{Ci/cc}$)	2nd Quarter Concentration (E-15 $\mu\text{Ci/cc}$)	3rd Quarter Concentration (E-15 $\mu\text{Ci/cc}$)	4th Quarter Concentration (E-15 $\mu\text{Ci/cc}$)	Annual Mean Concentration (E-15 $\mu\text{Ci/cc}$)	% of DCG ^a
ANL-W	0.16	0.18	0.98	1.73	0.76	3.8%
ARA	0.68	0.59	0.96	0.65	0.72	3.6%
CFA	0.35	0.46	0.87	0.53	0.55	2.8%
EBR-1	0.29	0.98	0.73	0.72	0.68	3.4%
EFS	0.38	0.63	1.08	1.32	0.85	4.3%
INTEC	-0.07	0.82	0.95	1.19	0.72	3.6%
NRF	0.32	0.60	1.13	0.68	0.68	3.4%
PBF	1.27	0.76	1.53	1.62	1.29	6.5%
REST	-0.18	0.62	1.18	1.72	0.83	4.2%
RWMC	0.03	0.56	0.78	0.99	0.59	3.0%
TAN	0.48	0.66	0.71	0.78	0.66	3.3%
TRA	0.18	0.69	1.25	1.83	0.99	4.9%
VAN-B	0.12	1.38	0.95	1.02	0.87	4.3%
Off-Site	0.67	1.10	1.53	1.04	1.08	5.4%

a. DCG - Derived Concentration Guide



Calendar Year 2002 Mean Gross Beta Concentration

Definition: gross beta radiation is the "total" amount of beta radiation emitted from a given sample.

Location	1st Quarter Concentration (E-15 μ Ci/cc)	2nd Quarter Concentration (E-15 μ Ci/cc)	3rd Quarter Concentration (E-15 μ Ci/cc)	4th Quarter Concentration (E-15 μ Ci/cc)	Annual Mean Concentration (E-15 μ Ci/cc)	% of DCGa
ANL-W	22	19	28	40	27	0.3%
ARA	28	22	31	38	30	0.3%
CFA	27	19	27	40	28	0.3%
EBR-1	22	21	29	41	28	0.3%
EFS	35	23	34	52	36	0.4%
INTEC	27	20	29	42	29	0.3%
NRF	25	19	32	43	30	0.3%
PBF	28	22	28	42	30	0.3%
REST	28	22	28	42	30	0.3%
RWMC	22	15	23	33	23	0.3%
TAN	29	19	28	39	29	0.3%
TRA	27	20	27	45	30	0.3%
VAN-B	29	22	32	42	31	0.3%
Off-Site	27	21	29	39	29	0.3%

a. DCG - Derived Concentration Guide

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b. Rest Area (new monitor) in place beginning 8/23/00.

Gamma Concentration

No gamma emitting radionuclides or I-131 were detected.

Radiochemistry

Specific Alpha concentrations of Uranium 234 and 238 were detected in numerous samples at a ratio that indicate they were from naturally occurring sources. No other Alpha emitting radionuclides were detected above minimum detectable activity.

FOR MORE INFORMATION

Visit our website at:
www.inel.gov/environment/monitoring

Read the 2002 Environmental Monitoring Program Report available in DOE Public Reading Rooms or at our website.

Contact: Roger Wilhelmsen
 208-526-9401
rnw@inel.gov

