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ATMOSPHERIC RADIONUCLIDE CONCENTRATIONS MEASURED BY PACIFIC NORTHWEST LABORATORY SINCE 1961

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ABSTRACT

The atmospheric concentrations of a wide spectrum of radionuclides produced by nuclear weapons, nuclear reactors, cosmic rays, radon and thoron decay and the SNAP-9A burn-up (^{238}Pu) have been measured at Richland, Washington, since 1961; at Barrow, Alaska, since 1964; and at other stations for shorter periods of time. Following the U.S.A.- U.S.S.R. test series of 1961-62 the concentrations of the longer lived nuclear weapons radionuclides reached a maximum in the spring of 1963. The concentrations then decreased until 1967, when the Chinese conducted their first high-yield atmospheric nuclear test. In recent years, the frequency of high-yield Chinese tests has decreased, so by 1979 the average ^{137}Cs (30 yr) concentration had fallen to 1.3% of the 1963 concentration. However, in October of 1980 the Chinese conducted a fairly high-yield test, so the concentrations will increase again in the spring of 1981.

The measurement of atmospheric radionculide concentrations during the past several years has produced considerable valuable information on the rates of atmospheric mixing and deposition processes which can be used to predict the behavior of other particulate pollutants. The measurements have shown, for example, that the ground-level concentrations of radionuclides released into the stratosphere increase to a maximum each spring and eventually begin to decrease with an 11-month half-time. Only the time delays before the appearance at ground-level and before the beginning of the concentration decrease depend upon the release location in the stratosphere, with middle- and high-latitude lower stratospheric releases showing the shortest delay time, and equational upper stratospheric releases showing the longest delay time. The concentrations of cosmogenic and nuclear weapons radionculides averaged more than twice as high at Richland, Washington, than at stations at about the same latitude on the coast of Washington because of vertical mixing

caused by the Cascade Mountains between the coastal stations and Richland. The concentration difference was greatest in the summer when stability is highest over the ocean and lowest over the continent. Comparison of radionuclide ratios between Richland and Barrow, Alaska, indicate that most of the ^{46}Sc, ^{55}Fe, ^{60}Co, ^{65}Zn, and ^{134}Cs measured at Richland came from the plutonium-producing nuclear reactors operating on the Hanford Reservation 20 to 30 miles north of Richland. (All but one of these reactors was shut down in the late 1960's and early 1970's.)

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INTRODUCTION

Large quantities of radionuclides were released into the atmosphere by the nuclear tests conducted by the U.S.S.R. at Novaya Zemlya (75°N, 55°E) in 1961 and 1962 and by the U.S.A. at Christmas (2°N, 157°W) and Johnston (17°N, 169°E) Islands in 1962. These countries have not conducted atmospheric tests since that time, but atmospheric nuclear tests conducted by the French in the Sahara Desert (27°N, 0°) and the South Pacific (21°S, 137°W) from 1960 through 1971, and by the Chinese at Lop Nor (40°N, 90°E) from 1964 through the present time have maintained atmospheric radionuclide concentrations at appreciable levels (Carter and Moghissi 1977, Perkins and Thomas 1980).

There has been considerable concern over the health hazard presented by these radionuclides, but it has also been recognized that atmospheric mixing and deposition rates can be determined from their measurement. Therefore, Pacific Northwest Laboratory began the continuous measurement of the atmospheric concentrations of a wide spectrum of radionuclides produced by nuclear weapons, nuclear reactors, cosmic rays, and radon and thoron decay at Richland, Washington (46°N, 119°W) in 1961 and Barrow, Alaska (71°N, 157°W) in 1964, and has continued these measurements through the present time. Radionuclide concentrations were also measured at Rio de Janeiro, Brazil (23°S, 43°W) from 1966 through 1970; at Barbados, British West Indies (13°N, 60°W) from 1968 through 1970; and near the Pacific coast of Washington State at Makah (48°N, 125°W) from 1967 through 1970 and Quillayute (48°N, 125°W) from 1973 through 1975. Makah and Quillayute are only about 30 miles apart and have about the same elevation and meteorology, so the concentrations measured at these two stations will be discussed together under the heading Makah-Quillayute in this paper. The concentrations measured at Rio de Janeiro and Barbados are reported in the tables, but they will not be discussed in this report.

Vertical profiles of radionuclide concentrations were measured at altitudes from 1.5 km to 19 km, mostly near Albuquerque, New Mexico (35°N, 107°W) and Spokane, Washington (48°N, 117°W) from 1967 through 1969, and east of

Barbados in the summer of 1969. These measurements are reported in the tables, but they will only be discussed whenever they shed light upon the ground-level measurements.

This report will discuss the concentrations of the longer-lived radionuclides (T 1/2 > 12 days). The concentrations of shorter-lived radionuclides measured following Chinese nuclear tests since 1972 are discussed in another report.

EXPERIMENTAL

Air samples are collected at ground level using Roots Type RAI blowers to draw air through air filters. In the past, millipore filters have been used, but in recent years samples have been collected on IPC-1478 filter paper because it is cheaper and easier to handle than millipore filters, and does not plug up as readily. It has been shown that at the face velocities used, IPC filter paper has nearly a 100 collection efficiency for radionuclides attached to aerosol particles (Van den Akkev 1960, Friend et al. 1961). At the present time, a 17 m^3/min Roots blower is being used at Barrow and a 10 m^3/min blower at Richland. These flow rates give face velocities of about 700 m/min across the filters at both sites. Air samples were collected above ground level aboard RB-57 aircraft using ram pressure to force air through IPC filters.

The air filter samples are pressed into disks one-half inch thick and two inches in diameter and counted directly, without chemical separation, on gamma-ray spectrometers to obtain the concentrations of a wide spectrum of radionuclides. Chemical separations are also performed on portions of some of the filters to obtain the concentrations of radionuclides such as ^{55}Fe, ^{90}Sr, ^{238}Pu, ^{239}Pu and ^{241}Am which cannot be measured directly by gamma-ray spectrometry.

All of the concentrations measured by gamma-ray spectrometry before 1966 were measured using anticoincidence shielded NaI(Tl) multidimensional gamma-ray spectrometers (Perkins 1965). The energy resolution of NaI(Tl) counters is not good enough to prevent interferences between several radionuclides which emit gamma rays of similar energy. However, many radionuclides emit two or more gamma rays simultaneously. The multidimensional NaI(Tl) counters take advantage of this fact to minimize interferences between radionuclides. The sample to be counted is placed between two large NaI(Tl) crystals. When one of the simultaneous gamma rays emitted by a radionuclide deposits its energy in one crystal, and the other deposits its energy in the second crystal, the event is stored in a 4096 channel computer memory at a location uniquely determined by the individual energies of the two gamma rays. In this manner, the interferences of radionuclides which emit simultaneous gamma rays with those which emit either single or simultaneous gamma rays are greatly reduced. However, the interferences between radionuclides that emit single gamma rays are not reduced, so these multidimensional counters are still not able to resolve the gamma rays of many radionuclides. For example, the gamma rays emitted by the parent-daughter pair, ^{95}Zr and ^{95}Nb, cannot be resolved, so the sum of the disintegration rates of ^{95}Zr and ^{95}Nb have been reported as $^{95}ZrNb$ when they were measured with NaI(Tl) counters.

Because of the inability of the NaI(Tl) counters to resolve the gamma rays emitted by several radionuclides, we began counting samples in late 1966 with anticoincidence-shielded Ge(Li) diodes, which have approximately 60 times better energy resolution than NaI(Tl) crystals (Cooper et al. 1968).) The early Ge(Li) diodes were quite small and therefore had low counting efficiencies, however, so they gave significantly poorer numbers for many of the radionuclides than did the NaI(Tl) counters. Therefore, we counted air samples with both NaI(Tl) and Ge(Li) counters for a few years. As larger Ge(Li) diodes became available, more and more radionuclides could be measured better with the Ge(Li) diodes. Therefore, since late 1970 we have counted air samples only with Ge(Li) diodes.

RESULTS AND DISCUSSION

The atmospheric radionuclide concentrations that have been measured at ground level at Barrow, Alaska; Richland and Makah-Quillayute, Washington; Barbados, British West Indies; and Rio de Janeiro, Brazil, and above ground level by aircraft are reported in tables at the end of this report. The error limits reported in the tables are the 1σ statistical counting errors associated with the random fluctuations in the counting rates. They do not include other sources of error such as counter drift or malfunction, standardization error, or errors in the calculated volumes of sampled air, because the magnitudes of these errors are unfortunately not known. Therefore, the reported error limits represent minimum possible rather than true error limits. It has been estimated that these other sources of error may contribute as much as a 10% error to the concentrations. Therefore, when the reported statistical counting error is significantly larger than 10%, it probably represents a fairly accurate estimate of the true error, but when it is less than 10% it may represent only a fraction of the total error.

Only a few error limits have been calculated for the single gamma-ray-emitting radionuclides that were measured using NaI multidimensional counters, since counter gain shift generally resulted in errors that were larger than the rather small statistical counting errors.

The method of reporting measured concentrations that were near or below the detection limits of the counters has changed since measurements were begun in 1961. For the first few years calculated concentrations that were zero or negative were reported as not detectable (abbreviated ND in the tables). It was soon realized that this method was not satisfactory because it gave no indication of the maximum possible concentration. Therefore, we now report calculated concentrations that are zero or negative as less than 2σ statistical counting error. Concentrations that are very small are reported as calculated even when they are much smaller than the error limits. This allows more accurate concentration averages to be calculated than if just less than numbers were reported. It also gives a better indication of whether or not the actual concentrations, are likely to be significantly below the detection limit.

NUCLEAR WEAPONS PRODUCED RADIONUCLIDES

Average Yearly Concentrations

The average yearly radionuclide concentrations at Richland, Washington, from 1961 through 1979 and for Barrow, Alaska, from 1965 through 1979 are reported in Tables 1 and 2, and the concentrations of three of the nuclear weapons-produced radionuclides at Richland are plotted versus time in Figure 1. The size and timing of the Chinese atmospheric tests are also shown in Figure 1. Measurements of atmospheric radionuclide concentrations by several investigators following numerous nuclear tests have shown that the rate of transfer of radionuclides from the stratosphere into the troposphere reaches a maximum in the spring, and that radionuclides introduced into the lower stratosphere at middle or high latitudes are generally transferred into the troposphere in maximum quantities the following spring. Therefore, the concentrations of the longer-lived radionuclides introduced into the atmosphere by the 1961-62 nuclear test series by the U.S.A. and the U.S.S.R. did not reach a maximum at Richland until the spring of 1963. However, the concentrations of the shorter-lived radionuclides ^{95}ZrNb (65 d), ^{103}Ru (40 d), ^{140}Ba (12.8 d), and ^{141}Ce (32.5 d) decreased after 1961 because of radioactive decay.

The concentrations of the nuclear weapons-produced radionuclides decreased rapidly until about 1967, when the Chinese conducted their first high-yield nuclear test at Lop Nor, (40°N, 90°E). The concentrations of the shorter-lived radionuclides decreased faster than did the concentrations of the longer-lived radionuclides. In 1968 the concentrations of ^{137}Cs (30 yr) at Richland averaged 7.8% of the maximum concentrations measured in 1963, but the ^{103}Ru (40 d) concentrations averaged only 0.2% of the maximum concentrations measured in 1961. After 1968, the radionuclides increased somewhat (reaching a maximum in 1971) because of four 3-megaton tests conducted by the Chinese from 1967 through 1970 (Carter and Moghissi 1977, Perkins and Thomas 1980). In 1971, the ^{137}Cs concentrations at Richland averaged 11% of the 1963 concentrations. The Chinese conducted only two high-yield tests from 1971 until late 1976, so the radionuclide concentrations decreased again during this period. By 1976

TABLE 1. Average Annual Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W)

Year	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y	^{90}Sr	$^{95}ZrNb$	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru
	Disintegrations Per Minute Per 10^3 M^3															
1961												10,900			6,820	
1962		.388		64.9				1.19		.96		4,380			2,300	766
1963		.642		238				1.82	16.2	1.35	95.7	3,970				899
1964	170	.329	.201	49.9	107			.741	26.0	.608	35.5	81.1				284
1965	158	.118	.289	9.70	75.0			.945	6.66	.041	16.7	38.0				60.9
1966	170	.051	.263	2.13	25.6			1.21	7.97	.005	9.50	9.50			20.2	30.2
1967	179	.034	.489	.770	19.5	.048	.146	.750	5.81	.064	4.25	42.4			19.4	14.5
1968	202	.042	1.14	1.01	13.6	.106	.300	.968	2.87	.006	5.41		24.1	47.5	11.3	47.[illegible]
1969	199	.032	1.35	.767	4.65	.166	.105	.200	1.11	.013	6.22		60.1	117	40.1	54.8
1970	210	.024	.544	.940	3.46	.280	.129	.182	.309	.154	6.93		55.5	120	21.4	128
1971	208	.036	ND	1.34		.211	.105	.058	.102	.442			84.4	159	28.6	75.3
1972	237	.029	ND	.220		.073	.038	.056	.084	.030			27.4	37.2	19.5	14.9
1973	242	.030	ND	.067		.022	.009	.077	.019	ND			2.05	2.81	3.46	2.65
1974	234	.025	ND	.489		.024	.018	.034	.035	.054			25.8	50.8	6.37	25.6
1975	241	.024	ND	.293		.016	.013	.054	.035	.148			10.4	21.2	2.62	11.4
1976	238	.022	ND	.092		.027	.293	.119	.015	ND			9.53	8.41	10.1	1.60
1977	253	.030	ND	.499	3.29	.054	.155	.029	.06	.251	4.99		45.2	83.1	23.1	26.3
1978	212	.021	.011	.349	6.28	.026	.026	.203	.08	.049	4.96		3.15	5.87	6.88	18.7
1979	208	.017	.013	.084	1.55	.005	.048	.052	.016	.014	10.1		.034	.053	.085	3.10

TABLE 1. (contd)

Year	Disintegrations Per Minute Per 10^3 M^3												
	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{238}Pu	^{239}Pu	^{241}Am
1961						7,720	9,820						
1962			87.5	.38	98.1	3,420	1,850	1,480			.023	.858	
1963	.174	4.89	149	.511	152			1,800	84.8			.603	.253
1964		1.70	71.1	.425	78.2			471	64.1		.007	.470	.120
1965	.060	.099	27.8	.185	34.4	14.5		98.4	14.1		.006	.395	.153
1966	.050	.059	18.7	.182	18.9	11.2	43.4	27.9	6.19		.009	.143	.078
1967	.055	.142	6.60	.050	11.7	9.72	17.7	19.7	.820		.032	[illegible]	.045
1968	.084	.034	6.54	.162	11.9	6.79	10.1	118	1.60		.028	.114	.035
1969	.040	.017	7.77	.178	14.0	2.36	35.4	139	1.71		.041	.116	.0046
1970	.029	ND	7.19	.188	18.4	1.38	16.7	156	2.34		.019	.131	.0037
1971	.026	ND	6.06	.092	16.3	1.50	17.2	151	1.17		.007	.121	.0059
1972	ND	ND	1.60	.243	14.5	5.85	20.2	30.0	.42		.007	.076	.0025
1973	ND	ND	.595	.021	3.02	1.89	1.94	4.64	.152		.0025	.0232	
1974	ND	ND	2.55	.012	6.19	.789	3.97	59.2	.608		.0019	.0533	
1975	.032	.029	1.34	.010	3.68	.088	1.30	26.6	3.03	18.1	.0019	.0366	
1976	ND	.028	.269	.007	1.75	10.7	11.6	4.16	.085	23.9	.0006	.0168	
1977	ND	.045	2.57	.011	5.23	5.44	15.2	56.8	.558	23.4	.0024	.0397	.0010
1978	.062	.19	2.73	.020	5.68	10.9	4.07	37.3	.569	19.8	.0018	.0581	.0027
1979	.058	.027	.681	.017	1.98	.306	.174	4.97	[illegible]	25.4	.0008	.0220	.0034

TABLE 2. Average Annual Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°10'N, 156°30'W)

Disintegrations Per Minute Per 10^3 M^3

Year	^{7}Be	^{22}Na	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y	$^{95}ZrNb$	^{95}Zr	^{95}Nb
1965		.066	5.35	11.6			.078	.035	.026	3.96		
1966	117	.028	1.21	6.63			.032	.155	.003	7.95		
1967	85.0	.014	.175	3.22	.025	.022	.013	.062	.026	13.9		
1968	81.0	.014	.334	2.44	.036	.108	.026	.267	.002		9.12	17.2
1969	95.9	.011	.210	.821	.054	.082	.016	.105	.003		9.19	19.2
1970	68.7	.012	.183	.874	.054	.066	.006	.12	.021		7.34	16.2
1971	84.7	.014	.296		.063	.060	.008	.012	.075		12.6	25.8
1972-3	101	ND	.066		.023	ND	ND	ND	ND		6.78	10.3
1974	115	.011	.138		ND	ND	ND	ND	.013		8.47	16.9
1975	120	.011	.156		.009	.012	.008	.023	.091		9.11	16.5
1976	123	.010	.026		.009	.081	.002	.007	ND		2.56	3.75
1977	129	.011	.133		.015	.078	.006	.015	.049		9.45	17.8
1978	108	.011	.190		.013	.018	.008	.009	.036		1.98	4.37
1979	91.0	.008	.022		.002	.003	.001	.001	.002		.017	.032

TABLE 2. (contd)

Year	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb
	Disintegrations Per Minute Per 10^3 M^3											
1965		27.3			11.5	.020	14.8	2.84		49.2		
1966	3.77	6.45	.008	.014	3.73	.006	7.87	8.38		8.83		
1967	6.66	2.26	.003	ND	.90	ND	2.76	7.57	3.08	3.93		
1968	4.01	12.8	.013	.045	1.76	ND	3.64	2.74	4.25	26.2		
1969	6.42	11.8	.009	.007	1.71	ND	2.58	.761	5.30	30.8		
1970	2.74	14.4	.004	.009	1.60	.008	2.34	.48	2.07	26.9		
1971	4.58	15.2	.003	.005	1.42	.011	2.84	.42	2.93	32.3		
1972-3	2.75	3.55	ND	.012	.456	ND	1.08	.68	3.80	7.54	.146	
1974	1.98	7.81	ND	ND	.751	ND	1.92	.19	.98	19.6	.211	15.9
1975	2.66	7.25	ND	ND	.719	.006	1.80	ND	1.23	16.6	.191	19.7
1976	3.51	.764	ND	ND	.105	.003	.391	1.50	3.15	1.61	.029	20.1
1977	5.40	6.99	.013	.016	.728	.005	1.33	3.74	4.13	13.4	.142	15.5
1978	1.72	11.4	.012	.055	1.47	.004	2.68	.93	.725	17.4	.293	13.5
1979	.056	1.45	.007	.011	.303	.002	.688	.08	.081	2.14	.067	12.2

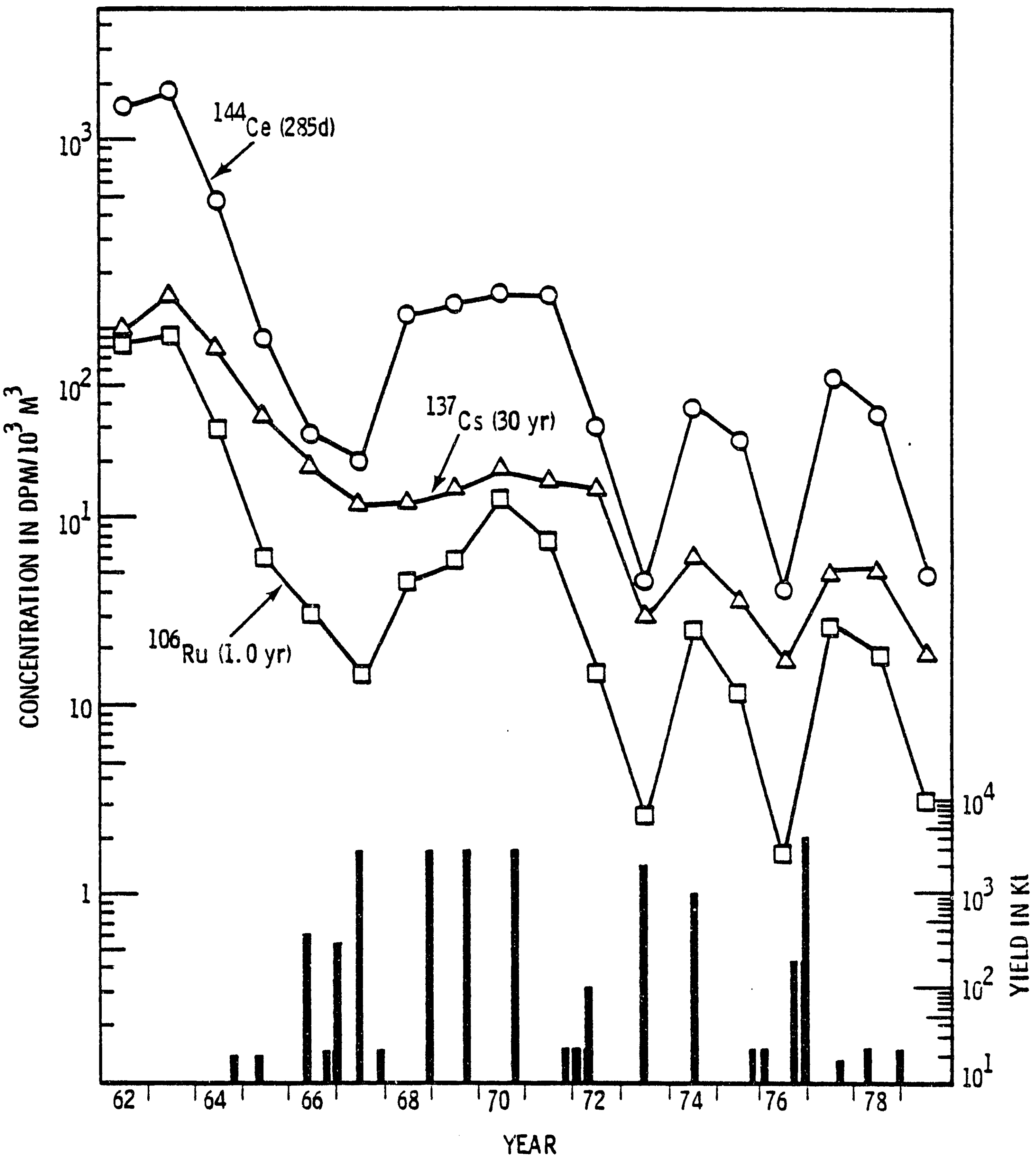

FIGURE 1. Average Yearly Concentrations of ^{106}Ru, ^{137}Cs and ^{144}Ce at Richland, Washington. Also shown are the dates and yields of Chinese atmospheric nuclear tests (Perkins and Thomas 1980).

the ^{137}Cs concentrations at Richland had decreased to 1.2% of the 1963 concentrations. The Chinese conducted two high-yield tests in late 1976, causing the radionuclide concentrations to increase again in 1977. They conducted only three small tests in 1977 and 1978 and none in 1979, so the radionuclide concentrations decreased again through 1979. In 1979 the ^{137}Cs concentrations at Richland averaged only 1.3% of the 1963 concentrations and 17% of the 1967 concentrations. However, in October of 1980 the Chinese conducted a 0.2 to 1 megaton test, so concentrations will increase again in the spring of 1981.

Stratospheric Residence Time

Although low-yield nuclear tests leave significant amounts of radionuclides in the troposphere, most of the radionuclides produced by high-yield tests rise into the stratosphere (Ferber 1964, Peterson 1970). The residence time of radionuclides in the troposphere before they are deposited on the earth's surface is around a month or less (Junge 1963, Enhalt 1973, Martell and Moore 1974, Bleichrodt 1978). Therefore, except for the first few months following a nuclear test, the primary source of nuclear weapons-produced radionuclides in the troposphere is radionuclides that were first introduced into the stratosphere. As a result, the rate of decrease in the average annual radionuclide concentrations in the troposphere in periods when there is no nuclear testing should be equal to the rate of decrease in the concentrations in the lower stratosphere.

Measurements by several investigators of radionuclides released at different latitudes and altitudes in the stratosphere have shown that processes such as 1) gravitational settling (which increases with altitude in the stratosphere), 2) poleward transport in the upper stratosphere, 3) downward transport in the middle and high-latitude stratosphere during the winter and spring, and 4) meridional transport and diffusion more or less parallel to the tropopause in the lower stratosphere eventually produce remarkably similar radionuclide distributions in the stratosphere for different release altitudes and latitudes (List and Telequdas 1969, Feely et al. 1966, Machte et al. 1970, Krey et al. 1973). This distribution features a layer of maximum concentration in the lower stratosphere which slopes upward from the pole to the equator, more or less parallel to the tropopause (Fig. 2). The time required to approach this distribution depends upon the location of the release, with minimum times required for releases in the lower mid-latitude or polar stratosphere and maximum times required for releases in the high equatorial stratosphere. Ground level measurements at Richland of radionuclides released at three different locations in the stratosphere have indicated that once this stratosphere distribution was approached, the stratospheric concentrations decreased at approximately the same rate for the three release locations. It is believed that this will also hold true for other release locations.

During the period from 1963 through 1966, the decay-corrected concentrations of several long-lived radionuclides decreased with an average half-time of 11 months at Richland, indicating that the concentrations in the lower stratosphere were decreasing at this rate. During this period there was little atmospheric testing. The French and Chinese conducted a few small tests, mostly in late 1966, but the yield of these tests was less than 0.5% of the yield of the 1961-62 test series (Carter and Moghissi 1977, Perkins and Thomas 1980). Therefore, the primary sources of radionuclides were the tests conducted by the U.S. at 2°N, 157°W and 17°N, 169°E in 1961 and the U.S.S.R. at 75°N, 55°E in 1961 and 1962. However, the total yield of the Russian tests was about eight times that of the U.S. tests (Peterson 1970). Also, about 60% of the total yield of the Russian tests was contributed by tests in 1962 (Carter and Moghissi 1977, Perkins and Thomas 1980), and much of the debris from the 1961 tests was transferred to the troposphere in 1962. Therefore, since almost all of the Russian debris stabilized below 20 km (Ferber 1964), it may be considered that radionuclides measured at Richland from 1963 through 1966 were mostly injected into the lower polar (75°N) stratosphere in 1962. These results indicate that radionuclides introduced into the lower polar stratosphere will produce maximum ground-level concentrations the following spring, and that the decay-corrected stratospheric and tropospheric concentrations will decrease from then on with an 11-month half-time.

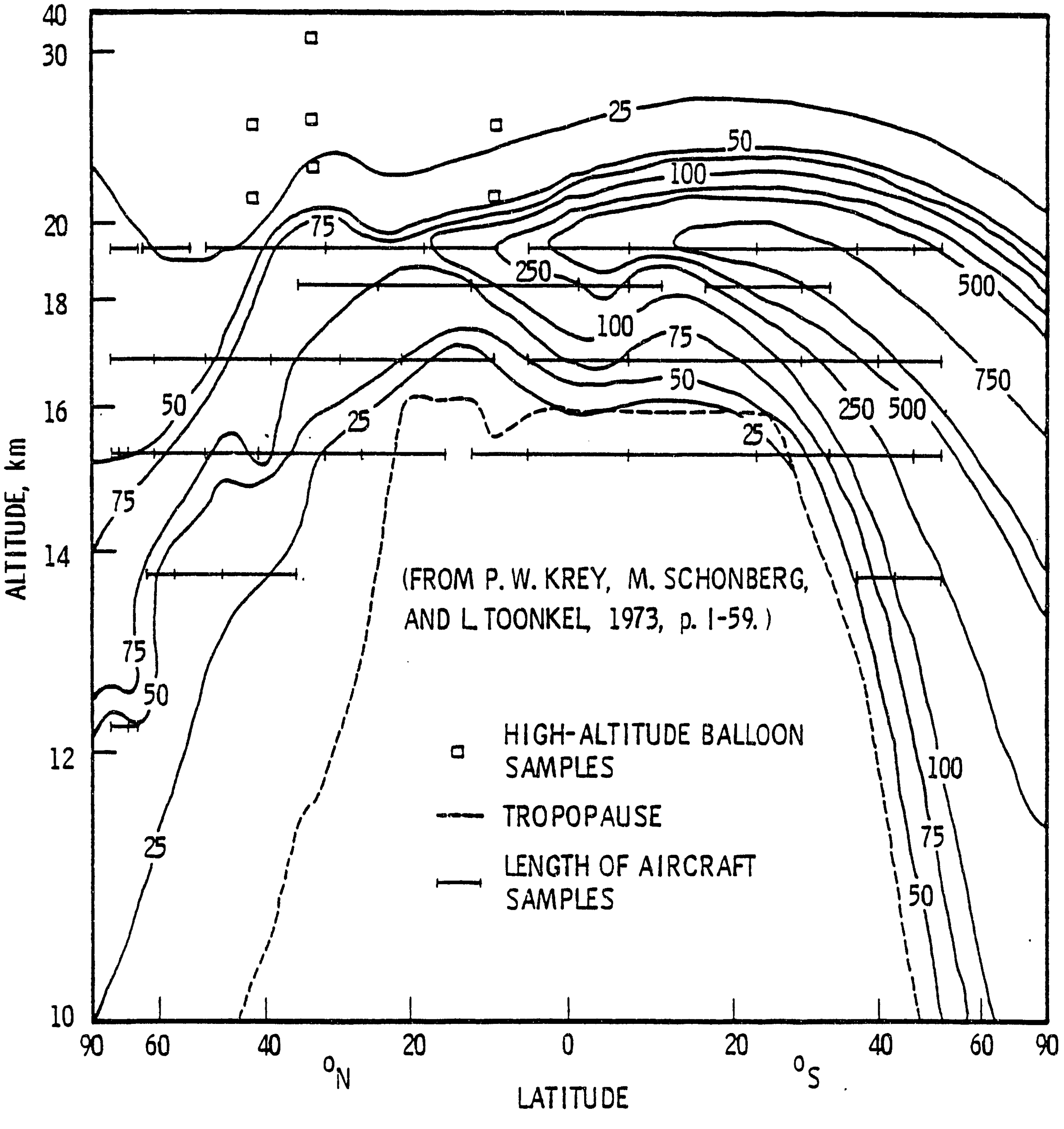

FIGURE 2. Concentration of ^{95}Zr in Stratospheric Air (in Picocuries per 100 Standard Cubic Meters) in March 1972

The decay-corrected concentrations of long-lived radionuclides injected into the lower stratosphere at mid-latitudes (40°N) by Chinese tests also reached maximums the following year at Richland and Barrow and then decreased with an 11-month half-time. Following the 3-megaton Chinese test of October 14, 1970, the decay-corrected concentrations of the long-lived radionuclides reached a maximum in the spring of 1971 and decreased with an 11-month half-time from 1971 through 1973. The Chinese then tested a 2 to 3-megaton device on June 26, 1973, so the decay-corrected concentrations again increased to a maximum in the spring of 1974 and then decreased with an 11-month half-time from 1974 through 1976, when the Chinese conducted two more tests.

Plutonium-238

The concentrations of ^{238}Pu (85 yr) introduced into the high equatorial stratosphere did not reach a maximum at Richland until five years after the release, but after that they decreased with a 12-month half-time (Figure 3). Plutonium-238 is released in small quantities by nuclear weapons tests. However, in April of 1974 a navigational satellite containing an electric power generator (SNAP-9A) using ^{238}Pu as a heat source burned up at an altitude of about 50 km at 11°S over the Indian Ocean, releasing 17 kCi of submicron-sized ^{238}Pu particles (Hansen et al. 1965, Krey 1967, USAEC 1968). At the beginning of 1965, the ^{238}Pu was still above 25 km in the stratosphere (List and Telegadas 1969). However, by September-November of 1965 layers of maximum concentration had developed in the lower stratosphere south of 30°S at an altitude of about 20 km, and north of 40°N at an altitude of about 30 km (Figure 4). By June-August of 1966, the concentration maximums were at about 20 km at middle and high latitudes of both hemispheres (Figure 5). Miyake (1970) reported that measurable concentrations of ^{238}Pu first appeared at Tokyo in late 1966. At Richland, ^{238}Pu concentrations began to increase in the spring of 1966 (Figure 3). The $^{238}Pu/^{239}Pu$ ratio also increased, indicating that the ^{238}Pu originated from SNAP-9A rather than nuclear weapons tests. Even though the ^{238}Pu concentrations had developed the characteristic concentration maximums in the lower stratosphere by the middle of 1966, ^{238}Pu concentrations at Richland continued to increase until 1969, indicating that ^{238}Pu was still

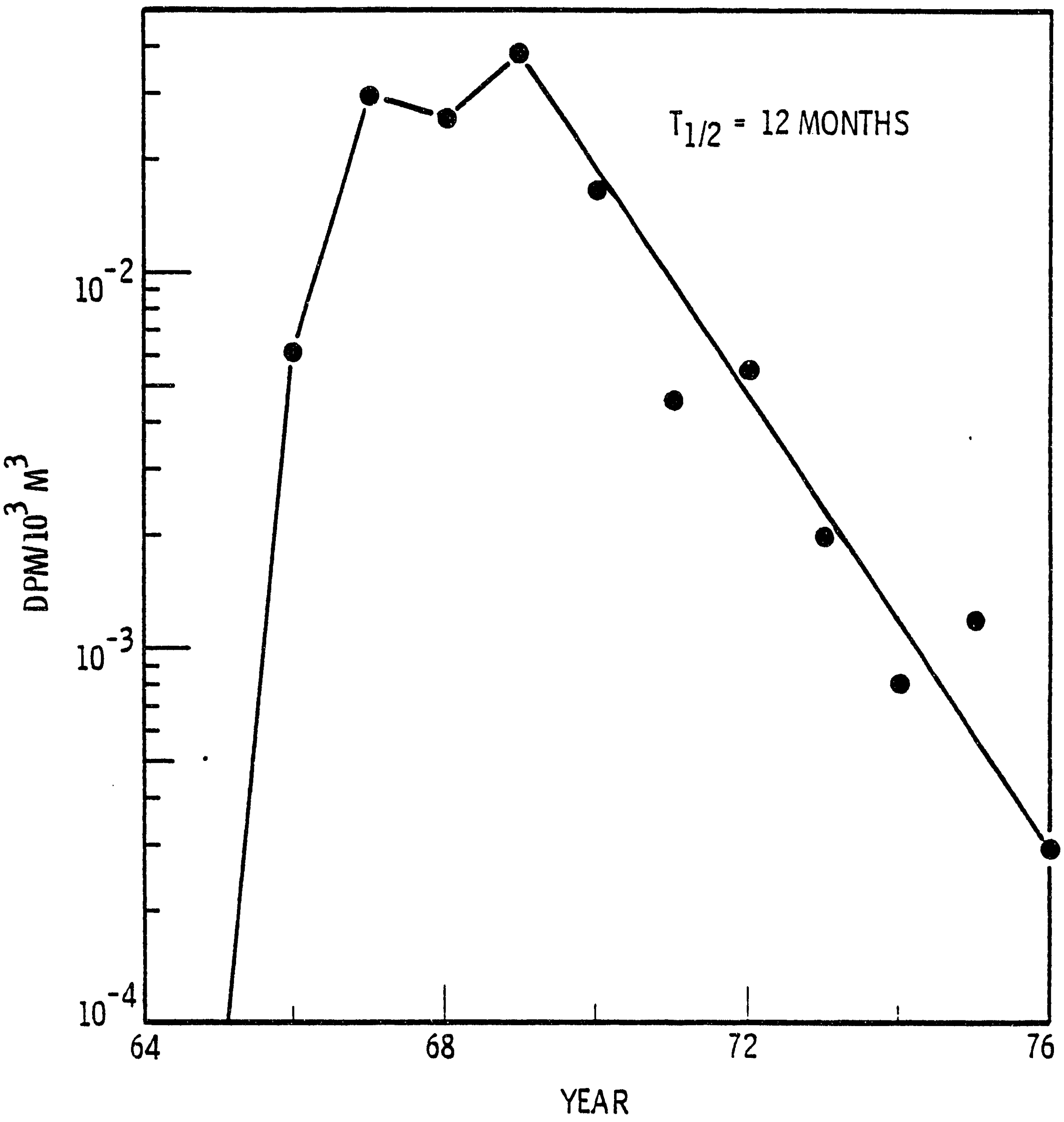

FIGURE 3. Concentrations of SNAP-9A ^{238}Pu at Richland, Washington

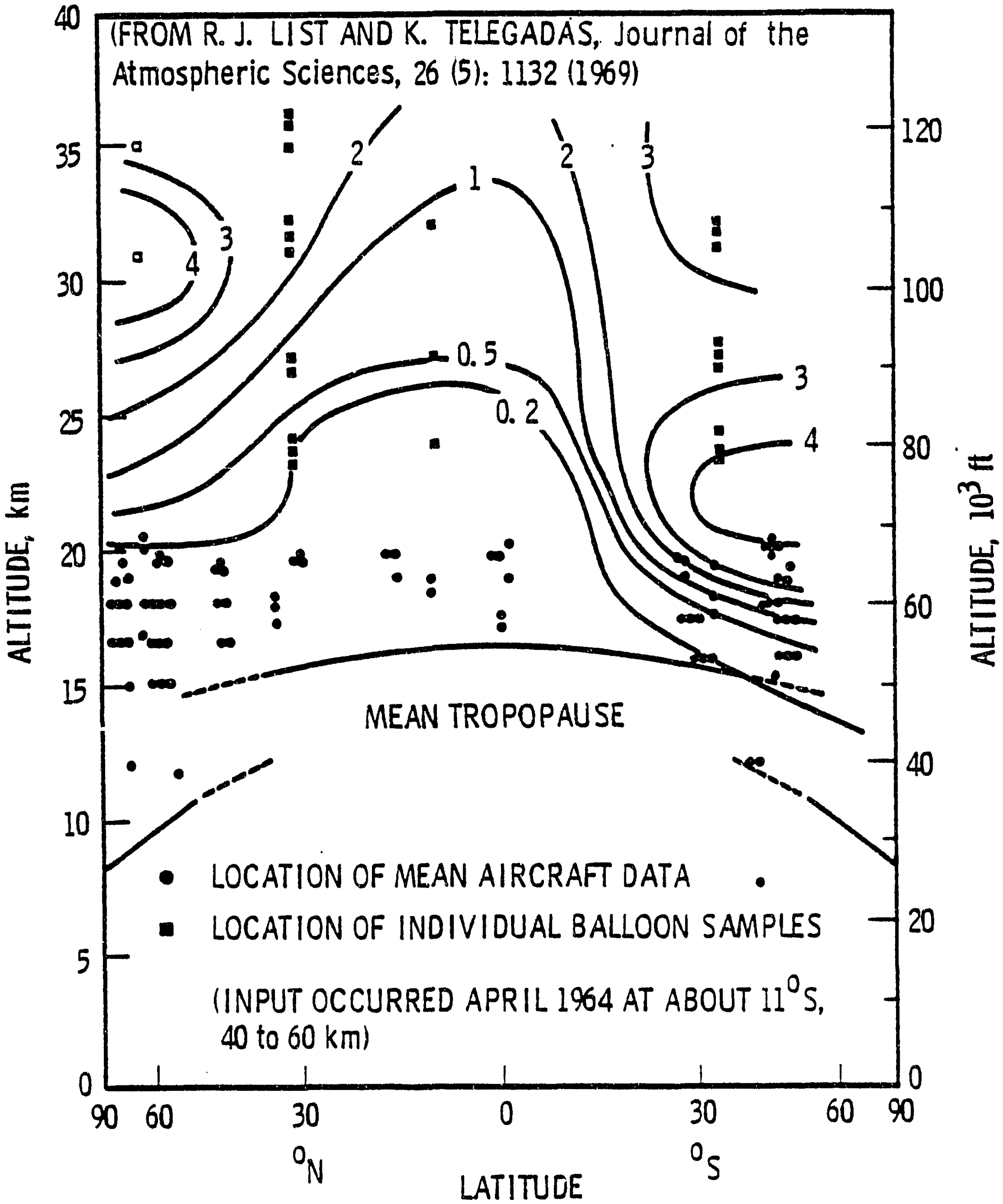

FIGURE 4. Plutonium-238 Distribution Cross Section During September-November 1965. Isolines show average concentration (in disintegrations per minute per 10^3 standard cubic feet), decay-corrected to April 1964.

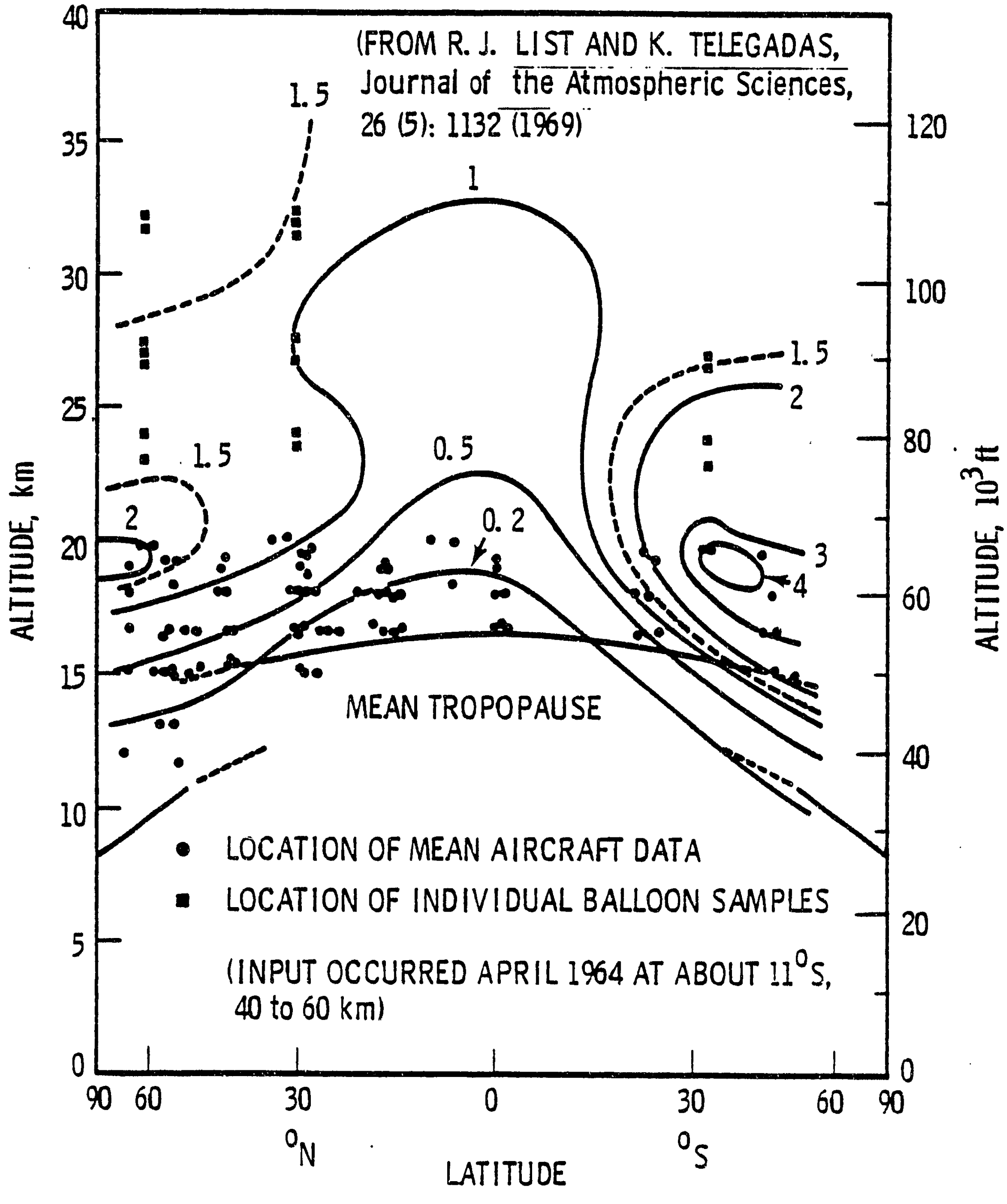

FIGURE 5. Plutonium-238 Distribution Cross Section During June-August 1966. Isolines show average concentration in disintegrations per minute per 10^3 standard cubic feet), decay-corrected to April 1964.

being transported downward from the high stratosphere (above the highest measurements) to the lower stratosphere in considerable quantities. From 1969 through 1976, however, the concentrations of SNAP-9A ^{238}Pu decreased with a half-time of 12 months, indicating that the majority of the ^{238}Pu had been transported to the lower stratosphere. After 1976 the concentrations of SNAP-9A ^{238}Pu were lower than the concentrations of nuclear weapons-produced ^{238}Pu, so it was no longer possible to observe the decrease in the concentrations of SNAP-9A ^{238}Pu.

About 80% of the SNAP-9A ^{238}Pu was in the southern stratosphere during January-March, 1966, and only 20% was in the northern stratosphere (Krey 1967). Plutonium-238 concentrations remained significantly higher in the southern stratosphere than the northern stratosphere through at least 1972 (Krey et al. 1973). Therefore, exchange between the hemispheres in the stratosphere should have slowed the rate of decrease of ^{238}Pu in the northern stratosphere. However, the measured rate of decrease in the ^{238}Pu concentrations in the northern hemisphere was probably not significantly slower than the measured rates of decrease in the concentrations of radionuclides introduced into the northern stratosphere by the Chinese and the Russians, even though exchange between the stratospheres should have increased the rates of decrease in the northern hemispheric concentrations of these radionuclides. It therefore does not appear that exchange between the northern and southern stratospheres is rapid enough to change the rate of decrease in the radionuclide concentrations in the northern hemisphere by an amount that can be measured easily. Reiter (1978) has estimated that only about 16% of the air in the stratosphere of one hemisphere is exchanged with the stratosphere of the other hemisphere annually.

Seasonal Variations

The concentrations of nuclear weapons-produced radionuclides showed pronounced seasonal variations at Richland (46°N), Makah-Quillayute (48°N) and Barrow (71°N), but the variations were somewhat different at Barrow than at Richland or Makah-Quillayute. In addition, the concentrations showed large shorter-term variations that resulted from variations in processes such as wet deposition and vertical mixing. Therefore, it was necessary to average the data over several years to obtain a clear picture of the average seasonal variations. Since the concentration levels varied considerably from year to year, it was also necessary to normalize each year's data in some manner before averaging the seasonal variations of different years. This was done by dividing the average concentration of each month by the average concentration for the year. The average ratios of monthly to yearly concentration for the long-lived nuclear weapons-produced radionuclide ^{137}Cs at Richland, Makah-Quillayute and Barrow are plotted versus month in Figure 6.

The radionuclide concentrations increased to a maximum in the spring at the three sites because of the spring maximum in the rate of transfer of radionuclides from the stratosphere into the troposphere through the tropopause gap. However, the concentrations reached a maximum in April at Barrow, but did not reach a maximum until one month later at Richland and Makah-Quillayute. The concentrations at Barrow then decreased to a minimum in August, but the concentrations at Richland and Makah-Quillayute did not reach a minimum until December, four months later.

The seasonal variations of other long-lived radionuclides have been almost identical to those of ^{137}Cs. Even the seasonal variations of the relatively short-lived radionuclides ^{95}Zr (65 d), ^{103}Ru (40 d), and ^{141}Ce (32.5 d) were generally almost identical to those of the longer-lived radionuclides, although there were a couple of years in which the ^{95}Zr, ^{103}Ru and ^{137}Cs concentration variations were clearly controlled by the timing of the low-yield Chinese tests. It therefore appears that the primary source of these and longer-lived radionuclides since 1962 has been nuclear debris that was first injected into the stratosphere, despite the fact that the Chinese have conducted several low-yield tests which released large quantities of radionuclides into the troposphere. The concentration variations of radionuclides having shorter half-lives than ^{141}Ce (32.5 d) have been controlled by the timing of these low-yield tests, however, indicating that their primary source has been debris released into the troposphere.

The concentrations of the nuclear weapons radionuclides have averaged 3.8 times higher at Richland than at Barrow, at least partly because radionuclides are transferred from the stratosphere into the troposphere primarily through

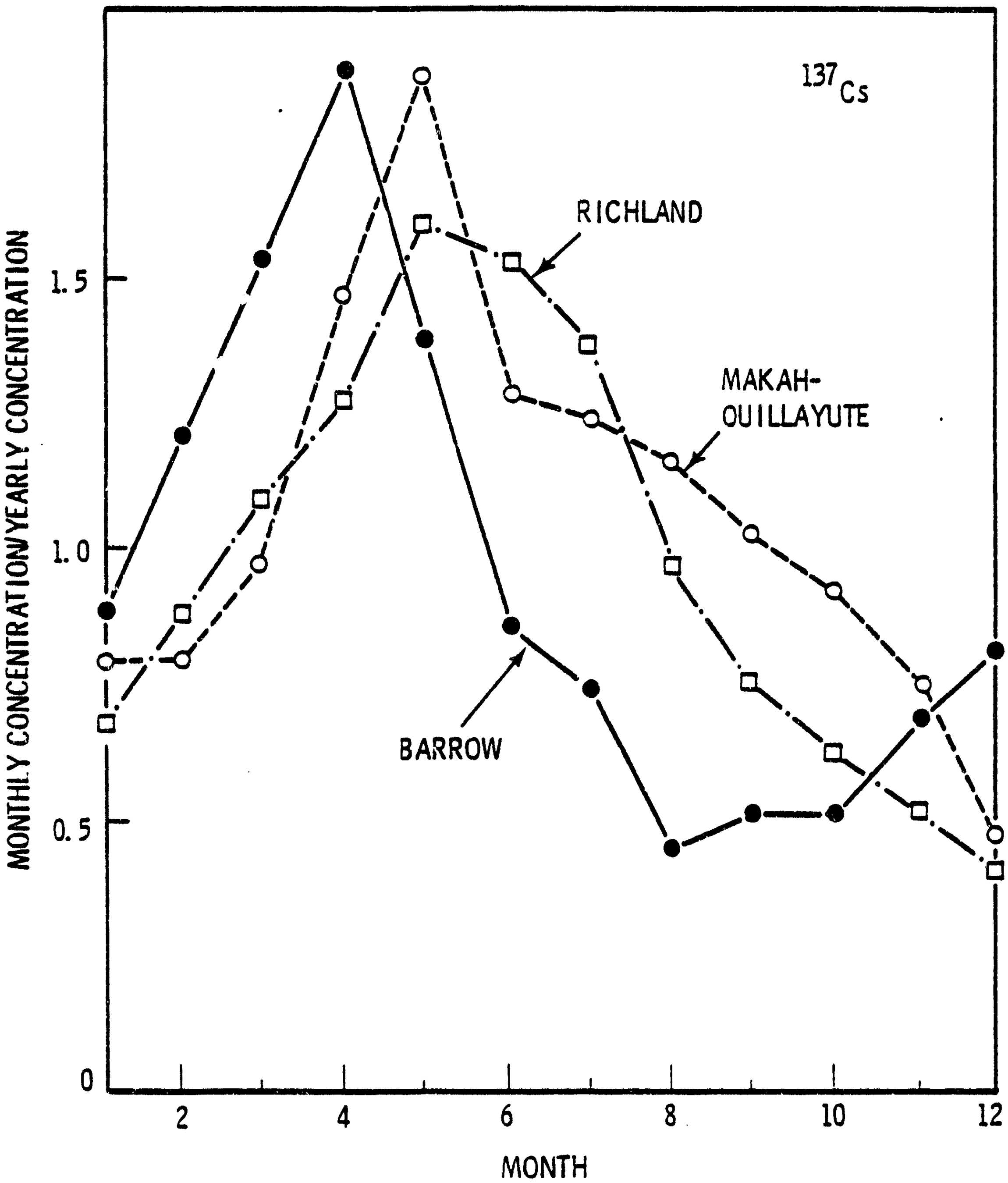

FIGURE 6. Average Seasonal Variations of ^{137}Cs at Richland (1962-1979), Barrow (1965-1979) and Makah-Quillayute (1968-1970, 1973-1974)

the tropopause gap at mid-latitudes. The fact that radionuclides began to decrease at Barrow after April, when the concentrations were still increasing at Richland, is probably due to the decrease in the rate of transport of radionuclides from middle to high latitudes which occurs when meridional mixing decreases in the spring and summer. Because of the relatively short residence time of radionuclides in the troposphere, the concentrations at Barrow would be expected to decrease when the transport of radionuclides from mid-latitudes decreased. The increase in the concentrations at Barrow after August probably results from the increase in meridional mixing which occurs in the fall and winter.

The concentrations of the nuclear weapons radionuclides at Richland also averaged about 2.7 times higher than those at Makah-Quillayute, even though Richland is at about the same latitude as Makah-Quillayute. Some of the difference could be due to the fact that precipitation is very heavy at Makah-Quillayute (250 cm/yr), but is very light at Richland (16 cm/yr). However, the concentration difference was greatest during the summer, when rainfall is light at both locations (Figure 7). The higher concentrations at Richland are probably due primarily to the vertical mixing that occurs when air passes over the Cascade Mountains going from the Washington coast to Richland in eastern Washington. Vertical profiles of radionuclide concentrations measured by Pacific Northwest Laboratory north of Richland showed that the radionuclide concentrations doubled for every 1.5 to 2 km increase in altitude in the lower troposphere, so vertical mixing would increase ground-level concentrations considerably (Figure 8). Concentrations measured by the Environmental Measurements Laboratory (EML) at Salt Lake City, Utah (41°N, 111°W) and Rocky Flats, Colorado (40°N, 105°W) were even higher than those at Richland (EML 1979), indicating continued vertical mixing as the air passed over additional mountain ranges (Figure 7). The radionuclide concentrations measured by EML at New York City (41°N, 74°W), however, averaged somewhat lower than those at Richland, but still over twice as high as those at Makah-Quillayute.

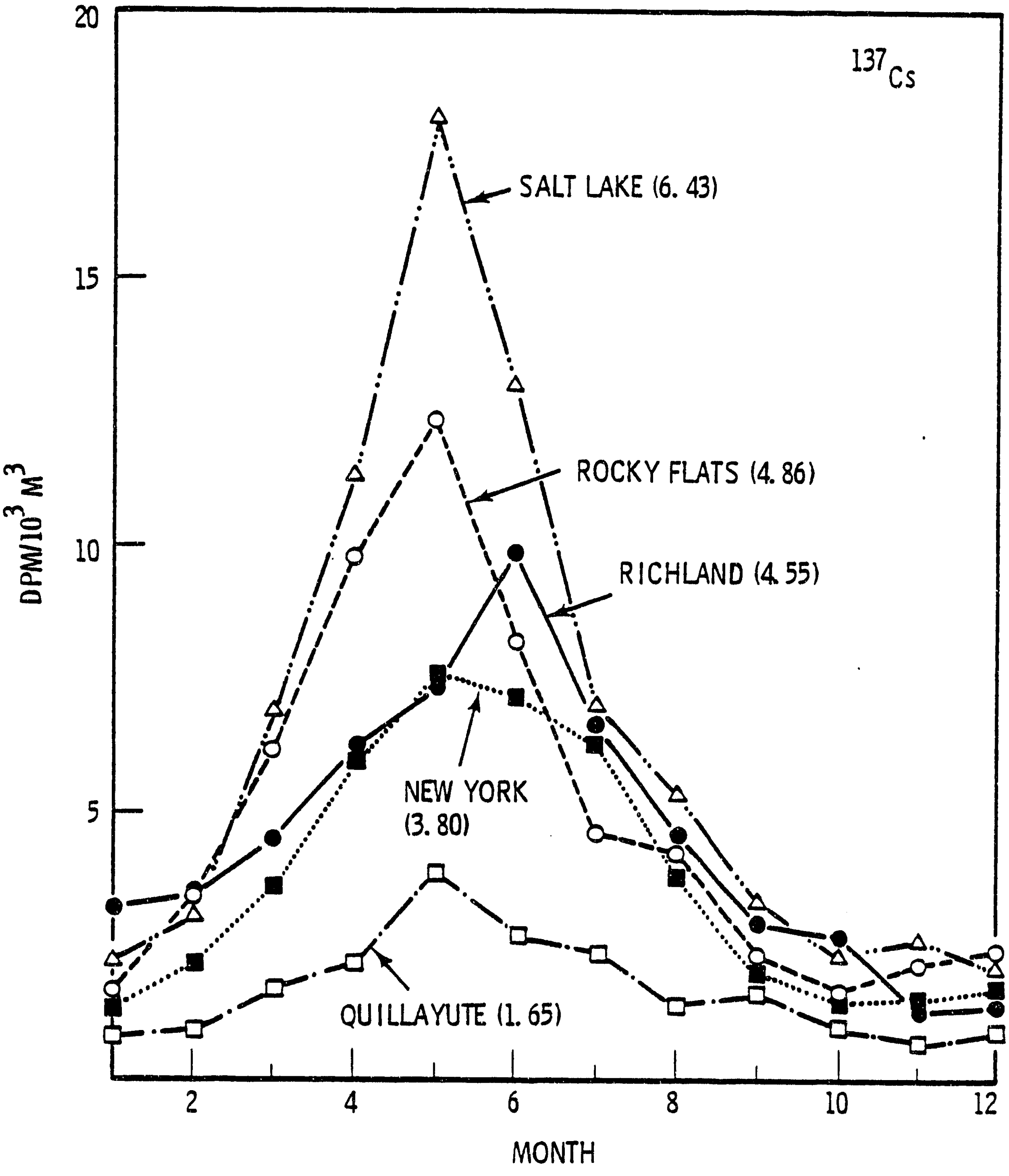

FIGURE 7. Seasonal Variations of ^{137}Cs at Quillayute, Richland, Salt Lake City, Rocky Flats, and New York City During 1973 and 1974. Average concentrations for the period are given in parentheses.

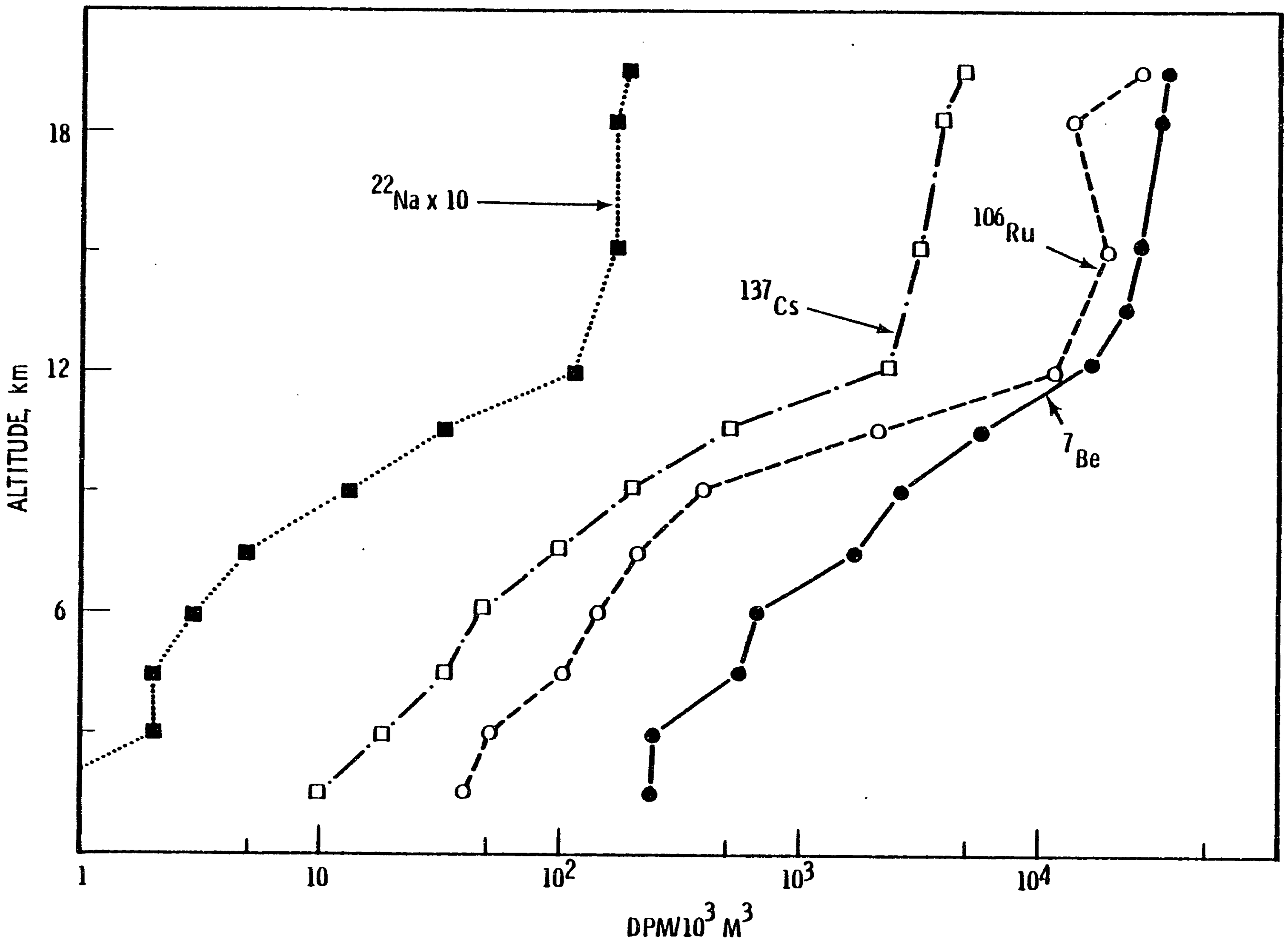

FIGURE 8. Radionuclide Disintegration Rates as a Function of Altitute at 40°-35°N, 112°-188°W During 1967-1969

COSMOGENIC RADIONUCLIDES

Average Yearly Concentrations

Beryllium-7 - Spallation reactions of cosmic rays with atmospheric gases produce ^{7}Be (53 d), ^{22}Na (2.6 yr) and several other radionuclides. The production rates of these cosmogenic radionuclides per gram of air increase by three to four orders of magnitude between ground level and the lower stratosphere, and also increase with increasing latitude, especially at higher altitudes (Lal and Peters 1962, Young et al. 1970).

The average concentrations of ^{7}Be at Richland and Barrow have varied with time, but the variation has been different than that of the nuclear weapons radionuclides (Figure 9). The ^{7}Be production rate should be proportional to the cosmic ray flux in the earth's atmosphere. Therefore, the production rate should vary inversely with the sunspot number, since the magnetic fields associated with sunspots inhibit the penetration of cosmic rays (especially those with low magnetic rigidity) into the solar system. This reduction should be greatest at high altitudes and latitudes, because low rigidity cosmic rays are deflected toward polar regions by the earth's magnetic field, and are also less able to penetrate the earth's atmosphere. According to Lal and Peters (1962), the primary cosmic ray intensity at 45°N was 40% lower during the solar maximum of 1958 than during the solar minimum of 1954, and the cosmogenic radionuclide production rate was 24% lower in 1958 than in 1954.

The ^{7}Be concentrations at Richland and Barrow have shown the expected correlation with the cosmic ray (neutron) flux, and anticorrelation with sunspot number, except at Richland from 1964 through 1967, when the ^{7}Be concentrations were lower than would be predicted from the neutron flux. It is possible that the low reported average ^{7}Be concentrations at Richland from 1964 through 1967 resulted from experimental error, since ^{7}Be was measured at Richland using NaI(Tl) counters before 1968. Beryllium-7 is particularly difficult to measure with NaI(Tl) counters in the presence of large amounts of ^{103}Ru because 1) the gamma rays emitted by ^{7}Be and ^{103}Ru have similar energy, 2) neither ^{7}Be nor ^{103}Ru emit simultaneous gamma rays, 3) the half-life of ^{103}Ru (40 d) is not much shorter than that of ^{7}Be (53 d), so allowing the

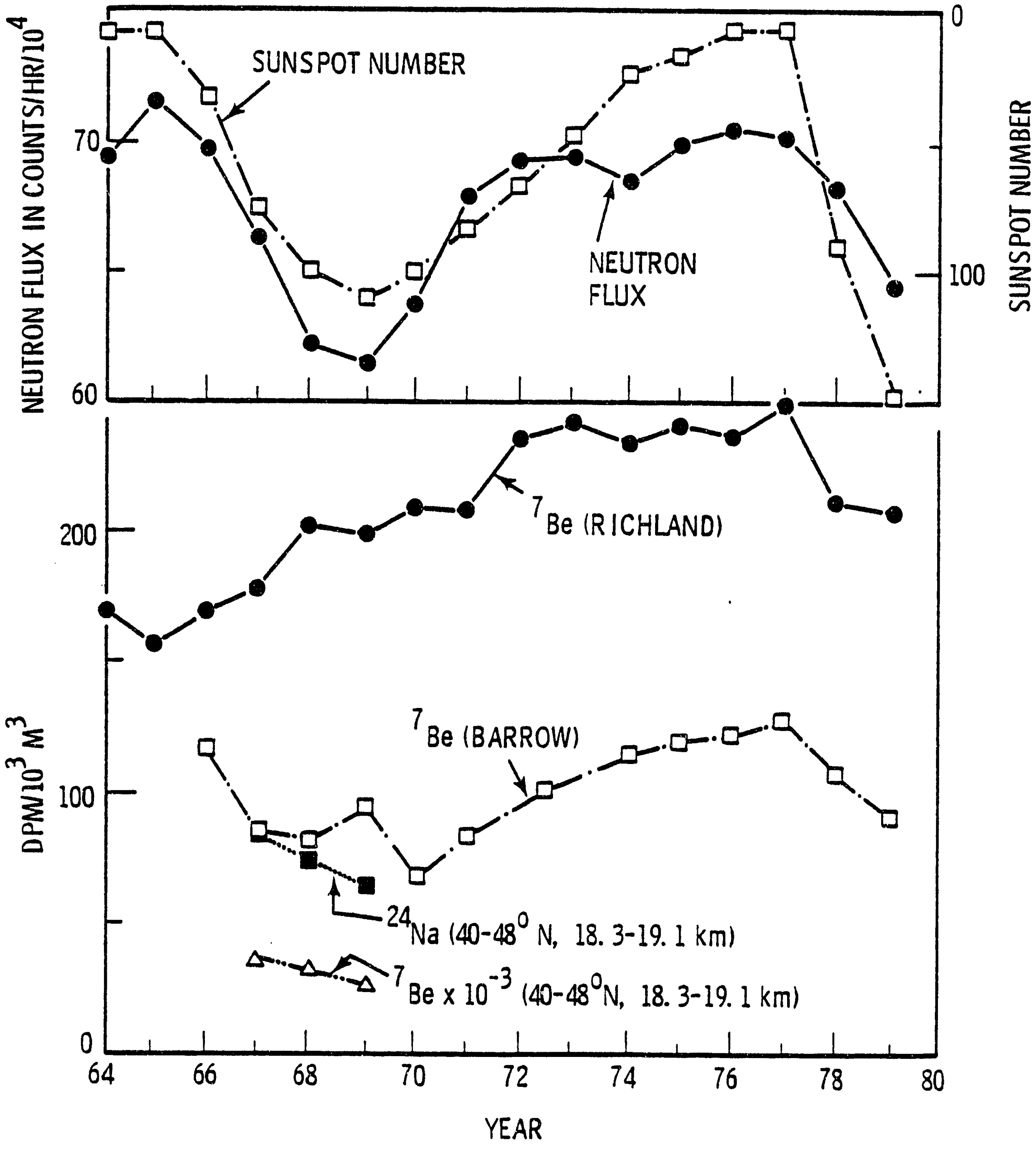

FIGURE 9. ^7Be Concentrations, Sunspot Number, and Neutron Flux (Green River, Canada) as Functions of Time

samples to decay a few months before counting does not increase the $^{7}Be/^{103}Ru$ ratio rapidly enough to increase the accuracy of the ^{7}Be measurements very much, and 4) only 10.4% of the ^{7}Be atoms emit the measured gamma ray upon decay. One of the NaI(Tl) counters used has been shown to give systematically low values for ^{7}Be in the presence of ^{103}Ru, due to a tendency to drift to lower gain. The early ^{7}Be measurements at Barrow would be expected to be more accurate than those at Richland because 1) measurement with Ge(Li) diodes was begun one year earlier at Barrow, 2) the ratio of ^{103}Ru to ^{7}Be has been considerably lower at Barrow than at Richland, and 3) there has been a tendency to allow the Barrow samples to decay longer before counting.

During the period from 1968 through 1979 the minimum average annual ^{7}Be concentration at Richland was 21% lower than the maximum concentration, a variation very similar to that reported by Lal Peters (1962) for 1954 through 1958 at 45°N. However, the minimum average annual concentration at Barrow was 47% lower than the maximum. The larger variation at Barrow might be expected since the magnetic fields associated with solar activity have the greatest effect on low-rigidity cosmic rays, which are deflected toward high latitudes by the earth's magnetic field. Of course, the measured concentration variations are not necessarily due entirely to variations in the production rate. Variations in meteorological conditions from year to year (possibly even caused by the variations in the solar activity) may cause variations in the ground-level ^{7}Be concentrations.

Pacific Northwest Laboratory also measured vertical profiles of ^{7}Be and the shorter-lived cosmogenic radionuclide, ^{24}Na (15 hr), from 1967 through 1969 (Young et al. 1970). The average yearly concentrations of ^{7}Be and ^{24}Na at an altitude of 18.3 km from 40 to 46°N decreased from 1967 through 1969, as would be predicted from the decrease in the neutron flux.

Sodium-22 - Sodium-22 is produced by cosmic rays, but it is also produced by nuclear weapons tests by the reaction $^{23}Na(n, 2n)^{22}Na$. Large amounts of ^{22}Na were released into the atmosphere by Russian thermonuclear tests in which sodium apparently was added to the nuclear device to provide a measure of the neutron flux. Sodium-22 is also produced when sodium in crustal material is ingested into the fireball of a ground-level test.

The ^{22}Na concentrations at Richland reached a maximum in 1963 and then decreased rapidly until 1967, when they averaged 5.3% of the 1963 concentrations (Figure 10). The concentrations at Barrow also decreased rapidly from 1964 through 1966. Between 1963 and 1966 the decay corrected concentrations of nuclear weapons-produced ^{22}Na at Richland decreased with a half-time of 11.8 months (in making this calculation it was assumed that the ^{22}Na concentrations in 1979 represented the concentration due to cosmogenic ^{22}Na, so this concentration was subtracted from the measured concentrations to obtain the concentrations due to nuclear weapons).

After 1967, the ^{22}Na concentrations continued to decrease, but at a much slower rate. From 1967 through 1978 the decrease may not have been significant. However, the concentrations of cosmogenic ^{22}Na would have been expected to increase because the cosmic-ray flux was increasing, so it is likely that there was still some nuclear weapons ^{22}Na in the atmosphere, mostly from Chinese tests.

The concentration differences between Richland and Barrow were considerably smaller for ^{7}Be and ^{22}Na than for the nuclear weapons radionuclides. The ratios of the Richland to the Barrow concentrations averaged 2.1 for ^{7}Be and 2.4 for ^{22}Na (from 1967 on), as compared to 3.8 for the nuclear weapons radionuclides. The differences between Richland and Barrow were probably smaller for ^{7}Be and ^{22}Na because of their production in the troposphere. The variations in the average ^{7}Be and ^{22}Na concentrations between Makah-Quillayute, Richland, and the EML stations at Salt Lake City, Rocky Flats, and New York City were almost identical to those of the nuclear weapons radionuclides.

Seasonal Variations

The average monthly concentrations of ^{7}Be and ^{22}Na at Richland, Barrow, and Makah-Quillayute are given in Figures 11 and 12. Sodium-22 concentrations measured before 1967 were not used because the seasonal variations of cosmogenic

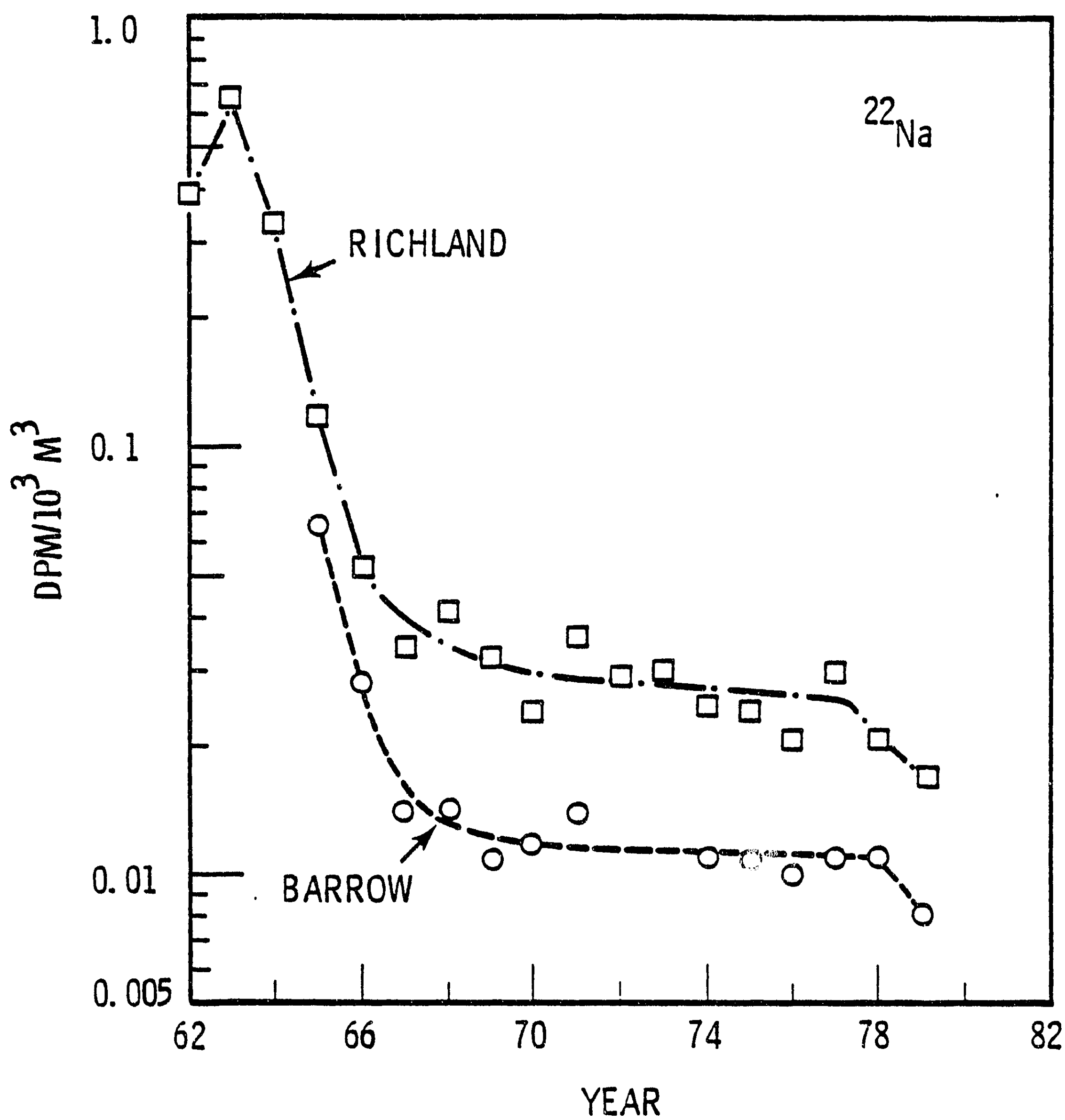

FIGURE 10. Average Yearly ^{22}Na Concentrations at Richland and Barrow

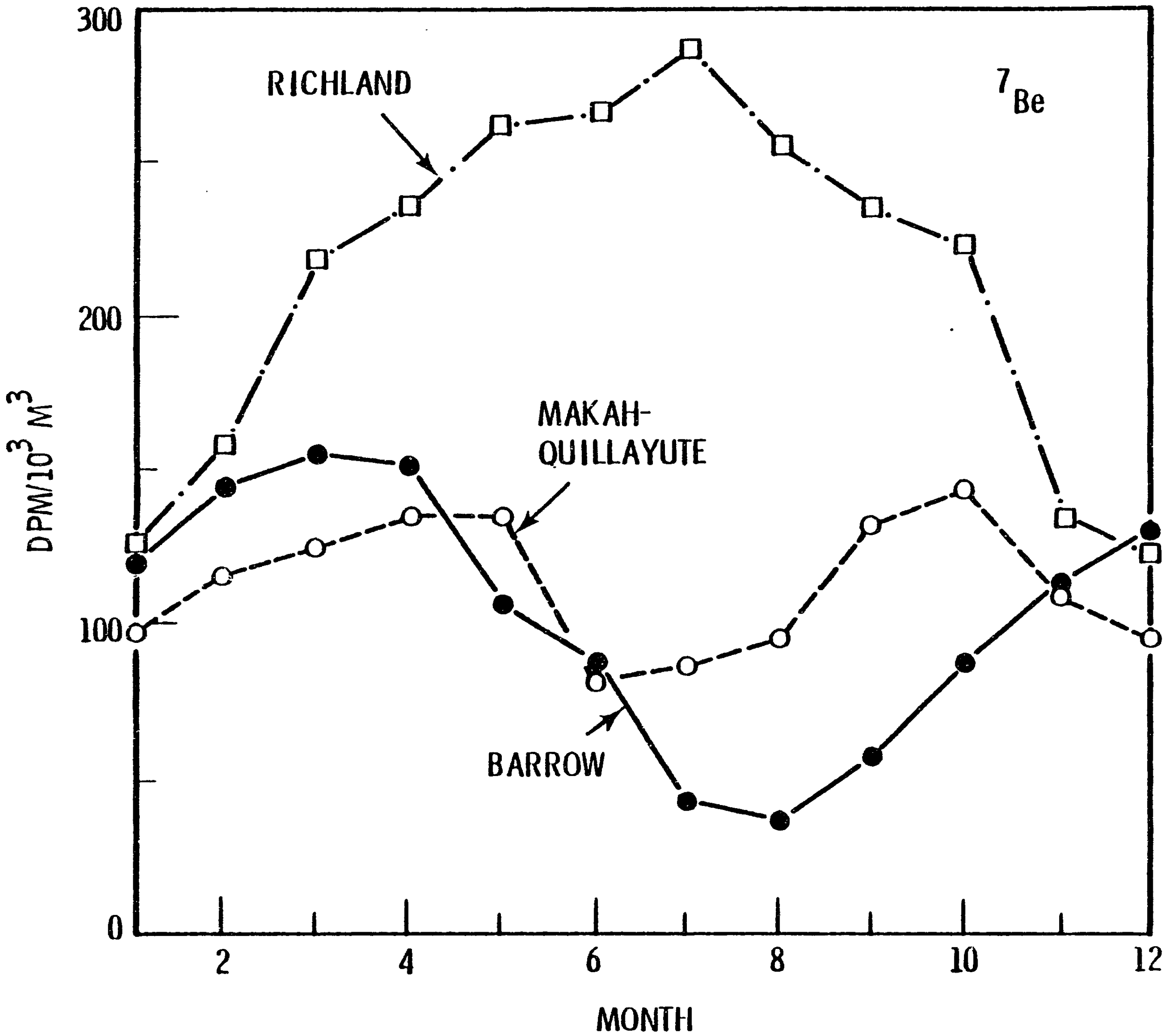

FIGURE 11. Seasonal Variations of ^7Be at Richland (1964-1979), Barrow (1966-1979) and Makah-Quillayute (1967-1970, 1973-1975)

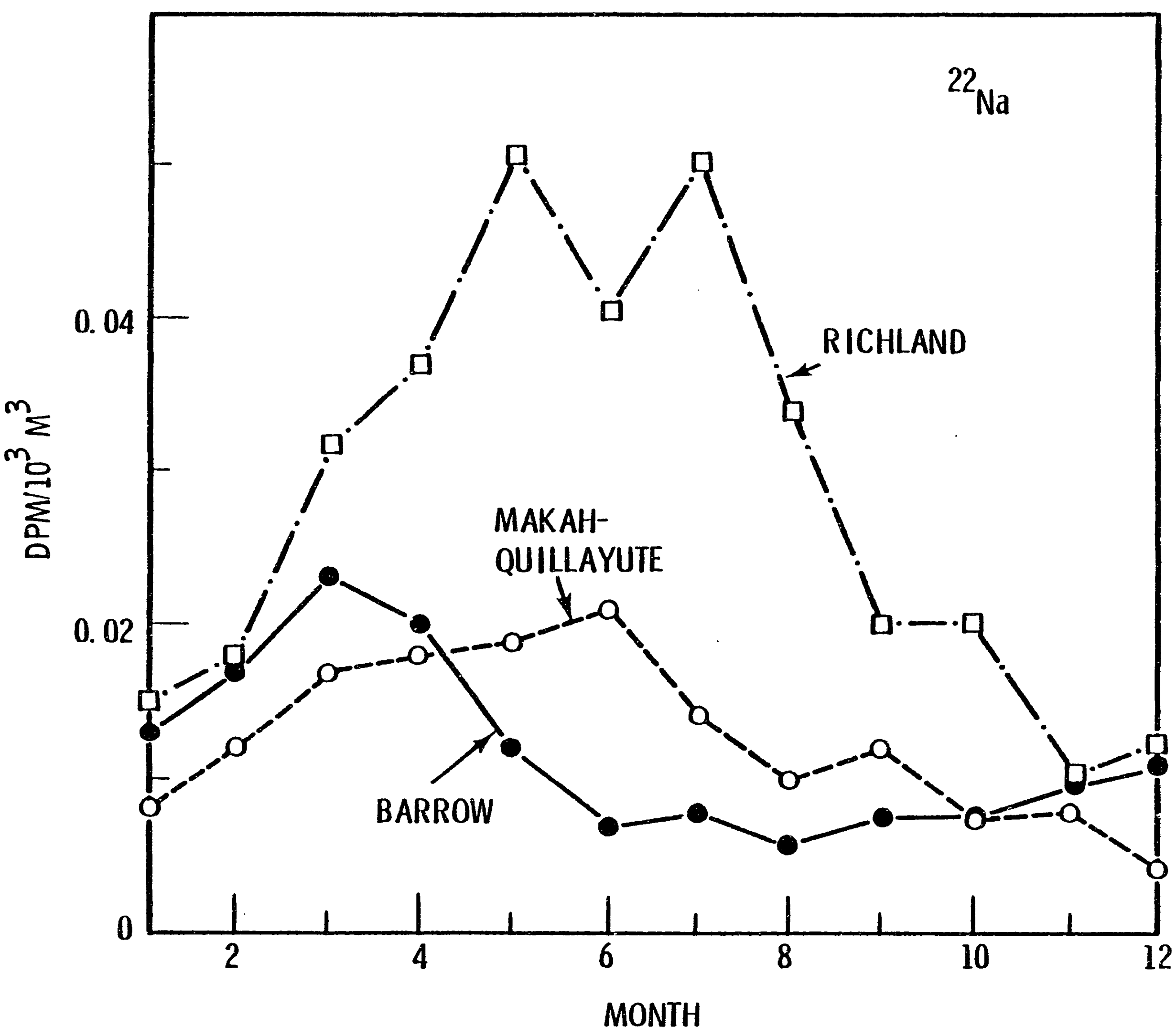

FIGURE 12. Seasonal Variations of ^{22}Na at Richland (1967-1979), Barrow (1967-1979) and Makah-Quillayute (1967-1970, 1973-1975)

^{22}Na were desired, and the ^{22}Na concentrations before 1967 were clearly dominated by nuclear weapons ^{22}Na. The seasonal variations of ^{7}Be and ^{22}Na were somewhat different from those of the nuclear weapons-produced radionuclides (see Figure 6). At Richland, the maximum ^{7}Be concentration occurred two months later than the maximum in the nuclear weapons radionuclides, but at Barrow the maximum ^{7}Be concentration occurred one month earlier than the maximum in the nuclear weapons radionuclides. The concentration maximum was also broader for ^{7}Be than for the nuclear weapons radionuclides. The net result was that the ^{7}Be seasonal variations appeared to be considerably farther out-of-phase between Richland and Barrow than were the nuclear weapons radionuclides.

The seasonal variations of ^{22}Na at Richland and Barrow appeared to be intermediate between those of ^{7}Be and the nuclear weapons radionuclides, probably because the half-life of ^{22}Na (2.6 yr) is considerably longer than that of ^{7}Be (53 d), so a larger fraction of the measured ^{22}Na was of stratospheric origin. Also, some of the ^{22}Na was probably of nuclear weapons origin.

The seasonal variations of ^{7}Be at Makah-Quillayute were distinctly different from those at Richland or Barrow, and were also different from the seasonal variations of ^{22}Na or the nuclear weapons radionuclides at Richland, Barrow, or Makah-Quillayute. The ^{7}Be concentrations at Makah-Quillayute (1968-70, 1973-74) rose to a maximum in April and May, decreased sharply from June through August, increased again to a maximum in October, and then decreased to a minimum in December and January (Figure 13). The depressed ^{7}Be concentrations in June through August at Makah-Quillayute were probably caused by the increased stability of the lower atmosphere over the Pacific Ocean during the summer months, which inhibits the transport of ^{7}Be downward from altitudes of higher concentration. When marine air moves inland from the coast, surface heating decreases the stability and mountain ranges cause increased vertical mixing, so it is not surprising that Richland shows no evidence of decreased ^{7}Be concentrations in the summer. What is surprising is that ^{22}Na and the nuclear weapons radionuclides did not show the same decreased concentrations in the summer at Makah-Quillayute as did ^{7}Be.

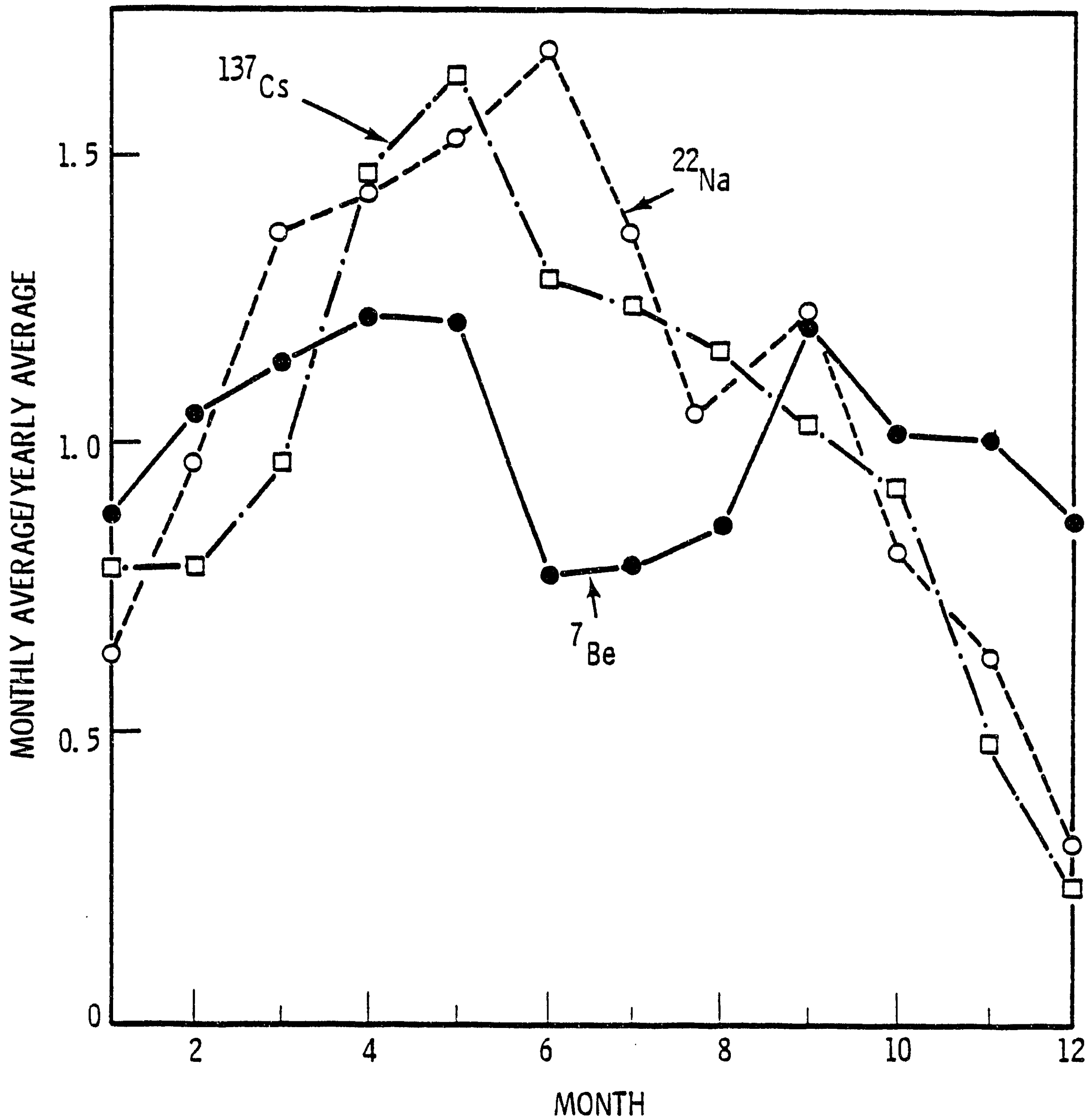

FIGURE 13. Seasonal Variations of ^{7}Be, ^{22}Na, and ^{137}Cs at Makah-Quillayute (1968-1970, 1973-1974)

The nuclear weapons radionuclides did show some evidence of decreased concentrations, but the decrease was very slight.

The reasons for the differences between the seasonal variations between ^{7}Be, ^{22}Na and the nuclear weapons radionuclides are not clear, but they undoubtedly result from differences in the source distributions. Bleichrodt (1978) estimated that only 30% of the ^{7}Be deposited on the earth's surface at 50°N is formed in the stratosphere. Aegerter et al. (1966) concluded from the concentration ratios of cosmogenic ^{32}P and ^{7}Be measured at ground level at 47°N that the seasonal variation of ^{7}Be was due primarily to the transport of ^{7}Be downward from higher altitudes in the troposphere, rather than transport from the stratosphere, as is the case for nuclear weapons radionuclides. If this is true, then the ^{7}Be concentrations in the middle and upper troposphere might become depleted below equilibrium levels by this transport. To test this possibility, the ratios of the ^{7}Be and ^{22}Na disintegration rates measured by Pacific Northwest Laboratory from 40 to 46°N to the production rates calculated by Bhandari et al. (1966) and Lal and Peters (1962) were plotted versus altitude in Figure 14. At ground level the ^{7}Be disintegration rates averaged about the same as the production rates. Since ^{7}Be is removed rather rapidly from the lower atmosphere by wet and dry deposition, this indicates that ^{7}Be was being replenished rather rapidly from higher altitudes. As the altitude increased, the ratio of the disintegration rate to the production rate decreased until maximum depletion occurred at around 7.5 km. The ratio then increased with altitude until the disintegration rate was only slightly below the production rate from 12 to 19 km. The ratio of the disintegration rate to the production rate for ^{22}Na showed the same change with altitude as did ^{7}Be, except that the ^{22}Na disintegration rates were significantly farther below equilibrium than were those of ^{7}Be because of the longer half-life of ^{22}Na. The ratios of the disintegration rate to the production rate for ^{7}Be and ^{22}Na at 35°N varied about the same with altitude as those at 40 to 46°N. It thus appears that a considerable fraction of the ^{7}Be measured at ground level originated at higher altitudes in the troposphere. However, a significant contribution from stratospheric ^{7}Be cannot be ruled out. Because of the large increase in the production rate

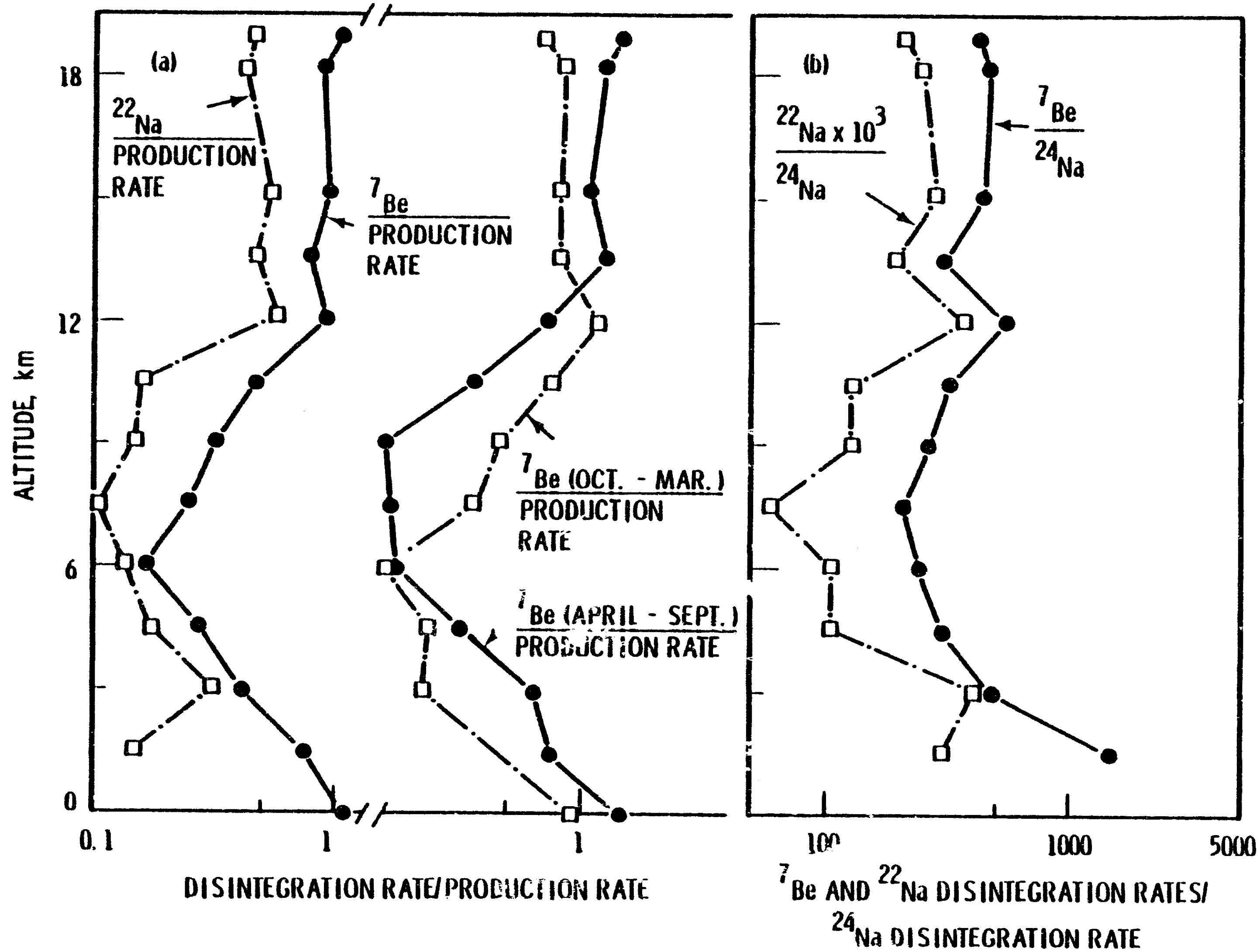

FIGURE 14. Ratios of ^{7}Be and ^{22}Na Concentrations to (A) Production Rate (from Bhandari, Lal and Rama, 1966, Tellus, 18:391-405) and (B) ^{24}Na Concentration

with altitude, the ^{7}Be depletion shown for 12 to 19 km represents about one-half of the ^{7}Be represented by the depletion from ground level to 12 km. However, the depletion shown for ^{22}Na for 12 to 19 km represents twice the ^{22}Na represented by the depletion from ground level to 12 km. The ^{7}Be depletions calculated from these profiles are unlikely to be very accurate at high altitudes where the production rates are high and the percent depletions are low, because of errors in the measured average concentrations and the calculated production rates. In addition, meridional transport also affects the ^{7}Be and ^{22}Na depletions, so the depletion may not be a very accurate indication of vertical transport.

In Figure 14 the ratio of disintegration rate to production rate for ^{7}Be is also plotted versus altitude for the six months of maximum concentration at Richland (April-September) and for the six months of minimum concentration (October-March) to indicate the source of the seasonal variations. During the months of maximum ground-level concentration the concentrations from 7.5 km to 12 km were considerably more depleted than during the months of minimum ground-level concentration, suggesting that the concentration maximum at ground level results from increased transport from these altitudes. Vertical mixing is more intense in the lower atmosphere over continental areas during the spring and summer when atmospheric stability decreases. The concentrations from 12 to 19 km were actually higher during the months of maximum ground-level concentration. It is possible that these higher concentrations could lead to increased transport of ^{7}Be to ground level, producing increased ground-level concentrations. The concentrations at 12 to 19 km could be maintained by meridional transport from higher latitudes, where ^{7}Be production rates are higher.

The ratios of the average ^{7}Be and ^{22}Na concentrations to the average measured concentrations of the short-lived cosmogenic radionuclide, ^{24}Na (15 hr), were also plotted versus altitude in Figure 14 to confirm the pattern of ^{7}Be and ^{22}Na depletion versus altitude. The half-life of ^{24}Na is so short that it should be nearly at equilibrium with its production rate. Therefore, changes in the $^{7}Be/^{24}Na$ and $^{22}Na/^{24}Na$ ratios should correspond to changes in the ^{7}Be and ^{22}Na depletion. The variation of these ratios with altitude were very similar to those of the ratios of disintegration rate to production rate for ^{7}Be and ^{22}Na, confirming that the variation in the ^{7}Be and ^{22}Na depletion with altitude is real.

LEAD-210

Lead-210 is a long-lived (22 yr) daughter of radon (^{222}Rn). Radon is a radioactive gas which is produced by the decay of radium in crustal material. After its formation, radon diffuses into the atmosphere where it decays through a chain of daughter radionuclides until stable lead is produced. The radon daughters quickly become attached to atmospheric aerosols, and are therefore collected on air filters. Since radon has a 3.8 day half-life, it is able to mix upward to a certain extent in the atmosphere, but its concentrations decrease rapidly with altitude. The concentrations of ^{210}Pb also decreases with altitude in the lower troposphere over continental areas, but the decrease is less than that of radon because the long half-life of ^{210}Pb allows for greater upward transport.

The average monthly concentrations of ^{210}Pb at Richland from 1975 through 1979 and Barrow from 1974 through 1979 are plotted in Figure 15. The ^{210}Pb concentrations at Barrow averaged about 70% of those at Richland. The concentrations showed pronounced seasonal variations at both Richland and Barrow, but the variations were out of phase with those of the nuclear weapons and cosmogenic radionuclides, with maximums occurring in the winter and minimums in the summer. The variations were fairly similar at Richland and Barrow, except that the concentration increases and decreases were somewhat earlier in the year at Richland.

Several other investigators have measured similar concentration variations for ^{210}Pb and/or radon at continental stations (Joshi and Rangarajan 1969, Joshi et al. 1969, Peirson et al. 1966, Lockhart 1962). The seasonal variations of radon measured by Lockhart (1962) at Wales and Kodiak, Alaska, for example, are very similar to those of ^{210}Pb at Barrow (Figure 16). It is believed by many investigators that a primary cause of the decrease in the radon and radon daughters in the spring and summer is the decrease in the stability of the lower atmosphere that occurs at this time, leading to

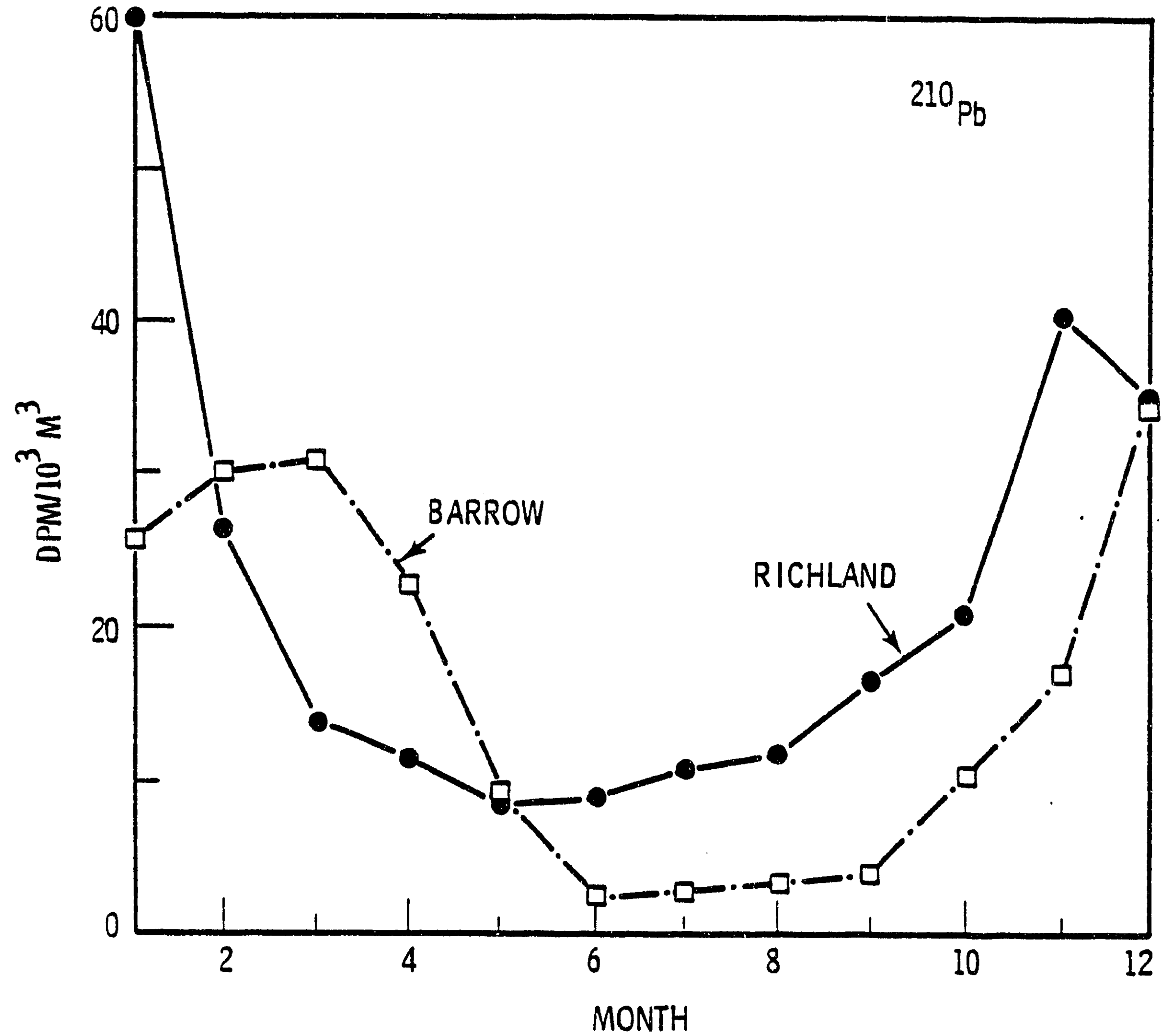

FIGURE 15. Seasonal Variation of ^{210}Pb at Richland (1975-1979) and Barrow (1974-1979)

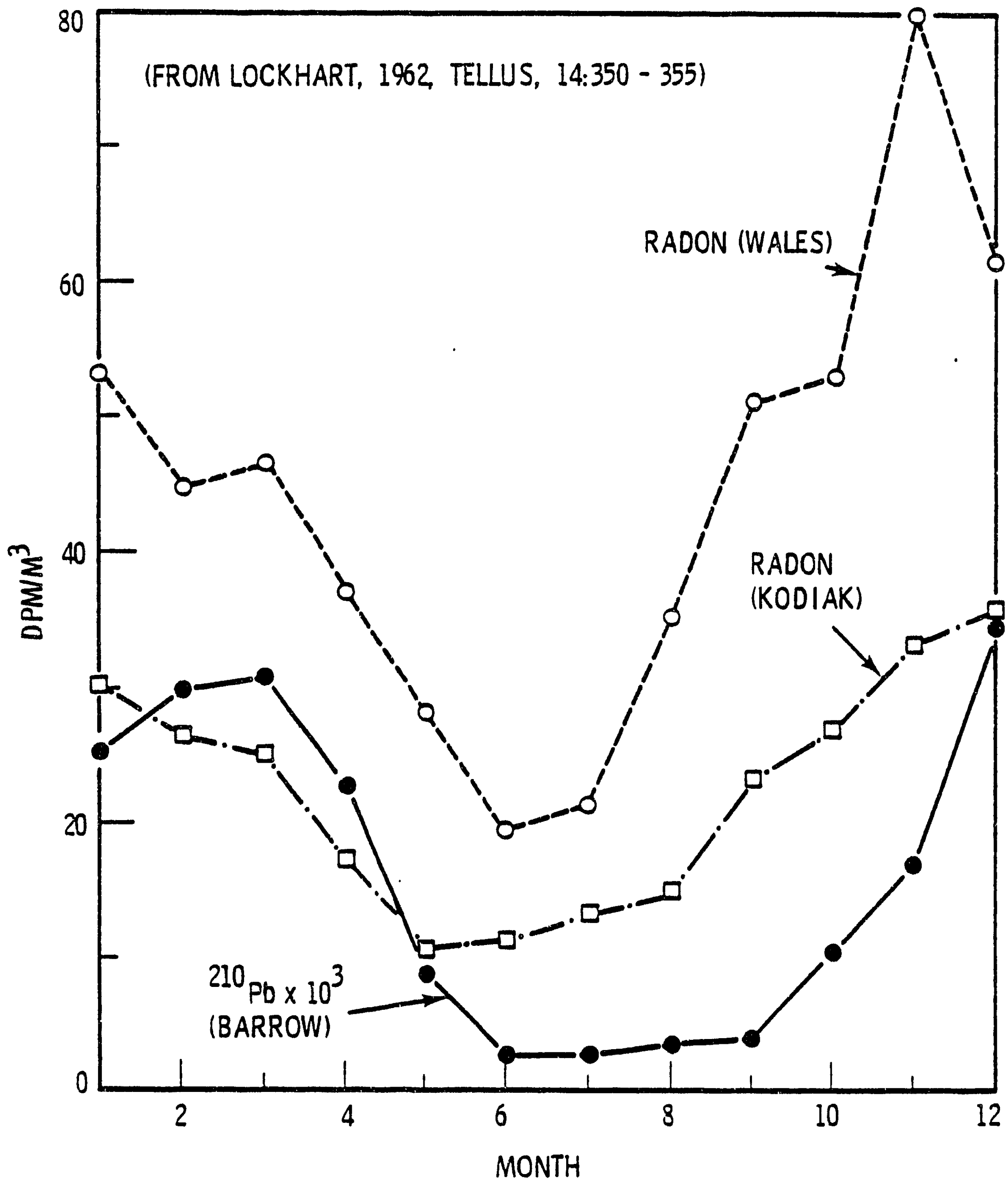

FIGURE 16. Seasonal Variations of ^{210}Pb at Barrow, Alaska (71°N, 157°W) and Radon at Kodiak, Alaska (58°N, 152°W) and Wales, Alaska (66°N, 168°W)

increased vertical mixing, lower ground-level concentrations and increased concentrations at higher altitudes (Gale and People 1958, Joshi et al. 1969, Reiter 1978, Beck and Gogolak 1979). The spring increase in vertical mixing would be expected to occur earlier at Richland than at Barrow, which would explain the earlier concentration decrease at Richland. In Figure 17, the average vertical profiles of radon and ^{210}Pb measured by Moore (1973) are shown for the six months that ^{210}Pb concentrations were minimum at Richland (March-April) and for the six months ^{210}Pb concentrations were maximum at Richland (September-February). It can be seen that concentrations above ground level were high when ground-level concentrations were low and vice versa, which would support the hypothesis that the ground-level seasonal variations at Richland are due primarily to variations in the rate of vertical mixing.

Ground level ^{210}Pb concentrations, of course, are also affected by the rate of emanation of radon from the soil and the fraction of the time the air has spent over land surfaces during its recent history. The rate of radon emanation from ocean surfaces is about 1% of that from land surfaces (Wildening 1975). However, the rate of emanation of radon from the soil around Richland should be greatest in the summer when the soil is driest, since soil moisture inhibits the escape of radon from the soil. The prevalence of marine air at Richland is also lower in the summer than in the winter, which should also tend to increase the summer ^{210}Pb concentrations. Therefore, the low summer ^{210}Pb concentrations at Richland indicate that the increased vertical mixing in the summer overshadows these other effects in controlling ^{210}Pb concentrations.

The rate of emanation of radon from the soil around Barrow might also be expected to increase in the spring and summer when the permafrost melts. However, snow cover offers little obstruction to the release of radon during the winter (Hosler 1968). Also, the soil tends to remain wet in the spring and summer, which would inhibit radon emanation. However, it is possible that the low ^{210}Pb concentrations in the summer are partly due to a decrease in the transport of Asian air that has high radon concentrations northward to Barrow in the summer.

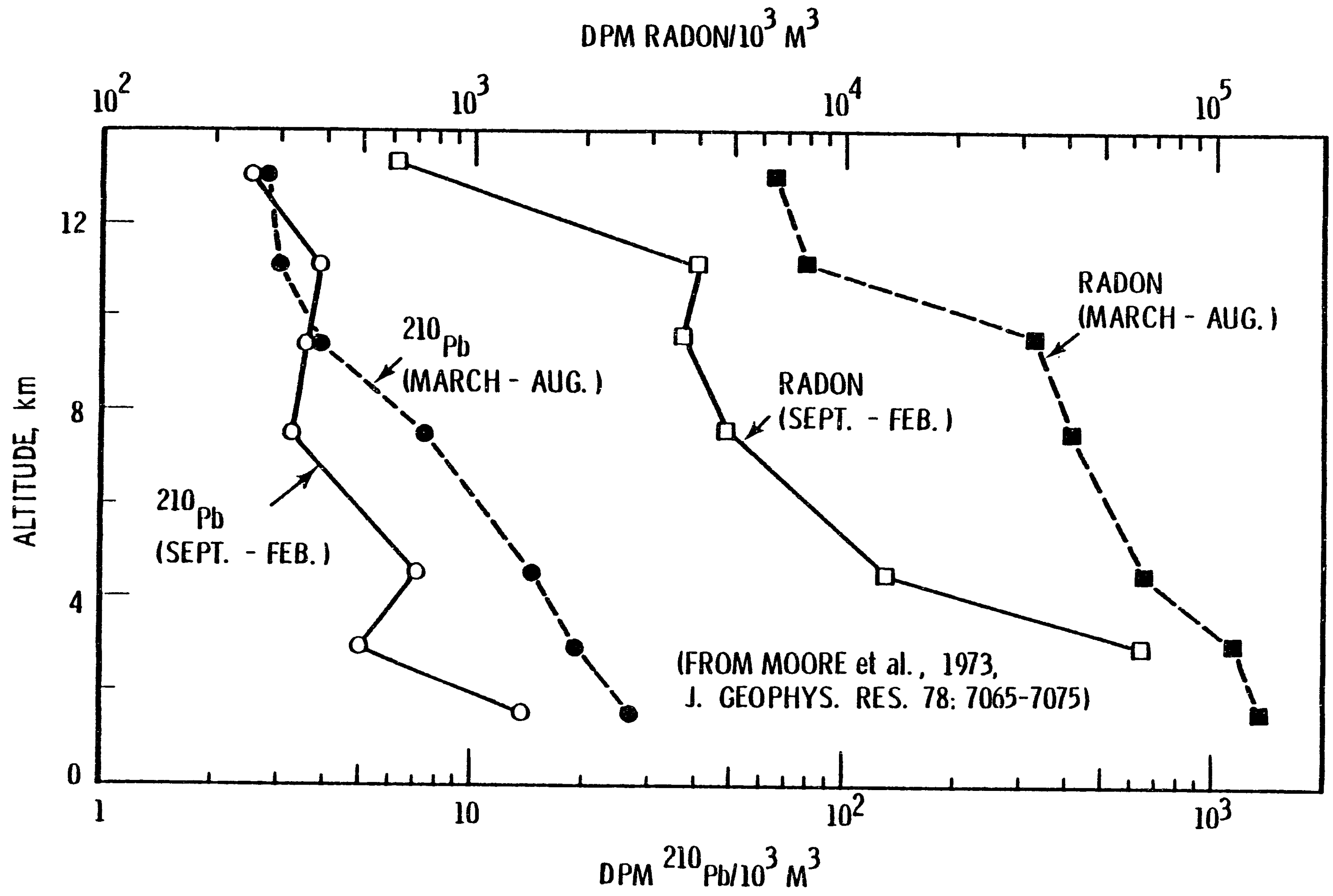

FIGURE 17. Average ^{210}Pb and Radon Concentrations Versus Altitude over the West Central United States

NUCLEAR REACTOR PRODUCED RADIONUCLIDES (^{46}Sc, ^{55}Fe, ^{60}Co, ^{65}Zn and ^{134}Cs)

Average Yearly Concentrations

The concentration ratios of the various nuclear weapons-produced radionuclides have been about the same at Richland as they have at Barrow. However, there have been five radionuclides whose concentrations at Richland have been considerably higher than would be predicted from their concentrations at Barrow, especially prior to 1971. During the period from 1965 through 1970, the concentrations of ^{55}Fe, ^{60}Co, ^{65}Zn and ^{134}Cs at Richland averaged higher by factors of 1.5, 8.7, 26.1 and 5.3, respectively, than would be predicted if they had been produced entirely by nuclear weapons. The concentrations of ^{46}Sc at Richland were also higher than would be predicted from the Barrow concentrations, but the Barrow concentrations were below detection limits, so it was impossible to tell how much the ^{46}Sc concentrations were enriched at Richland.

The elevated concentrations of these radionuclides at Richland resulted from the operation of eight plutonium-producing nuclear reactors on the Hanford Reservation 20 to 30 miles north of the Richland air sampling site. These reactors used Columbia River water as a primary coolant on a once-through basis. During its passage through the reactors, the water became radioactive because of the neutron activation of impurities in the water, the leaching of corrosion products, and occasional fuel element failures. The water was held for a few hours in ponds to allow some of the short-lived radionuclides to decay, and then dumped back into the Columbia River. Studies have shown that radionuclides in the water became deposited in Columbia River sediments, where they could later be resuspended into the atmosphere during periods when the river level was low (Perkins et al. 1966, Nelson and Haushild 1970, Robertson and Fix 1977). The Richland sampling site is downriver from the reactors and about half a mile from the river.

It should be noted that even though the reactor operations resulted in increased atmospheric concentrations of ^{46}Sc, ^{55}Fe, ^{60}Co, ^{65}Zn, and ^{134}Cs at Richland, the concentrations of these radionuclides were still considerably lower than those of other radionuclides, so they represented only a tiny fraction of the total atmospheric radionuclide concentrations. Modern electric power-generating nuclear reactors use both a primary and a secondary coolant. The primary coolant is not discharged into the environment, so these reactors should not release the above radionuclides in significant quantities.

The Hanford plutonium-producing reactors began to be shut down in the late 1960's, and since 1971 the only reactor which has been in operation has been N-reactor, which produces both electricity and plutonium. Therefore, the atmospheric concentrations of ^{46}Sc, ^{55}Fe, ^{60}Co, ^{65}Zn and ^{134}Cs at Richland generally decreased in the late 1960's and the 1970's, with the radionuclides having the shortest half-lives showing the fastest rate of decrease (Figure 18). The ^{46}Sc (84 d) concentrations fell below detection limits in 1971, the ^{65}Zn (244 d) concentrations fell below detection limits in 1976, and the ^{134}Cs (2.1 yr) concentrations fell below detection limits in 1978. The half-times for the decreases of ^{65}Zn and ^{134}Cs were about equal to their half-lives for the periods 1967 through 1975 and 1970 through 1976, respectively. The concentrations of ^{55}Fe (2.7 yr) and ^{60}Co (5.2 yr), however, have remained measurable to the present time. Comparison of the ^{60}Co concentrations at Richland and Barrow indicates that the ^{60}Co released by the nuclear reactors is still the primary source of the ^{60}Co measured at Richland. Since there have been no measurements of ^{55}Fe at Barrow in recent years, it is not possible to tell from a comparison of ^{55}Fe concentrations at Richland and Barrow whether the ^{55}Fe measured at Richland in the past few years has been due primarily to nuclear weapons or to nuclear reactors.

Seasonal Variations

The seasonal variations of ^{46}Sc, ^{55}Fe, ^{60}Co, ^{65}Zn and ^{134}Cs at Richland have been considerably different from those of the nuclear weapons radionuclides, again indicating that their primary source has not been nuclear weapons (Figure 19). However, the seasonal variations of each of these radionuclides have also been different from those of the others, indicating that they have become fractionated in the environment, and possibly that different processes are responsible for introducing them into the atmosphere. In the past, ^{65}Zn

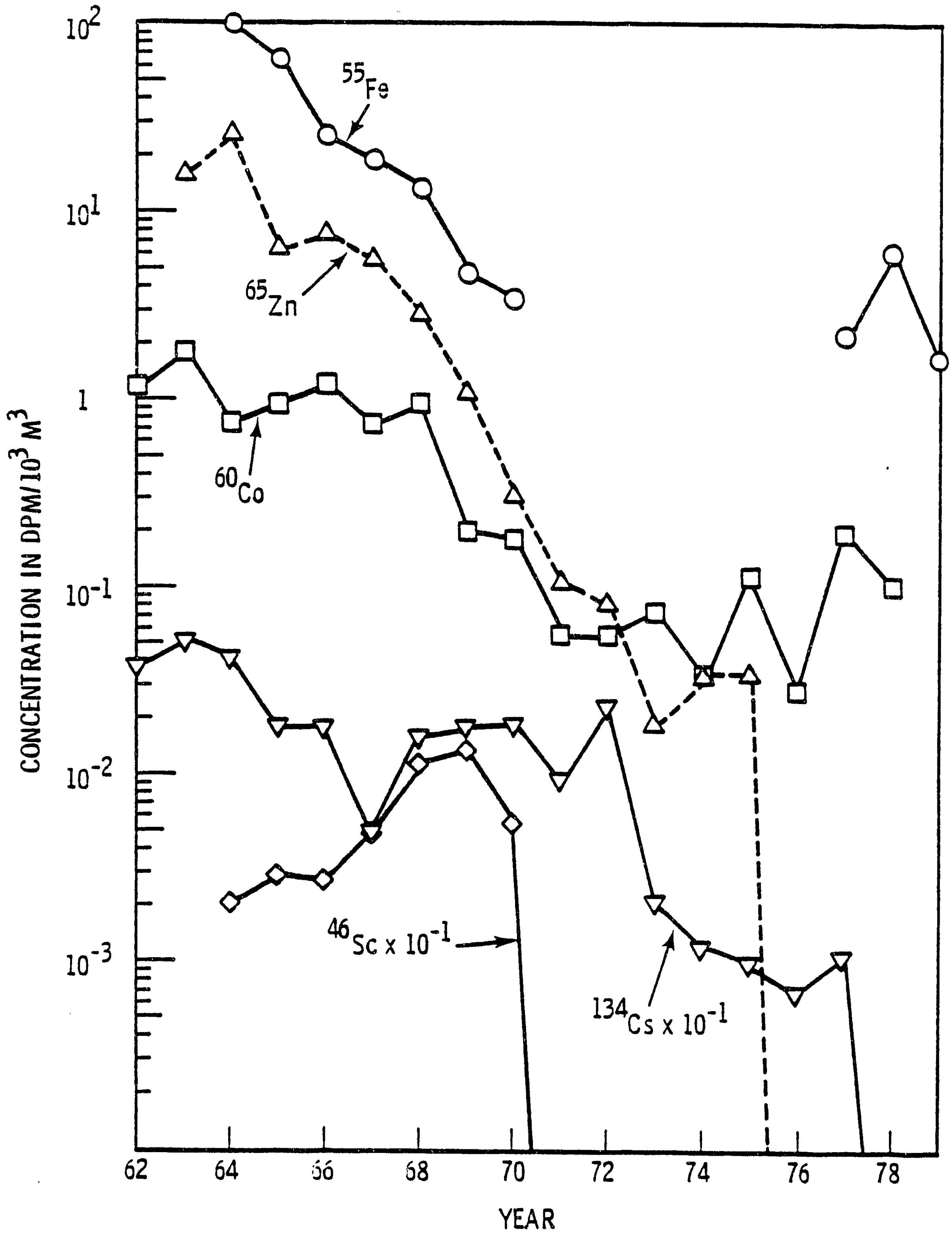

FIGURE 18. Average Yearly Concentrations at Richland, Washington, of Radionuclides Released by Hanford Nuclear Reactors

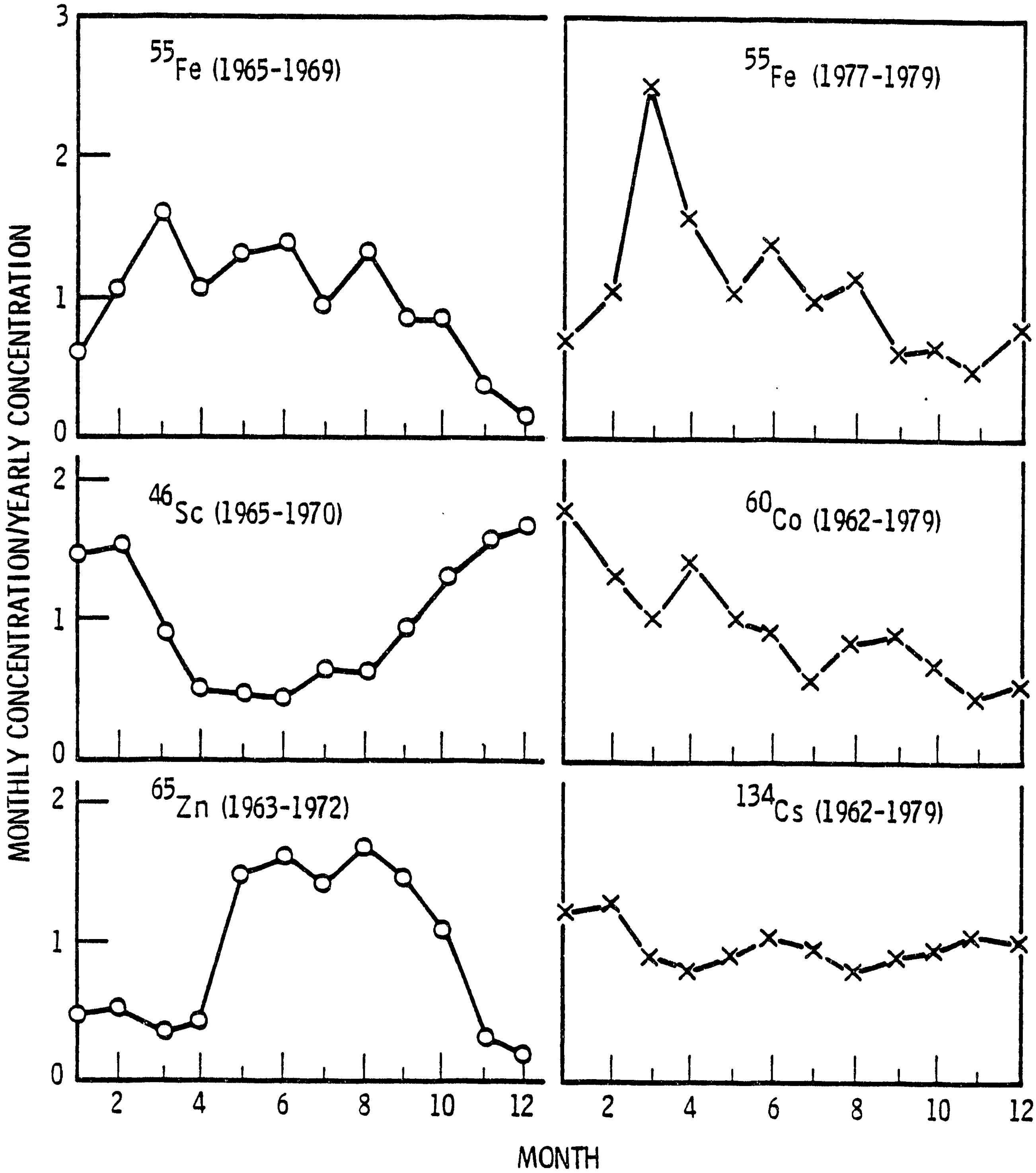

FIGURE 19. Seasonal Variations at Richland of Radionuclides Released by Hanford Nuclear Reactors

concentrations have been found to be high in gnats, and the gnats collect on the air filters, so the measured ^{65}Zn concentrations increased in the summer when the gnats hatched. The seasonal variations of ^{46}Sc were nearly identical to those of ^{210}Pb, suggesting that the ^{46}Sc concentrations were controlled by the rate at which vertical mixing decreases ground-level concentrations. The seasonal variations of ^{55}Fe and ^{60}Co show some similarities, but the cause of the variation has not been determined. The seasonal variations of ^{55}Fe from 1977 through 1979 have been very similar to those from 1965 through 1969, indicating that ^{55}Fe released by the nuclear reactors is still making a major contribution to the measured concentrations.

SUMMARY AND CONCLUSIONS

The atmospheric concentrations of a wide spectrum of radionuclides have been measured at Richland, Washington, since 1961; at Barrow, Alaska, since 1964; and at other stations for shorter periods of time. Following the U.S.-U.S.S.R. test series of 1961-62 the concentrations of the longer-lived nuclear weapons radionuclides reached a maximum at Richland in the spring of 1963, and then decreased until 1967 when the Chinese conducted their first high-yield atmospheric nuclear test. The concentrations then increased somewhat until 1971, but have decreased since then as the frequency of high-yield Chinese tests has decreased. In 1979 the concentrations of ^{137}Cs (30 yr) averaged only 1.3% of the average 1963 concentrations. However, in October of 1979 the Chinese conducted a 0.2 to 1 megaton atmospheric nuclear test, so the ground-level concentrations of nuclear weapons radionuclides will increase again in the spring of 1981.

The measurement of atmospheric radionuclides during the past several years has produced considerable valuable information on the rates of atmospheric mixing and depositon processes. Other submicron-sized particulate materials, such as those emitted by volcanos or other pollutant sources, should have the same mixing and deposition rates as radioactive particles, so the measurements of radionuclides can be used to predict the behavior of those other particulates in the atmosphere.

Radionuclide measurements have shown that the ground-level concentrations of radionuclides or other particulate pollutants produced by releases at different locations in the stratosphere will eventually begin to decrease with approximately an 11-month half-time, with only the time delay before the beginning of this decrease depending upon the release location. The decay-corrected concentrations of radionuclides released into the middle- and high-latitude lower stratosphere by the Chinese and the Russians, respectively, reached a maximum at Richland the following spring, and then decreased with an 11-month half-time, indicating that the half-residence time in the lower stratosphere is 11 months. However, the concentrations of ^{238}Pu released at an altitude of about 50 km by the burn-up of the SNAP-9A nuclear generator in April of 1964 at 11°S did not reach a maximum at Richland until the spring of 1969, five years later, indicating that this time interval was required for particulates to be transported from the upper equatorial stratosphere to the lower stratosphere at mid-latitudes in the northern hemisphere. After the spring of 1969, the SNAP-9A ^{238}Pu concentrations at Richland decreased with a 12-month halftime. The fact that the concentrations of ^{238}Pu (which was released in the southern hemisphere) decreased at about the same rate as the concentrations of radionuclides released in the northern hemisphere indicates that the transport of radionuclides between the hemispheres in the stratosphere is not rapid enough to affect the rate of decrease in the ground-level concentrations very much.

The ground-level concentratiuons of nuclear weapons and cosmogenic radionuclides have increased to a maximum each spring. The spring maximum in the concentrations of nuclear weapons radionuclides is primarily due to a maximum in the rate of transfer of radionuclides from the stratosphere into the troposphere through the tropopause gap. However, increased vertical mixing in the troposphere in the spring is probably also partially responsible for the maximum. Vertical profiles of the cosmogenic radionuclides, ^{7}Be and ^{22}Na, indicate that the spring maximums in their concentrations may be due primarily to increased transport down from the upper troposphere rather than the stratosphere. This increased vertical mixing in the spring is probably the primary cause of the spring minimum in the concentrations of the radon daughter, ^{210}Pb.

The seasonal variations have been different at different sampling locations. The radionuclide concentrations at Barrow, Alaska, reached a maximum in April and then began to decrease, even though concentrations were still increasing at Richland. Therefore, during the summer the concentrations at Barrow were much lower than those at Richland, probably because the rate of meridional transport of radionuclides from the mid-latitude source region to high latitudes is lowest during the summer. During the winter, when meridional mixing is greatest, the radionuclide concentrations have been only slightly lower at Barrow than at Richland.

The concentrations of nuclear weapons radionuclides at Richland (46°N) have averaged 2.7 times higher than those at Makah-Quillayute, even though the two stations are at about the same latitude, because of the vertical mixing caused by the Cascade Mountains between Makah-Quillayute and Richland. The concentration difference was greatest in the spring and summer when the stability of the air over the continent is lowest. In the summer months, the ^{7}Be concentrations at Makah-Quillayite showed a secondary minimum that presumably resulted from decreased vertical mixing over the Pacific Ocean caused by increased stability.

The concentrations of ^{46}Sc, ^{55}Fe, ^{60}Co, ^{65}Zn and ^{134}Cs have been considerably higher at Richland than would be predicted from the ratios of these radionuclides to the other nuclear weapons radionuclides at Barrow, especially prior to 1971. Their elevated concentrations at Richland have resulted from the operation of eight plutonium-producing nuclear reactors on the Hanford Reservation 20 to 30 miles north of the Richland air-sampling site. These radionuclides were picked up by cooling water during its passage through the reactors and were then deposited in Columbia River sediments, where they could later be resuspended into the atmosphere. The plutonium-producing reactors began to be shut down in the late 1960's, and since 1971 only one reactor has been in operation, so the concentrations of these radioncuclides has decreased. At the present time, measurable quantities of only ^{60}Co and possibly ^{55}Fe from the reactors are observed at the Richland sampling site. It has not been possible as yet to detect radionuclides at Richland or Barrow that have been released from nuclear reactors operating at other locations around the world.

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Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1964 and 1965

Date		DPM/$10^3 M^3$								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{60}Co	^{65}Zn	^{88}Y	$^{95}ZrNb$
11-18-64	12-05-64	133 ± 1	.124 ± .016		13.4 ± .2	17.1 ± 1.3	.182 ± .015		.096 ± .011	25.4 ± .2
12-05-64	01-02-65	71.0 ± .3	.080 ± .013		6.71 ± .03	7.67 ± .59	.073 ± .008		.049 ± .008	5.93 ± .04
01-02-65	01-20-65	90.8 ± .6	.093 ± .015		8.48 ± .04		.109 ± .011		.046 ± .009	2.79 ± .04
01-30	02-27	115 ± 1	.133 ± .015		11.0 ± .1	29.6 ± .5	.154 ± .011		.064 ± .009	1.66 ± .03
02-27	03-27	107 ± 1	.127 ± .023		10.3 ± .1	8.04 ± .54	.133 ± .011		.049 ± .008	1.04 ± .03
03-27	04-24	95.0 ± .4	.105 ± .015		9.46 ± .03	26.2 ± 2.4	.144 ± .012		.046 ± .007	.770 ± .024
04-24	06-07	55.4 ± .3	.059 ± .011		5.00 ± .03	11.3 ± 1.2	.079 ± .008		.026 ± .006	1.60 ± .03
06-07	07-03	68.2 ± .6	.076 ± .018		5.12 ± .04	17.1 ± 1.8	.087 ± .011		.019 ± .008	23.3 ± .1
07-03	07-31	19.6 ± .7	.011 ± .006	.014	1.42 ± .02	4.61 ± .82	.027 ± .006	.103	.004 ± .004	7.98 ± .09
07-31	08-30	36.7 ± .5	.014 ± .006	.010	1.01 ± .01	1.85 ± .33	.014 ± .004	.016	ND	.427 ± .022
10-29	11-25	47.1 ± .6	.019 ± .007	.005	.71 ± .01	4.0 ± 1.6	.017 ± .004	.012	.004 ± .004	ND
11-25	01-02	70.5 ± .3	.025 ± .006	.005	1.02 ± .01	1.83 ± .30	.020 ± .004	.010	.003 ± .002	ND

ND = Not detectable

Barrow, Alaska, 1964 and 1965 (contd)

Date		DPM/10^{3}M^3								
On	Off	^{103}Ru	^{106}Ru	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba	^{144}Ce
11-18-64	12-05-64	ND	61.4 ± .7	.071 ± .022	24.5 ± .2	.042 ± .009	28.2 ± .3	18.3 ± .7	126 ± 7
12-05-64	01-02-65	ND	31.3 ± .4	.060 ± .019	12.5 ± .1	.021 ± .008	14.9 ± .2	1.93 ± .30	65.3 ± 5.2
01-02-65	01-20-65	ND	38.5 ± .5	.032 ± .019	16.4 ± .1	.028 ± .008	19.4 ± .1	.32 ± .24	80.9 ± 6.2
01-20	02-27	ND	45.2 ± .4	.028 ± .019	22.2 ± .1	.039 ± .007	27.4 ± .1	5.05 ± .50	96.1 ± 5.4
02-27	03-27	ND	48.4 ± .5	.025 ± .015	21.4 ± .1	.042 ± .008	26.5 ± .1	.106 ± .084	92.2 ± 5.7
03-27	04-24	ND	49.8 ± .5	.025 ± .013	21.0 ± .1	.021 ± .008	27.0 ± .1	.035 ± .029	87.2 ± 5.5
04-24	06-07	2.08 ± .06	30.9 ± .4	ND	10.8 ± .1	.018 ± .006	14.5 ± .1	3.81 ± .2	45.6 ± 4.2
06-07	07-03	12.4 ± .1	37.8 ± .5	ND	12.1 ± .1	.025 ± .010	16.1 ± .1	14.2 ± .6	42.7 ± 5.8
07-03	07-31	5.93 ± .18	7.45 ± .23	ND	3.34 ± .05	.009 ± .004	4.80 ± .03	3.4 ± 3.0	15.8 ± 3.8
07-31	08-30	.18 ± .10	5.76 ± .19	.028 ± .020	2.71 ± .04	.006 ± .003	3.88 ± .02	1.4 ± 1.7	13.8 ± 2.7
10-29	11-25	.082 ± .058	3.81 ± .15	.005 ± .008	1.91 ± .04	.004 ± .002	3.29 ± .02	.054 ± .035	7.4 ± 2.0
11-25	01-02	.061 ± .035	5.04 ± .13	ND	2.92 ± .04	.005 ± .002	5.09 ± .03	.045 ± .036	10.2 ± 1.6

ND - Not detectable

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1966

Date		DPM/10^3M^3									
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{60}Co	^{65}Zn	^{88}Y	$^{95}ZrNb$	^{103}Ru
01-07	02-04	106	.033	.022	1.66	5.38 ± .73	.046	.078	.001	.141	.670
02-04	02-18	140	.057	ND	2.47	4.92 ± .86	.078	.314	.004	.296	ND
03-03	03-31	129	.057	.004	2.19	11.2 ± .5	.071	.060	.003	.120	ND
03-31	04-30	174	.081	.003	2.86	18.9 ± .4	.085	.095	.005	.120	ND
04-30	05-29	115	.053	.003	1.76	11.9 ± .3	.057	.053	.001	.208	ND
05-29	06-30	52.3	.017	ND	.706	8.62 ± .21	.021	ND	.003	14.1	.988
06-30	08-01	22.8	.008	.003	.243	4.04 ± .27	.007	.019	.001	4.77	1.98
08-01	09-02	31.2	.011	ND	.222	3.07 ± .08	.008	.918	ND	2.89	1.41
09-02	09-15	68.8 ± .8	.007 ± .001	ND	.162 ± .005	2.51 ± .21	.007 ± .001	.053 ± .005	ND	.988 ± .013	ND
09-27	10-14	91.8 ± .9	.011 ± .001	ND	.211 ± .004	4.83 ± .12	.008 ± .001	.064 ± .006	ND	.777 ± .011	ND
10-28	11-14	243 ± 1	.027 ± .002	ND	.529 ± .009	2.11 ± .18	.022 ± .002	.187 ± .006	ND	20.7 ± .1	3.53 ± .05
11-14	11-30	123	.014	ND	3.28		.015	.071	ND	32.1	15.3
11-30	12-08	160	.014	.002	.388	1.89 ± .15	.013	.177	.001	22.8	14.6
12-08	12-16	177	ND	ND	.257		.014	.081	.005	11.3	14.3

ND = Not detectable .

Barrow, Alaska, 1966

Date On	Date Off	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{228}Th
		DPM/10^3M^3										
01-07	02-04	6.67	.005	ND	4.87	.010	9.29	ND		12.2	ND	.005
02-04	02-18	11.0	.035	ND	7.49	.015	14.5	.074		18.6	.015	.019
03-03	03-31	11.0	.002	ND	7.80	.017	14.9	ND		19.8	.004	.011
03-31	04-30	18.2	.009	ND	10.7	.018	20.1	ND		22.1	.013	.015
04-30	05-29	15.1	.007	ND	6.50	.013	12.9	.088		13.9	.009	.011
05-29	06-30	6.99	.013	ND	2.86	.003	5.54	ND		6.60	.011	.020
06-30	08-01	2.36	.004	ND	1.02	.002	2.08	ND	.130	3.00	.005	.012
08-01	09-02	2.54	.004	ND	.918	.001	2.08	.159		2.75	ND	.014
09-02	09-15	1.80 ± .05	.002 ± .002	ND	.812 ± .021	.002 ± .001	1.73 ± .01	.494 ± .058		1.34 ± .38	.004 ± .005	.005 ± .007
09-27	10-14	2.01 ± .03	.002 ± .001	ND	.636 ± .016	.001 ± .001	2.10 ± .01	.283		1.45 ± .23	ND	.008
10-28	11-14	4.63 ± .08	.003 ± .002	ND	1.55 ± .03	.003 ± .001		32.7	8.26	5.75 ± .64	.014	.021
11-14	11-30	2.86	.006	ND	.833	ND	3.04	23.6		5.76	.005	.005
11-30	12-08	3.04	.010	ND	1.07	ND		17.0		5.62	ND	.014
12-08	12-16	2.05	.006	ND	5.16	ND	6.22	42.9	7.71	4.77	ND	.007

ND - Not detectable

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1967

Date		DPM/10^3M^3								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
01-16	02-15	129 ± 5*	.016 ± .003	ND	.388 ± .005		.046 ± .020*		.023 ± .001	.180 ± .006
02-16	03-01	134 ± 5	.021 ± .002	ND	.424 ± .005	8.91 ± .51	.053 ± .031	.032 ± .020	.022 ± .002	.130 ± .005
03-01	04-01	185 ± 1	.028 ± .003	ND	.494 ± .007	4.24 ± .24	.039 ± .018	.064 ± .044	.032 ± .003	.085 ± .007
04-01	05-01	146 ± 3	.028 ± .001	ND	.424	7.11 ± .51	.102 ± .024	.007 ± .024	.032 ± .001	.194
05-01	06-01	99.3 ± .7	.018 ± .001	ND	ND	1.08 ± .10	.014 ± .013	.007 ± .014	.022 ± .001	.085
06-01	07-01	40.4 ± .5	.005 ± .001	ND	.064	3.98 ± .17	.002 ± .004	.007 ± .007	.005 ± .001	.016
07-01	07-15	51.3 ± .7	.008 ± .001	ND	.099		.025 ± .010	.011 ± .010	.007 ± .001	.035
07-17	08-01	15.9 ± .4	.004 ± .001	ND	.021	5.08 ± .58	.018 ± .009	.007 ± .008	.002 ± .001	ND
08-01	09-01	32.4 ± .4	.021 ± .001	ND	.042		ND	ND	.003 ± .001	.001
09-01	10-02	44.1 ± .5	.009 ± .001	ND	.042	.492 ± .072	ND	.022 ± .004	.004 ± .001	.002
10-02	11-01	61.6 ± .6	.009 ± .001	ND	.074	.268 ± .063	.012 ± .008	.028 ± .005	.005 ± .001	.032
11-01	12-07	81.3 ± .6	.009 ± .001	ND	.088	.408 ± .058	.012 ± .007	.035 ± .005	.007 ± .001	.021
12-07	01-04	85.1 ± .6	.011 ± .001	ND	.113	.606 ± .077	.006 ± .007	.038 ± .006	.007 ± .001	.028

* = First Analysis by GE(Li) Diode
ND = Not detectable

Barrow, Alaska, 1967 (contd)

Date		DPM/$10^3 M^3$								
On	Off	^{88}Y	$^{95}ZrNb$	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
01-16	02-15	.042 ± .004	31.5 ± .1	24.1 ± .1	3.00 ± .03	.002 ± .002	.180 ± .007	1.31 ± .20*	ND	3.99 ± .01
02-16	03-01	.060 ± .002	44.5 ± .1	21.6 ± .1	3.64 ± .04	ND	.180 ± .009	1.94 ± .17	.007 ± .002	4.27 ± .01
03-01	04-01	.088 ± .007	47.4 ± .1	20.3 ± .1	5.79 ± .08	ND	.116 ± .011	1.90 ± .09	.007 ± .002	6.18 ± .01
04-01	05-01	.081 ± .004	29.6	11.6 ± .1	5.54 ± .05	.00[illegible] ± .002	.078 ± .008	2.36 ± .33	.002 ± .001	8.72
05-01	06-01	.057 ± .003	17.9	5.22 ± .07	4.63 ± .05	.003 ± .002	.032 ± .006	1.34 ± .09	.001 ± .001	4.24
06-01	07-01	.006 ± .001	1.70	.883 ± .039*	1.20 ± .02	.003 ± .002	ND	.395 ± .033	ND	.988
07-01	07-15	.003 ± .001	.706	.176 ± .025	1.13 ± .03	.004 ± .004	ND	.565 ± .058	ND	1.62
07-17	08-01	.001 ± .001	.078	.049 ± .028	.318 ± .019	.007 ± .003	ND	.257 ± .050	.001 ± .001	.459
08-01	09-01	ND	.494	.039 ± .026	.565 ± .016	.002 ± .004	ND	.219 ± .033	.001 ± .001	.812
09-01	10-02	ND	.265	.219 ± .035	.530 ± .015	ND	ND	.152 ± .051	ND	.810
10-02	11-01	.001 ± .001	1.65	.406 ± .057	.600 ± .015	.002 ± .001	ND	.410 ± .065	ND	1.02
11-01	12-07	.001 ± .001	2.15	.883 ± .056	.880 ± .018	.002 ± .001	ND	.357 ± .051	ND	1.27
12-07	01-04	.001 ± .001	2.44	1.13 ± .05	1.55 ± .03	.002 ± .001	ND	.515 ± .079	ND	1.55

* = First Analysis by Ge(Li) Diode
ND = Not Detectable

Barrow, Alaska, 1967 (contd)

Date		DPM/$10^3 M^3$					
ON	OFF	^{140}Ba	^{141}Ce	^{144}Ce	^{207}Bi	^{226}Ra	^{232}Th
01-16	02-15	34.5 ± .2		6.03 ± .65	.005 ± .002	ND	.005 ± .003
02-16	03-01	23.5 ± .2		8.44 ± .55	.002 ± .002	.014 ± .003	.014 ± .019
03-01	04-01	8.48 ± .15	21.0 ± .1*	9.1 ± 1.1	.003 ± .002	.002 ± .002	.018 ± .011
04-01	05-01	1.20 ± .09		5.68 ± .50	.003 ± .001	.025 ± .003	.017 ± .011
05-01	06-01	D	4.45 ± .05	4.63 ± .37	.001 ± .001	.007 ± .004	.007 ± .003
06-01	07-01	D	.388 ± .024	1.44 ± .08	ND	.007 ± .002	.012 ± .003
07-01	07-15	D	.201 ± .025	1.48 ± .13	.001 ± .001	.025 ± .005	.032 ± .007
07-17	08-01	D	.049 ± .021	.268 ± .058	.001 ± .001	.007 ± .003	.014 ± .006
08-01	09-01	.017 ± .015	.180 ± .011	.655 ± .047	.001 ± .001	.007 ± .002	.012 ± .003
09-01	10-02	.057 ± .006	.791 ± .025	1.20 ± .18	ND	.005 ± .002	.009 ± .003
10-02	11-01	.025 ± .005	1.27 ± .04	2.12 ± .23	ND	.007 ± .002	.007 ± .003
11-01	12-07	.008 ± .009	1.09 ± .03	3.99 ± .25	.001 ± .001	.001 ± .002	.002 ± .002
12-07	01-04	.353 ± .014	1.34 ± .03	6.00 ± .37	ND	.011 ± .003	.011 ± .004

* = First Analysis by Ge(Li) Diode
ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1968

Date		DPM/10³M³								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
01-04	02-03	73.3 ± 1.2	.011 ± .001	ND	.104 ± .017*	.67 ± .22	.005 ± .010	.064 ± .022	.010 ± .001	.052 ± .038*
02-03	02-16	116 ± 1	.027 ± .002	.006 ± .005	.310 ± .031	3.07 ± .25	.019 ± .017	.166 ± .033	.030 ± .002	.175 ± .071
02-16	02-28	83.2 ± 1.3	.014 ± .002	ND	.187 ± .026	5.92 ± .30	.013 ± .014	.071 ± .024	.017 ± .002	.157 ± .059
03-16	04-02	95.2 ± .7	.025 ± .002	.014 ± .004	.465 ± .034	6.11 ± .24	.064 ± .018	.197 ± .025	.053 ± .002	.333 ± .077
04-05	04-17	129 ± 1	.019 ± .006	.009 ± .010	.844 ± .050	7.36 ± .94	.035 ± .034	.286 ± .040	.064 ± .006	.423 ± .088
04-17	05-01	90.1 ± .5	.021 ± .002	.007 ± .005	.524 ± .042	2.18 ± .23	.095 ± .022	.218 ± .029	.042 ± .002	.150 ± .090
05-01	05-16	117 ± 1	.027 ± .002	ND	.554 ± .038	1.35 ± .17	.057 ± .023	.152 ± .021	.034 ± .002	.316 ± .083
05-16	06-01	74.1 ± .8	.011 ± .002	.005 ± .003	.373 ± .031	1.17 ± .16	.046 ± .019	.159 ± .019	.032 ± .002	.231 ± .070
06-01	06-17	34.6 ± .6	.008 ± .001	ND	.196 ± .022	2.26 ± .22	.011 ± .010	.049 ± .013	.015 ± .002	.222 ± .051
06-17	07-01	25.9 ± .6	.008 ± .002	.003 ± .003	.210 ± .026	.87 ± .11	ND	.078 ± .016	.014 ± .001	.090 ± .068
07-01	07-16	96.1 ± 1.1	.016 ± .003	.008 ± .004	.612 ± .075	2.03 ± .21	.117 ± .025	.243 ± .024	.049 ± .003	.53 ± .12
07-16	08-01	80.5 ± .9	.022 ± .002	ND	.572 ± .034		.046 ± .021	.074 ± .018	.042 ± .002	.423 ± .087
08-01	08-17	54.6 ± .7	.010 ± .002	.006 ± .003	.307 ± .031	3.07 ± .21	.057 ± .017	.105 ± .016	.027 ± .002	.324 ± .070
08-17	09-03	59.5 ± .7	.011 ± .001	ND	.259 ± .024		ND	.039 ± .012	.014 ± .001	.257 ± .067
09-03	09-16	42.8 ± .6	.007 ± .001	ND	.118 ± .021	.73 ± .10	.035 ± .013	.024 ± .010	.012 ± .001	.580 ± .047
09-16	10-01	48.1 ± .6	.009 ± .001	ND	.208 ± .022		.004 ± .015	.035 ± .010	.014 ± .001	.052 ± .059
10-01	10-16	61.3 ± .7	.006 ± .001	.002 ± .002	.251 ± .025	.039 ± .039	.025 ± .013	.071 ± .013	.012 ± .001	.123 ± .060
10-16	11-01	66.7 ± .6	.013 ± .001	ND	.106 ± .020		.004 ± .010	.034 ± .012	.014 ± .001	.023 ± .058
11-01	11-15	113 ± 1	.016 ± .002	ND	.217 ± .027	1.04 ± .15	.049 ± .016	.078 ± .015	.018 ± .001	.112 ± .072
11-15	12-07	94.3 ± .7	.009 ± .002	.004 ± .004	.304 ± .022		.032 ± .014	.053 ± .020	.023 ± .002	.584 ± .056
12-07	12-13	141 ± 1	.017 ± .004	.010 ± .007	.411 ± .053		.067 ± .029	.184 ± .043	.030 ± .003	.32 ± .15
12-13	12-21	86.0 ± .7	ND	ND	.205 ± .044	1.17 ± .11	ND	ND	.013 ± .002	.39 ± .10

* = First Analysis by Ge(Li) Diode
ND = Not Detectable

Barrow, Alaska, 1968 (contd)

Date ON	Date OFF	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
		DPM/10³M³								
01-04	02-03	.002 ± .001	18.3 ± .3*	30.4 ± .2*	6.92 ± .20	1.81 ± .05	.009 ± .003	.004 ± .005	.596 ± .12	ND
02-03	02-16	.002 ± .001	32.1 ± .4	34.3 ± .1	17.5 ± .3	5.79 ± .09	.011 ± .003	.005 ± .012	1.74 ± .13	.021 ± .003
02-16	02-28	.002 ± .001	16.1 ± .3	20.6 ± .2	11.6 ± .2	4.06 ± .07	.010 ± .003	.006 ± .006	1.04 ± .16	.008 ± .002
03-16	04-02	.003 ± .001	21.7 ± .3	46.0 ± .2	11.3 ± .3	12.1 ± .1	.017 ± .004	.014 ± .006	2.66 ± .17	.007 ± .003
04-05	04-17	.007 ± .003	31.3 ± .4	64.9 ± .4	17.5 ± .4	23.3 ± .3	.031 ± .010	.030 ± .014	3.26 ± .26	.011 ± .008
04-17	05-01	.004 ± .001	17.6 ± .3	41.2 ± .2	7.27 ± .17	18.2 ± .2	.024 ± .005	.018 ± .007	2.73 ± .20	.007 ± .004
05-01	05-16	.002 ± .001	16.8 ± .2	38.1 ± .2	5.69 ± .15	27.1 ± .1	.016 ± .004	ND	3.00 ± .20	ND
05-16	06-01	.002 ± .001	8.26 ± .13	18.8 ± .1	2.33 ± .07	15.3 ± .1	.018 ± .004	.014 ± .004	1.87 ± .11	ND
06-01	06-17	.001 ± .001	3.60 ± .10	8.19 ± .09	.706 ± .052	9.50 ± .08	.004 ± .003	.003 ± .003	.905 ± .071	ND
06-17	07-01	.001 ± .001	2.86 ± .11	5.86 ± .09	.459 ± .068	7.49 ± .09	.011 ± .003	.008 ± .004	.956 ± .076	ND
07-01	07-16	.003 ± .001	9.36 ± .18	19.0 ± .2	1.41 ± .10	25.2 ± .2	.034 ± .005	.003 ± .006	3.68 ± .14	.006 ± .004
07-16	08-01	.001 ± .001	6.18 ± .13	14.8 ± .1	1.02 ± .08	27.6 ± .1	.016 ± .005	ND	3.02 ± .11	.012 ± .003
08-01	08-17	.001 ± .001	3.53 ± .10	8.54 ± .09	.565 ± .053	14.3 ± .1	.012 ± .003	.014 ± .004	1.97 ± .10	.002 ± .003
08-17	09-03	.001 ± .001	2.15 ± .09	5.12 ± .08	.282 ± .056	11.1 ± .1	.003 ± .002	.002 ± .003	1.18 ± .07	.001 ± .001
09-03	09-16	.001 ± .001	1.09 ± .07	2.78 ± .06	.187 ± .036	7.94 ± .08	.004 ± .002	ND	.964 ± .068	.003 ± .002
09-16	10-01	.001 ± .001	1.17 ± .06	2.58 ± .05	.201 ± .033	8.62 ± .08	.003 ± .002	ND	.842 ± .066	.002 ± .001
10-01	10-16	.001 ± .001	.953 ± .067	2.33 ± .05	.254 ± .039	6.18 ± .08	.006 ± .002	.008 ± .003	.864 ± .066	ND
10-16	11-01	ND	.883 ± .062	2.15 ± .04	.329 ± .045	9.07 ± .08	.003 ± .002	ND	.886 ± .063	ND
11-1	11-15	ND	1.45 ± .09	3.28 ± .06	.494 ± .051	12.3 ± .1	.006 ± .003	ND	1.31 ± .09	.005 ± .002
11-15	12-07	ND	1.52 ± .07	3.39 ± .06	.691 ± .052	10.8 ± .1	.007 ± .002	.003 ± .005	1.66 ± .07	ND
12-07	12-13	.001 ± .001	2.26 ± .16	3.92 ± .12	.78 ± .11	14.4 ± .2	.024 ± .007	.019 ± .005	2.30 ± .16	.005
12-13	12-21	ND	1.45 ± .14	2.86 ± .10	.770 ± .088	8.72 ± .09	.008 ± .002	ND	1.38 ± .14	ND

* = First Analysis by Ge(Li) Diode
ND = Not Detectable

Barrow, Alaska, 1968 (contd)

Date ON	Date OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{207}Bi	^{226}Ra	^{232}Th
		DPM/10^{3}M^3						
01-04	02-03	1.34 ± .04*	12.0 ± .1	14.7 ± .2	10.4 ± .8	ND	.014 ± .005	.008 ± .006
02-03	02-16	3.89 ± .08	15.1 ± .7	28.3 ± .2	26.3 ± 1.4	.003 ± .002	.035 ± .008	.017 ± .008
02-16	02-28	2.21 ± .06	5.72 ± .30	14.8 ± .1	14.5 ± 1.1	ND	.030 ± .007	.006 ± .007
03-16	04-02	4.96 ± .08	1.66 ± .14	9.53 ± .13	42.3 ± 1.5	.007 ± .003	.071 ± .009	.011 ± .005
04-02	04-17	6.25 ± .11	.99 ± .13	8.72 ± .17	68.7 ± 4.1	.024 ± .002	.102 ± .025	.039 ± .016
04-17	05-01	5.11 ± .09	.353 ± .030	4.70 ± .10	46.3 ± .9	.010 ± .002	.109 ± .012	.017 ± .009
05-01	05-16	4.83 ± .08	.071 ± .020	2.78 ± .08	43.1 ± 1.3	.006 ± .004	.035 ± .011	.002 ± .004
05-16	06-01	2.94 ± .05	.070 ± .018	1.62 ± .06	33.5 ± 1.3	ND	.081 ± .011	.010 ± .006
06-01	06-17	1.46 ± .04	ND	.423 ± .048	15.2 ± .8	.002 ± .002	.053 ± .008	.025 ± .006
06-17	07-01	1.42 ± .04	.078 ± .025	.304 ± .073	14.3 ± 1.0	ND	.071 ± .008	.012 ± .006
07-01	07-16	5.62 ± .08	.131 ± .016	.776 ± .099	58.2 ± 1.8	.008 ± .005	.182 ± .013	.015 ± .006
07-16	08-01	4.52 ± .06	.012 ± .015	.423 ± .078	42.0 ± 1.3	ND	.081 ± .011	.085 ± .008
08-01	08-17	3.30 ± .06	.042 ± .010	.198 ± .051	29.4 ± 1.3	.005 ± .003	.080 ± .010	.012 ± .005
08-17	09-03	2.08 ± .04	ND	.145 ± .064	16.6 ± .8	.003 ± .002	.013 ± .007	.013 ± .005
09-03	09-16	1.53 ± .04	.013 ± .007	.145 ± .040	10.7 ± .7	.002 ± .002	.022 ± .008	.006 ± .007
09-16	10-01	1.64 ± .04	.018 ± .006	.124 ± .040	11.3 ± .7	.005 ± .002	.005 ± .007	.008 ± .005
10-01	10-16	1.55 ± .04	.067 ± .013	.371 ± .047	11.8 ± .9	.003 ± .002	.032 ± .007	.004 ± .004
10-16	11-01	1.51 ± .04	.131 ± .016	.459 ± .053	11.5 ± .7	ND	.021 ± .007	.003 ± .005
11-01	11-15	2.54 ± .05	.423 ± .030	.812 ± .064	16.3 ± .9	.002 ± .003	.031 ± .012	.008 ± .006
11-15	12-07	3.24 ± .04	10.8 ± .1	1.52 ± .07	18.2 ± 1.0	ND	.025 ± .007	.007 ± .004
12-07	12-13	4.32 ± .10	5.37 ± .12	1.98 ± .14	26.0 ± 2.2	.005 ± .005	.078 ± .017	.020 ± .014
12-13	12-21	2.86 ± .08	7.17 ± .09	.57 ± .11	10.7 ± 1.0	.002 ± .002	.028 ± .007	.010 ± .005

* = First Analysis by Ge(Li) Diode
ND - Not Detectable

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1969

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
		DPM/10³M³								
12-31	01-16	94.7 ± .7	.017 ± .001	<.005	.120 ± .020	.50 ± .12	.038 ± .013	.053 ± .012	.017 ± .001	.029 ± .040
01-16	02-03	121 ± 1	.013 ± .002	.005 ± .003	.136 ± .022	.85 ± .10	.046 ± .006	.074 ± .016	.021 ± .002	.227 ± .059
02-03	02-17	110 ± 1	.014 ± .002	<.021	.172 ± .024	.74 ± .13	.060 ± .016	D	.035 ± .002	.185 ± .067
02-17	03-03	113 ± 1	.013 ± .002	.022 ± .009	.124 ± .025		.062 ± .017	.124 ± .056	.020 ± .002	.263 ± .066
03-03	03-17	158 ± 1	.024 ± .002	.016 ± .010	.239 ± .029	1.31 ± .14	.074 ± .018	.187 ± .063	.032 ± .002	.227 ± .076
03-17	04-02	200 ± 1	.025 ± .002	.003 ± .004	.313 ± .030		.033 ± .013	ND	.042 ± .002	.211 ± .074
04-02	04-18	147 ± 1	.021 ± .002	.008 ± [illegible]	.329 ± .018	.92 ± .12	.152 ± .019	.092 ± .033	.033 ± .002	.189 ± .065
04-18	05-01	186 ± 1	.036 ± .002	<.016	.339 ± .028		.085 ± .028	.102 ± .039	.034 ± .002	.181 ± .048
05-01	05-16	111 ± 1	.018 ± .002	.007 ± .006	.186 ± .031	.62 ± .08	.029 ± .019	.162 ± .035	.026 ± .002	.167 ± .071
05-16	06-17	54.9 ± .6	.003 ± .001	<.016	.109 ± .014		.048 ± .011	.023 ± .014	.011 ± .001	.077 ± .032
06-17	07-04	70.0 ± 1.3	.006 ± .002	.008 ± .004	.246 ± .032	1.24 ± .10	.042 ± .022	.109 ± .023	.013 ± .001	.178 ± .067
07-04	07-18	41.1 ± 1.1	.005 ± .002	.008 ± .004	.223 ± .032	1.49 ± .14	.049 ± .022	.095 ± .021	.008 ± .001	.186 ± .084
07-18	08-01	20.9 ± .7	<.003	<.005	.050 ± .018		.007 ± .011	.034 ± .013	.004 ± .001	ND
08-01	08-16	19.4 ± .6	.002 ± .001	.003 ± .002	.109 ± .019	.708 ± .058	.042 ± .016	.067 ± .014	.005 ± .001	.061 ± .050
08-16	09-02	15.0 ± .6	<.002	.004 ± .002	.090 ± .019		.053 ± .012	.037 ± .012	.002 ± .001	ND
09-02	09-16	57.1 ± 1.0	.006 ± .002	.006 ± .004	.189 ± .032	.648 ± .055	.051 ± .019	.102 ± .019	.007 ± .001	ND
09-16	10-01	37.9 ± .7	.002 ± .001	.002 ± .002	.183 ± .025		.036 ± .015	.046 ± .013	.005 ± .001	ND
10-01	10-16	56.6 ± .9	.001 ± .001	<.006	.167 ± .027	.361 ± .069	.025 ± .014	.056 ± .017	.005 ± .001	.018 ± .073
10-16	11-01	130 ± 1	.011 ± .002	.005 ± .004	.401 ± .035		.070 ± .022	.127 ± .020	.009 ± .001	ND
11-01	11-18	128 ± 1	.007 ± .002	.004 ± .003	.338 ± .030	.549 ± .067	.097 ± .019	.088 ± .018	.009 ± .001	.039 ± .077
11-18	12-01	133 ± 1	.009 ± .002	.005 ± .004	.270 ± .034		.037 ± .021	.092 ± .022	.008 ± .002	ND
12-01	12-18	104 ± 1	.012 ± .001	<.007	.165 ± .027	.742 ± .059	.053 ± .016	.053 ± .016	.005 ± .001	.049 ± .072

ND = Not detectable
D = Decayed away before analysis

Barrow, Alaska 1969 (contd)

Date On	Date Off	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
		DPM/10^{3}M^3								
12-31	01-16	ND	.99 ± .06	2.05 ± .05	1.31 ± .11	9.32 ± .08	.005 ± .002	.002 ± .003	1.13 ± .03	<.003
01-16	02-03	.001 ± .001	3.11 ± .08	4.52 ± .06	3.43 ± .06	8.61 ± .09	.010 ± .003	.012 ± .005	1.45 ± .08	<.005
02-03	02-17	.001 ± .001	2.22 ± .08	3.81 ± .06	2.51 ± .06	10.1 ± .1	.006 ± .004	D	1.46 ± .08	<.003
02-17	03-03	.001 ± .001	3.60 ± .10	5.23 ± .08	4.24 ± .07	7.94 ± .11	.008 ± .003	.028 ± .017	1.24 ± .09	.002 ± .002
03-03	03-17	.003 ± .001	[illegible] ± .14	10.9 ± .1	7.94 ± .12	12.4 ± .1	.011 ± .004	.016 ± .017	2.01 ± .11	<.005
03-17	04-02	.001 ± .001	9.43 ± .14	18.9 ± .1	10.1 ± .1	15.0 ± .1	.014 ± .003	.009 ± .005	2.64 ± .12	<.006
04-02	04-18	.001 ± .001	7.17 ± .11	13.5 ± .1	8.93 ± .09	13.0 ± .1	.014 ± .003	<.007	2.47 ± .10	.001 ± .003
04-18	05-01	.002 ± .001	12.9 ± .2	24.3 ± .2	11.8 ± .2	19.7 ± .1	.013 ± .004	<.019	2.57 ± .16	<.005
05-01	05-16	.002 ± .001	10.0 ± .2	20.3 ± .2	10.1 ± .2	12.8 ± .1	.016 ± .004	.018 ± .009	1.73 ± .10	.002 ± .003
05-16	06-17	.002 ± .001	10.5 ± .1	21.4 ± .1	9.43 ± .10	9.53 ± .07	.006 ± .002	.004 ± .004	.883 ± .059	<.003
06-17	07-04	.005 ± .001	27.3 ± .3	58.6 ± .3	17.9 ± .2	16.8 ± .1	.006 ± .002	.012 ± .006	1.58 ± .12	.007 ± .003
07-04	07-18	.007 ± .001	20.8 ± .3	44.8 ± .2	12.2 ± .2	14.1 ± .1	.006 ± .003	.010 ± .005	1.37 ± .13	.006 ± .003
07-18	08-01	.002 ± .001	8.15 ± .15	17.0 ± .1	11.5 ± .3	6.60 ± .09	.005 ± .002	.005 ± .003	.565 ± .085	<.004
08-01	08-16	.003 ± .001	8.62 ± .15	18.7 ± .1	4.80 ± .10	7.91 ± .09	.008 ± .002	.008 ± .003	.706 ± .091	.002 ± .002
08-16	09-02	.001 ± .001	5.54 ± .13	12.0 ± .1	2.54 ± .09	5.16 ± .07	.005 ± .002	.004 ± .003	.612 ± .064	<.004
09-02	09-16	.003 ± .001	12.8 ± .2	28.4 ± .2	4.56 ± .13	12.1 ± .1	.005 ± .002	.016 ± .005	1.34 ± .12	.003 ± .003
09-16	10-01	.002 ± .001	6.60 ± .14	15.3 ± .1	2.30 ± .09	7.52 ± .09	.003 ± .002	.009 ± .003	.706 ± .085	.002 ± .002
10-01	10-16	.002 ± .001	7.98 ± .17	17.7 ± .2	3.21 ± .12	10.2 ± .1	.008 ± .004	.008 ± .005	.986 ± .088	.004 ± .003
10-16	11-01	.005 ± .001	14.1 ± .2	30.9 ± .2	4.16 ± .10	18.9 ± .1	.010 ± .003	.012 ± .005	2.51 ± .13	.010 ± .003
11-01	11-18	.004 ± .001	10.2 ± .2	23.1 ± .2	3.11 ± .09	15.8 ± .1	.009 ± .003	.008 ± .004	4.45 ± .27	.004 ± .003
11-18	12-01	.005 ± .001	8.30 ± .18	17.9 ± .2	2.97 ± .12	13.6 ± .1	.017 ± .005	.017 ± .006	4.02 ± .27	.010 ± .003
12-01	12-18	.003 ± .001	5.72 ± .15	12.3 ± .1	2.11 ± .12	12.4 ± .1	.002 ± .003	ND	1.27 ± .08	.004 ± .002

ND = Not detectable
D = Decayed away before analysis

Barrow, Alaska 1969 (contd)

Date ON	Date OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{207}Bi	^{226}Ra	^{232}Th
		DPM/10^3M^3						
12-31	01 16	2.33 ± .04	1.70 ± .05	.53 ± .04	21.3 ± .2*	.002 ± .002	.016 ± .007	.006 ± .005
01-16	02 03	2.93 ± .05	3.17 ± .04	5.47 ± .07	26.2 ± .2	.005 ± .002	.036 ± .008	.011 ± .005
02 03	02-17	2.75 ± .05	1.56 ± .03	3.74 ± .006	23.3 ± .2	.004 ± .002	.024 ± .007	.021 ± .008
02 17	03-03	2.64 ± .05	1.52 ± .03	5.93 ± .007	23.8 ± .2	.005 ± .002	.015 ± .007	.005 ± .006
03-03	03-17	4.20 ± .06	1.75 ± .05	9.67 ± .12	23.6 ± .1	.005 ± .003	.039 ± .008	.005 ± .007
03 17	04 02	3.51 ± .04	1.39 ± .09	12.5 ± .1	47.0 ± .3	.010 ± .003	.067 ± .010	ND
04 02	04 18	3.92 ± .06	.883 ± .027	2.08 ± .05	22.2 ± .5	.011 ± .003	.064 ± .009	.004 ± .005
04-18	05 01	5.61 ± .09	.423 ± .031	8.79 ± .12	35.7 ± .3	.002 ± .003	.018 ± .010	.005 ± .006
05 01	05-16	3.11 ± .05	D	8.86 ± .21	30.4 ± .3	.009 ± .003	.067 ± .009	.007 ± .006
05-16	06-17	1.73 ± .03	.39 ± .20	7.24 ± .09	22.1 ± .1	.003 ± .002	.018 ± .005	.022 ± .004
06-17	07-14	3.07 ± .05	.35 ± .11	15.0 ± .2	55.3 ± .3	.004 ± .003	.071 ± .009	.020 ± .006
07-04	07-18	2.43 ± .05	.176 ± .049	10.5 ± .2	46.6 ± .3	.005 ± .003	.081 ± .010	.035 ± .007
07 18	08 01	1.00 ± .03	.042 ± .018	3.39 ± .08	19.0 ± .2	.007 ± .002	.034 ± .007	.026 ± .007
08-01	08-16	1.13 ± .04	.034 ± .013	3.32 ± .08	24.5 ± .2	.007 ± .003	.042 ± .008	.011 ± .006
08 16	09 02	.78 ± .03	.060 ± .042	1.76 ± .08	16.6 ± .2	.002 ± .002	.042 ± .006	.028 ± .006
09 02	09 16	1.94 ± .05	.139 ± .037	3.67 ± .12	44.0 ± .3	.007 ± .003	.085 ± .010	.013 ± .006
09-16	10 01	1.27 ± .04	.046 ± .015	1.48 ± .08	26.3 ± .2	.006 ± .002	.042 ± .008	.014 ± .006
10 01	10 16	1.48 ± .04	.257 ± .044	2.05 ± .11	30.9 ± .2	.010 ± .003	.038 ± .008	.013 ± .006
10-16	11-01	3.32 ± .06	.565 ± .032	2.82 ± .09	39.1 ± .2	.014 ± .003	.085 ± .011	.006 ± .005
11 01	11-18	3.07 ± .05	.494 ± .031	2.40 ± .09	34.7 ± .2	.013 ± .003	.060 ± .009	.007 ± .005
11-18	12 01	2.57 ± .06	.635 ± .065	2.82 ± .12	31.3 ± .2	.012 ± .003	.134 ± .013	.018 ± .006
12-01	12-18	1.94 ± .04	.39 ± .10	2.57 ± .13	34.1 ± .2	ND	.007 ± .006	.002 ± .004

* - First Analysis by Ge(Li) Diode
ND - Not Detectable
D - Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska
(71°18'N, 156°47'W) in 1970

Date		DPM/10^{3}M^3								
ON	OFF	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
12-30	01-16	156 ± 1	.020 ± .003	<.012	.207 ± .027	.550 ± .057	.074 ± .017	.065 ± .028	.007 ± .002	<.14
01-16	02-02	104 ± 1	.011 ± .003	.008 ± .005	.115 ± .023		.063 ± .015	.059 ± .024	.007 ± .002	<.11
02-02	02-19	73.2 ± .9	.013 ± .002	.010 ± .003	.113 ± .029	.309 ± .097	.034 ± .017	.084 ± .018	.008 ± .001	.093 ± .068
02-19	03-04	113 ± 1	.012 ± .002	.001 ± .003	.194 ± .030		.058 ± .020	.068 ± .016	.009 ± .001	<.14
03-04	03-18	90.2 ± .8	.019 ± .002	<.006	.215 ± .026	1.01 ± .11	.034 ± .013	.049 ± .012	.006 ± .001	<.13
06-01	06-16	83.1 ± 1.1	.016 ± .003	.004 ± .005	.462 ± .041	2.28 ± .13	.159 ± .031	.112 ± .028	.012 ± .002	<.18
06-16	07-02	37.9 ± 1.0	.010 ± .002	<010	.263 ± .029		.046 ± .019	.015 ± .018	.006 ± .001	<.13
07-02	07-24	33.3 ± .7	.010 ± .001	<.006	.216 ± .025	2.22 ± .09	.060 ± .017	.032 ± .014	.003 ± .001	<.11
07-24	08-03	28.0 ± 1.0	.012 ± .002	<.012	.221 ± .039		.046 ± .025	.040 ± .012	.005 ± .002	<.18
08-03	09-01	22.6 ± .5	.005 ± .001	.001 ± .003	.109 ± 014	.728 ± .047	.025 ± .009	.059 ± .016	.002 ± .001	<.070
09-01	09-15	76.8 ± 1.0	.012 ± .001	.003 ± .006	.190 ± .034		.067 ± .021	.139 ± .031	.004 ± .001	ND
09-15	10-02	36.0 ± .6	.007 ± .001	.002 ± .004	.122 ± .002		.036 ± .012	.077 ± .020	.003 ± .001	<.10
10-02	11-2	68.9 ± .6	.008 ± .001	.001 ± .002	.159 ± .018	.369 ± .040	.060 ± .011	.057 ± .012	.003 ± .001	<.078
11-02	12-02	14.8 ± .2	.004 ± .001	.002 ± .001	.036 ± .005	.301 ± .028	.010 ± .003	.039 ± .008	.001 ± .001	ND
12-02	12-17	54.9 ± .4	.009 ± .001	.002 ± .003	.116 ± .010		.031 ± .007	.059 ± .015	.004 ± .001	ND
12-17	01-02	107 ± 1	.020 ± .002	.001 ± .003	.183 ± .013	.100 ± .032	.068 ± .009	.106 ± .017	.009 ± .001	<.034

ND = Not Detectable

Barrow, Alaska, 1970 (contd)

Date ON	Date OFF	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
		DPM/10^{3}M^3								
12-30	01-16	.005 ± .002	6.00 ± .13	12.7 ± .1	2.34 ± .08	15.2 ± .2	.010 ± .005	<.013	1.66 ± .06	.005 ± .003
01-16	02-02	.003 ± .002	4.10 ± .10	9.01 ± .09	2.40 ± .06	10.7 ± .2	.002 ± .005	.002 ± .005	1.26 ± .08	.005 ± .004
02-02	02-19	.005 ± .001	3.26 ± .12	7.20 ± .11	1.84 ± .08	8.98 ± .10	.002 ± .004	.005 ± .005	1.09 ± .09	.010 ± .003
02-19	03-04	.010 ± .002	7.52 ± .14	15.1 ± .1	4.07 ± .09	13.7 ± .1	.003 ± .004	.003 ± .003	1.63 ± .14	.008 ± .003
03-04	03-[illegible]	.012 ± .001	7.20 ± 0.13	14.7 ± .1	3.92 ± .08	12.1 ± .1	.005 ± .003	.002 ± .003	1.59 ± .10	.007 ± .002
06-01	06-16	.079 ± .004	25.6 ± .2	58.7 ± .2	10.4 ± .1	44.2 ± .2	.008 ± .004	.020 ± .006	4.42 ± .17	.025 ± .005
06-16	07-02	.035 ± .003	14.4 ± .2	32.6 ± .2	5.63 ± .15	22.2 ± .1	<.007	.001 ± .005	2.08 ± .11	.009 ± .002
07-02	07-24	.035 ± .002	11.9 ± .2	26.7 ± .2	3.28 ± .09	17.5 ± .1	.009 ± .003	.005 ± .003	1.89 ± .09	.005 ± .002
07-24	08-03	.035 ± .003	8.86 ± .22	19.9 ± .2	2.19 ± .15	17.2 ± .1	.006 ± .005	.003 ± .007	1.78 ± .13	.008 ± .003
08-03	09-01	.014 ± .002	3.46 ± .09	8.33 ± .09	.735 ± .05	6.17 ± .05	.003 ± .002	<.007	.716 ± .047	.002 ± .001
09-01	09-15	.036 ± .003	9.05 ± .18	20.3 ± .2	1.67 ± .11	21.2 ± .1	.005 ± .004	.009 ± .008	2.55 ± .05	.010 ± .003
09-15	10-02	.015 ± .002	3.67 ± .10	8.19 ± .09	.738 ± .059	10.6 ± .1	.003 ± .003	<.011	1.26 ± .008	.006 ± .002
10-02	11-02	.015 ± .001	3.93 ± .08	8.87 ± .08	.861 ± .050	9.13 ± .08*	.003 ± .002	.002 ± .008	1.44 ± .06	.003 ± .002
11-02	12-02	.004 ± .001	1.03 ± .02	2.08 ± .02	.432 ± .013	2.67 ± .04	.002 ± .002	.005 ± .002	.261 ± .010	.008 ± .001
12-02	12-17	.010 ± .002	2.62 ± .05	5.11 ± .11	1.21 ± .04	6.40 ± .08	.004 ± .003	.002 ± .004	.656 ± .023	.005 ± .002
12-17	01-02	.019 ± .002	4.78 ± .06	9.16 ± .06	2.10 ± .03	11.6 ± .1	.002 ± .003	.016 ± .005	1.27 ± .03	.012 ± .003

* – First Analysis by Ge(Li) Diode

Barrow, Alaska, 1970 (contd)

Date		DPM/$10^3 M^3$					
ON	OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{232}Th
12-30	01-16	2.81 ± .05	.185 ± .049	2.43 ± .08	28.4 ± 1.8	.031 ± .015	.019 ± .011
01-16	02-02	2.11 ± .04	.085 ± .021	2.05 ± .06	21.5 ± 2.0	.032 ± .018	.007 ± .008
02-02	02-19	1.62 ± .05	.152 ± .024	1.63 ± .08	19.6 ± 1.2	.045 ± .010	.005 ± .006
02-19	03-04	2.67 ± .06	.107 ± .014	3.74 ± .08	26.5 ± 1.3	.004 ± .010	.002 ± .007
03-04	03-18	2.31 ± .05	.032 ± .006	3.56 ± .07	24.7 ± 1.0	.007 ± .008	.002 ± .003
06-01	06-16	5.48 ± .08	.176 ± .035	6.46 ± .12	73.2 ± 2.0	.024 ± .016	.035 ± .006
06-16	07-02	2.89 ± .05	D	3.53 ± .15	36.1 ± 1.1	.002 ± .011	.065 ± .007
07-02	07-24	2.62 ± .04	.028 ± .025	2.12 ± .08	31.7 ± .9	.051 ± .008	.021 ± .004
07-24	08-03	2.20 ± .06	.16 ± .17	1.41 ± .15	35.0 ± 1.5	.074 ± .015	.005 ± .008
08-03	09-01	1.02 ± .02	2.24 ± .64	.671 ± .072	13.6 ± .6	.015 ± .005	.004 ± .003
09-01	09-15	3.28 ± .06	1.62 ± .32	1.24 ± .11	37.0 ± 1.6	.019 ± .011	.006 ± .005
09-15	10-02	1.53 ± .04	.90 ± .20	.423 ± .057	16.6 ± 1.0	.016 ± .008	.009 ± .005
10-02	11-02	2.07 ± .03	.168 ± .034	.575 ± .053	22.8 ± .8	.007 ± .006	.003 ± .002
11-02	12-02	.649 ± .010	.354 ± .030	.420 ± .016	5.20 ± .41	.017 ± .004	.002 ± .002
12-02	12-17	1.41 ± .02	.554 ± .045	1.14 ± .03	13.2 ± .9	.009 ± .007	.003 ± .004
12-17	01-02	2.72 ± .03	.469 ± .021	1.77 ± .05	25.2 ± 1.1	.026 ± .009	.003 ± .004

D = Decayed away before analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1971

Date ON	Date OFF	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
		DPM/10³M³								
01-02	01-16	117 ± 1	.019 ± .002	.004 ± .004	.178 ± .002	.332 ± .058	.056 ± .012	.109 ± .021	.005 ± .001	<.034
01-16	02-01	47.6 ± .7	.007 ± .001	<.004	.075 ± .015		.028 ± .008	.041 ± .011	.002 ± .001	<.021
02-01	02-15	42.9 ± .7	.007 ± .001	.001 ± .002	.070 ± .015		.024 ± .008	.037 ± .010	.003 ± .001	<.016
02-15	03-01	88.7 ± .9	.017 ± .002	.003 ± .003	.315 ± .035		.063 ± .012	.093 ± .016	.008 ± .001	<.029
03-01	03-15	95.7 ± .9	.019 ± .002	.003 ± .003	.222 ± .023		.078 ± .014	.115 ± .016	.008 ± .001	<.034
03-15	04-01	143 ± 1	.026 ± .002	.008 ± .005	.411 ± .026		.135 ± .017	.127 ± .022	.011 ± .001	.024 ± .013
06-01	06-15	39.1 ± .7	.016 ± .003	.008 ± .004	.403 ± .030		.079 ± .018	.199 ± .024	.009 ± .001	<.047
06-15	07-01	119 ± 1	.008 ± .004	<.009	1.35 ± .05		.204 ± .028	.044 ± .038	.013 ± .002	.061 ± .018
07-01	07-29	22.2 ± .4	.005 ± .002	.010 ± .004	.239 ± .016		.033 ± .009	.040 ± .021	.003 ± .001	.011 ± .011
09-15	10-01	70.1 ± .8	.024 ± .007*	.012 ± .011	.208 ± .021		.038 ± .011	.013 ± .007*	.012 ± .009	.019 ± .013
10-01	10-15	47.0 ± .6	.021 ± .008	.003 ± .008	.101 ± .016		.029 ± .010	.002 ± .006	.013 ± .009	.003 ± .008
10-15	11-01	81.6 ± 1.1	.016 ± .007	<.027	.164 ± .020		.035 ± .011	ND	.001 ± .015	.025 ± .018
11-01	11-15	98.6 ± 1.3	.008 ± .008	.004 ± .017	.173 ± .022		.030 ± .011	.012 ± .021	.011 ± .021	.017 ± .017
12-15	01-01	173 ± 2	.008 ± .010	.007 ± .015	.230 ± .022	.037 ± .011	.047 ± .013	.009 ± .012	.009 ± .021	.012 ± .015

* – First Analysis by Ge(Li) Diode.
ND Not detectable

Barrow, Alaska (71°18'N, 156°47'W) in 1971 (contd)

Date		DPM/10^{3}M^3								
ON	OFF	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb	^{134}Cs
01-02	01-16	.017 ± .002	2.38 ± .06	4.11 ± .15	1.94 ± .07	10.7 ± .4	.002 ± .003	.019 ± .005	1.12 ± .06	.006 ± .003
01-16	02-01	.006 ± .001	1.09 ± .04	1.62 ± .09	.777 ± .039	4.49 ± .27	.001 ± .003	<.007	.450 ± .030	.003 ± .002
02-01	02-15	.006 ± .001	1.00 ± .38	1.53 ± .08	.769 ± .036	4.18 ± .29	.001 ± .003	.005 ± .003	.478 ± .038	.005 ± .002
02-15	03-01	.022 ± .002	2.60 ± .02	6.34 ± .06	3.51 ± .07	10.1 ± .4	.002 ± .003	<.008	1.15 ± .06	.006 ± .003
03-01	03-15	.033 ± .003	2.95 ± .06	9.03 ± .18	4.64 ± .06	12.3 ± .4	.004 ± .003	.001 ± .004	1.38 ± .06	.011 ± .003
03-15	04-01	.129 ± .004	28.0 ± .3	52.6 ± .4	14.5 ± .1	22.9 ± .6	.006 ± .003	<.010	2.14 ± .07	.014 ± .003
06-01	06-15	.145 ± .005	27.1 ± .3	53.6 ± .4	9.32 ± .11	25.2 ± .7	.009 ± .004	.008 ± .006	1.85 ± .08	.025 ± .004
06-15	07-01	.454 ± .010	81.3 ± .6	169 ± 1	20.1 ± .2	64.7 ± .9	.011 ± .006	<.020	5.76 ± .12	.058 ± .006
07-01	07-29	.081 ± .005	12.2 ± .1	25.6 ± .1	2.68 ± .05	11.7 ± .1	.003 ± .004	<.011	1.08 ± .04	.009 ± .003
09-15	10-01	.056 ± .009*	5.91 ± .14	12.6 ± .1	.955 ± .048	11.7 ± .4	.021 ± .022*	.026 ± .023*	1.04 ± .05	.028 ± .011*
10-01	10-15	.026 ± .007	2.40 ± .09	5.22 ± .09	.366 ± .024	5.80 ± .32	.021 ± .020	<.042	.518 ± .041	.003 ± .004
10-15	11-01	.023 ± .010	3.08 ± .13	6.64 ± .13	.420 ± .054	8.34 ± .36	<.039	.017 ± .027	.795 ± .043	<.019
11-01	11-15	.022 ± .011	3.29 ± .14	6.78 ± .13	.464 ± .041	9.39 ± .42	<.047	.062 ± .030	.958 ± .052	.002 ± .010
12-15	01-01	.030 ± .012	3.30 ± .15	6.57 ± .12	3.74 ± .11	11.9 ± .4	.002 ± .021	.029 ± .043	1.21 ± .05	<.021

* = First Analysis by Ge(Li) Diode.

Barrow, Alaska (71°18'N, 156°47'W) in 1971 (contd)

Date		DPM/10^3M^3						
ON	OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{232}Th	^{228}Ac
01-02	01-16	2.38 ± .06	.591 ± .076	1.51 ± .07	21.7 ± .2	.034 ± .009	.005 ± .005	.189 ± .080*
01-16	02-01	1.01 ± .04	0.98 ± .017	.563 ± .035	9.30 ± .15	.010 ± .006	.005 ± .004	.072 ± .063
02-01	02-15	1.00 ± .04	.057 ± .010	.544 ± .031	8.18 ± .15	.011 ± .007	.006 ± .005	.024 ± .056
02-15	03-01	2.60 ± .02	.196 ± .018	2.61 ± .06	22.1 ± .02	.017 ± .009	.001 ± .003	.068 ± .079
03-01	03-15	2.95 ± .06	.118 ± .012	3.54 ± .06	26.0 ± .3	.013 ± .009	.002 ± .005	.125 ± .083
03-15	04-01	4.85 ± .07	.331 ± .049	10.1 ± .1	48.5 ± .5	<.022	.008 ± .005	.106 ± .073
06-01	06-15	3.34 ± .07	.209 ± .026	4.60 ± .07	46.3 ± .3	.037 ± .013	.007 ± .005	.135 ± .089
06-15	07-01	10.9 ± .1	.58 ± .16	11.8 ± .2	152 ± 11	<.032	.084 ± .009	.125 ± .090
07-01	07-29	1.94 ± .04	.114 ± .035	1.44 ± .03	27.4 ± .03	.004 ± .004	.015 ± .009	.059 ± .042
09-15	10-01	2.00 ± .05	<.038*	.358 ± .032	23.4 ± .2			.102 ± .070
10-01	10-15	1.06 ± .04	ND	.170 ± .020	10.7 ± .2			.107 ± .071
10-15	11-01	1.45 ± .04	ND	.257 ± .073	15.6 ± .2			.159 ± .073
11-01	11-15	1.79 ± .05	ND	.234 ± .056	18.2 ± .23			.143 ± .074
12-15	01-01	2.54 ± .05	3.6 ± 1.4	3.24 ± .11	22.3 ± .2			.138 ± .066

* = First Analysis by Ge(Li) Diode.
ND = Not Detectable

Barrow, Alaska (71°18'N, 156°47'W) in 1972 and 1973 (contd)

Date		DPM/10³M³								
ON	OFF	7 Be	22 Na	46 Sc	54 Mn	57 Co	58 Co	60 Co	65 Zn	88 Y
04-01-72	04-15-72	59.1 ± .8	.022 ± .023	<.026	.132 ± .019	.024 ± .011	.010 ± .009	.010 ± .009	ND	.010 ± .011
04-15-72	05-01-72	178 ± 1	.022 ± .023	<.055	.226 ± .019	.075 ± .015	.016 ± .014	<.021	<.028	.018 ± .012
05-01-72	05-15-72	161 ± 2	<.037	<.068	.218 ± .040	.064 ± .030	.045 ± .045	.028 ± .014	.051 ± .030	.008 ± .017
05-15-72	06-01-72	127 ± 2	.002 ± .012	<.053	.170 ± .032	.074 ± .027	.050 ± .032	.007 ± .012	<.10	.020 ± .014
06-01-72	06-15-72	46.5 ± 1.3	<.046	<.088	.073 ± .031	.034 ± .023	<.033	.006 ± .011	<.092	<.040
06-15-72	07-01-72	25.0 ± .4	.009 ± .009	<.064	.008 ± .022	<.024	.002 ± .009	.009 ± .005	.007 ± .019	.001 ± .007
07-01-72	07-15-72	49.9 ± 1.1	<.050	<.069	.057 ± .029	.035 ± .023	.016 ± .013	.004 ± .010	<.093	.006 ± .012
07-15-72	08-01-72	12.6 ± .5	.001 ± .007	<.019	.018 ± .021	.006 ± .014	< .039	.011 ± .009	<.067	.012 ± .021
08-01-72	09-01-72	33.0 ± .9	<.037	<.020	.043 ± .023	.013 ± .015	.012 ± .011	.016 ± .009	.057 ± .021	<.029
09-01-72	09-15-72	45.2 ± 1.1	.012 ± .012	<.016	.016 ± .027	.011 ± .018	<.029	.019 ± .011	.057 ± .026	.006 ± .012
09-15-72	10-01-72	52.1 ± .7	<.023	<.011	.015 ± .014	.018 ± .010	.004 ± .006	<.022	.020 ± .010	<.019
10-04-73	10-18-73	150 ± 5	.013 ± .008	ND	.022 ± .007	<.005	<.081	<.009	<.004	ND
10-18-73	11-01-73	94.0 ± 3.9	.007 ± .010	ND	<.001	.010 ± .003	<.070	<.010	<.004	ND
11-02-73	11-15-73	220 ± 6	.008 ± .011	ND	.027 ± .010	<.010	.084 ± .059	<.011	<.004	ND
11-15-73	11-29-73	168 ± 9	.010 ± .009	ND	<.016	<.010	ND	ND	.033 ± .026	<.032
11-29-73	12-28-73	202 ± 3	.014 ± .005	ND	.026 ± .006	.005 ± .003	<.004	<.005	<.016	ND

ND = Not Detectable

Barrow, Alaska (71°18'N, 156°47'W) in 1972 a 1973 (contd)

Date		DPM/10³M³								
ON	OFF	95 Zr	95 Nb	103 Ru	106 Ru	110m Ag	124 Sb	125 Sb	134 Cs	137 Cs
04-01-72	04-15-72	.869 ± .077	1.82 ± .07	.340 ± .034	7.20 ± .36	<.044	.027 ± .029	.892 ± .048	.002 ± .011	2.13 ± .05
04-15	05-01	14.1 ± .2	16.4 ± .1	1.90 ± .06	11.0 ± .4	<.044	ND	1.32 ± .07	.011 ± .012	3.33 ± .06
05-01	05-15	26.8 ± .5	36.3 ± .4	5.52 ± .19	10.6 ± .3	<.040	<.048	1.48 ± .14	<.019	3.12 ± .10
05-15	06-01	24.8 ± .4	33.7 ± .3	7.14 ± .16	8.20 ± .58	<.073	<.046	1.11 ± .13	.004 ± .011	2.42 ± .08
06-01	06-15	9.31 ± .34	15.2 ± .28	3.95 ± .18	4.11 ± .47	ND	.092	.54 ± .10	.010 ± .010	1.14 ± .06
06-15	07-01	.85 ± .11	1.23 ± .08	.211 ± .048	.45 ± .21	<.038	<.073	.037 ± .018	.016 ± .007	.102 ± .024
07-01	07-15	10.5 ± .3	17.2 ± .3	6.43 ± .08	4.14 ± .45	.049 ± .030	<.071	.46 ± .10	.008 ± .010	1.13 ± .06
07-15	08-01	1.79 ± .13	3.12 ± .11	1.63 ± .08	.85 ± .23	<.045	<.060	.155 ± .052	.014 ± .008	.260 ± .032
08-01	09-01	2.65 ± .17	5.18 ± .15	2.67 ± .12	2.23 ± .17	<.064	.047 ± .038	.276 ± .036	.005 ± .007	.587 ± .041
09-01	09-15	1.71 ± .16	3.40 ± .13	1.89 ± .11	2.19 ± .33	<.058	ND	.282 ± .066	.015 ± .009	.575 ± .049
09-15	10-01	1.22 ± .06	2.29 ± .06	1.11 ± .04	1.76 ± .19	<.028	ND	.227 ± .041	.007 ± .005	.513 ± .029
10-04-73	10-18-73	1.51 ± .26	2.76 ± .21	1.30 ± .50	.49 ± .10	ND	ND	.067 ± .014	<.015	.334 ± .014
10-18	11-01	1.19 ± .22	2.39 ± .18	1.30 ± .44	.44 ± .11	ND	ND	.057 ± .012	.017 ± .007	.218 ± .012
11-02	11-15	4.19 ± .39	8.22 ± .32	2.76 ± .52	.77 ± .12	ND	ND	.123 ± .019	.012 ± .009	.480 ± .019
11-15	11-29	2.12 ± .51	5.66 ± .44	3.3 ± 1.8	.86 ± .12	.038 ± .041	ND	.111 ± .015	.003 ± .012	.383 ± .015
11-12	12-28	4.92 ± .24	9.54 ± .22	2.54 ± .32	1.61 ± .08	ND	ND	.164 ± .013	<.005	.569 ± .013

ND = Not Detectable

Barrow, Alaska (71°18'N, 156°47'W) in 1972 and 1973 (contd)

Date		DPM/10^3M^3							
		^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac	^{40}K
ON	OFF								
04-01-72	04-15-72	D	.260 ± .041	14.1 ± .2	.309 ± .047		<.26	.121 ± .073	.64 ± .20
04-15	05-01	2.25 ± .22	7.96 ± .10	24.5 ± .2	.369 ± .060		<.12	.063 ± .069	.53 ± .18
05-01	05-15	3.42 ± .88	12.4 ± .2	23.3 ± .4	.46 ± .12		<.52	<.12	1.64 ± .45
05-15	06-01	2.00 ± .37	10.5 ± .1	18.6 ± .3	.35 ± .10		<.45	.05 ± .13	1.40 ± .37
06-01	06-15	D	4.19 ± .17	8.38 ± .24	.143 ± .075		<.47	<.11	1.52 ± .43
06-15	07-01	<.017	.276 ± .060	.77 ± .13	<.040		<.11	.05 ± .12	1.36 ± .37
07-01	07-15	.47 ± .37	6.37 ± .14	8.98 ± .25	.231 ± .087		<.54	.09 ± .15	2.08 ± .47
07-15	08-01	D	1.29 ± .07	1.83 ± .13	.040 ± .053		<.44	.13 ± .12	1.58 ± .39
08-01	09-01	D	1.86 ± .10	3.78 ± .16	.054 ± .054		<.42	.17 ± .12	1.02 ± .33
09-01	09-15	ND	1.12 ± .09	3.34 ± .18	.132 ± .067		<.54	.09 ± .15	1.36 ± .43
09-15	10-01	ND	.594 ± .033	2.75 ± .10	.035 ± .038		ND	.071 ± .075	.93 ± .22
10-04-73	10-18-73	ND	2.2 ± 1.5	1.06 ± .05	.022 ± .009	10.4 ± .3	.161 ± .038	.007 ± .020	
10-18	11-01	ND	3.7 ± 1.2	.877 ± .045	.018 ± .009	16.3 ± .3	.057 ± .027	.025 ± .021	
11-02	11-15	ND	3.1 ± 1.3	2.56 ± .08	.034 ± .010	20.1 ± .4	.043 ± .034	<.085	.308 ± .023
11-15	11-29	ND	D	2.08 ± .07	.033 ± .010	30.8 ± .4	.083 ± .033	.049 ± .022	.287 ± .023
11-29	12-28	ND	1.11 ± .68	3.80 ± .06	.060 ± .009	25.2 ± .3	.045 ± .017	.010 ± .013	.117 ± .009

ND = Not detectable
D = Decayed away before analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1974

Date		DPM/10^3M^3								
ON	OFF	^7Be	^{22}Na	^{40}K	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
12-28	01-13	134 ± 7	<.006	<.056	ND	.088 ± .032	<.020	<.15	<.005	<.11
01-13	01-26	138 ± 2	ND	<.067	ND	.060 ± .010	.012 ± .005	<.031	ND	<.019
01-26	02-24	157 ± 2	.021 ± .006	<.18	ND	.090 ± .009	<.006	.059 ± .031	<.006	<.029
02-24	03-01	242 ± 4	.022 ± .018	<.14	ND	.200 ± .030	<.018	<.010	.022 ± .018	<.090
03-01	03-15	159 ± 2	.016 ± .009	.264 ± .023	ND	.106 ± .015	.013 ± .007	<.043	<.011	<.043
03-15	04-01	193 ± 2	.030 ± .009	<.019	ND	.213 ± .017	.011 ± .008	ND	.012 ± .008	ND
04-01	04-15	39.4 ± .8	.007 ± .007	ND	ND	.051 ± .010	.005 ± .004	.029 ± .017	ND	.026 ± .018
04-15	05-01	221 ± 3	.024 ± .011	.262 ± .032	ND	.048 ± .027	.027 ± .011	ND	.026 ± .009	.080 ± .057
05-01	05-15	221 ± 3	.016 ± .013	<.019	ND	.535 ± .035	.021 ± .014	.122 ± .010	ND	.177 ± .078
05-15	06-02	50.7 ± 1.8	ND	.165 ± .027	ND	.190 ± .028	ND	ND	ND	.139 ± .068
06-02	06-15	72.0 ± 1.5	.016 ± .011	<.019	ND	.322 ± .024	.013 ± .010	ND	ND	.065 ± .051
06-15	07-01	47.1 ± 1.0	.010 ± .009	<.019	ND	.210 ± .019	.007 ± .007	ND	ND	.047 ± .002
07-01	07-15	18.7 ± .6	ND	.248 ± .020	ND	.042 ± .010	.006 ± .004	<.042	ND	ND
07-15	08-01	71.7 ± 1.4	.019 ± .020	.618 ± .082	ND	.241 ± .029	.016 ± .011	ND	ND	<.11
08-01	08-15	65.1 ± .9	.008 ± .009	.436 ± .038	ND	.149 ± .016	.002 ± .006	<.048	ND	<.066
08-15	08-31	47.3 ± .6	.007 ± .006	.096 ± .008	ND	.089 ± .010	ND	ND	ND	ND
08-31	09-15	153 ± 1	.022 ± .010	.381 ± .038	ND	.212 ± .018	.006 ± .007	<.014	ND	ND
09-15	10-01	78.3 ± .7	.008 ± .006	.420 ± .032	ND	.058 ± .009	.002 ± .004	ND	ND	ND
10-01	10-15	151 ± 1	.003 ± .008	.218 ± .020	ND	.107 ± .013	.013 ± .005	ND	<.014	ND
10-15	11-01	56.0 ± .6	.005 ± .006	ND	ND	.035 ± .007	.004 ± .002	<.018	ND	ND
11-01	11-15	98.6 ± .8	.017 ± .008	.287 ± .025	>.016	.063 ± .009	.003 ± .004	<.018	<.014	.046 ± .018
11-15	12-01	98.5 ± .7	ND	.044 ± .004	>.007	.057 ± .008	.002 ± .004	ND	.011 ± .006	ND
12-01	12-15	143 ± 1	.007 ± .006	.281 ± .023	ND	.061 ± .008	.008 ± .004	<.016	<.012	.025 ± .015
12-15	01-01	95.4 ± .7	.008 ± .006	ND	>.016	.082 ± .010	.015 ± .005	<.015	<.015	ND

ND = Not Detectable

Barrow, Alaska, 1974 (contd)

Date		DPM/10^{3}M^3								
On	Off	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
12-28	01-13	ND	6.56 ± .76	12.4 ± .7	2.01 ± .77	2.49 ± .46	ND	ND	.171 ± .006	<.009
01-13	01-26	ND	5.92 ± .26	10.7 ± .2	2.48 ± .20	2.41 ± .15	ND	ND	.234 ± .023	<.011
01-26	02-24	ND	10.0 ± .3	18.8 ± .2	2.56 ± .19	4.17 ± .13	ND	ND	.405 ± .020	<.08
02-24	03-01	ND	16.3 ± .6	30.0 ± .5	5.12 ± .38	7.39 ± .40	ND	ND	.708 ± .055	<.024
03-01	03-15	ND	11.9 ± .3	21.9 ± .2	3.17 ± .14	6.69 ± .22	ND	ND	.603 ± .034	<.16
03-15	04-01	ND	17.8 ± .3	33.0 ± .2	4.44 ± .13	10.9 ± .3	ND	ND	.910 ± .040	ND
04-01	04-15	ND	3.27 ± .13	7.19 ± .13	.842 ± .070	2.52 ± .14	ND	ND	.250 ± .023	ND
04-15	05-01	ND	24.8 ± .4	54.9 ± .3	6.06 ± .19	24.3 ± .4	ND	ND	2.06 ± .03	ND
05-01	05-15	ND	26.2 ± .5	60.8 ± .5	6.38 ± .39	30.5 ± .5	ND	ND	2.68 ± .07	ND
05-15	06-02	ND	9.66 ± .41	18.7 ± .4	1.77 ± .27	11.3 ± .4	ND	ND	.855 ± .06	ND
06-02	06-15	.059 ± .025	13.4 ± .3	24.6 ± .3	2.16 ± .18	17.7 ± .4	ND	ND	1.44 ± .05	ND
06-15	07-01	ND	8.95 ± .23	17.6 ± .20	1.11 ± .11	11.7 ± .3	ND	ND	1.24 ± .04	ND
07-01	07-15	.020 ± .014	2.01 ± .09	3.83 ± .09	.258 ± .054	3.52 ± .04	ND	ND	.344 ± .023	<.014
07-15	08-01	.031 ± .025	6.53 ± .25	12.5 ± .2	.665 ± .098	9.88 ± .36	ND	ND	1.15 ± .07	ND
08-01	08-15	ND	3.53 ± .13	6.52 ± .10	.373 ± .050	5.99 ± .19	ND	ND	.759 ± .037	ND
08-15	08-31	ND	2.46 ± .08	4.18 ± .07	.354 ± .027	3.99 ± .14	ND	ND	.462 ± .026	ND
08-31	09-15	.030 ± .015	8.51 ± .16	17.7 ± .15	.958 ± .054	9.60 ± .26	ND	ND	1.04 ± .04	ND
09-15	10-01	ND	1.38 ± .06	2.80 ± .05	.406 ± .026	2.75 ± .12	ND	ND	.382 ± .025	<.011
10-01	10-15	.012 ± .013	4.28 ± .11	8.33 ± .10	.702 ± .041	4.47 ± .17	ND	ND	.556 ± .034	<.016
10-15	11-01	.007 ± .008	2.29 ± .08	4.49 ± .06	.311 ± .021	1.77 ± .10	ND	ND	.233 ± .021	ND
11-01	11-15	.016 ± .005	2.08 ± .07	3.88 ± .06	.871 ± .029	2.73 ± .13	ND	ND	.356 ± .028	.020 ± .007
11-15	12-01	.046 ± .009	5.10 ± .09	9.30 ± .08	1.05 ± .03	2.83 ± .14	ND	ND	.380 ± .028	.016 ± .006
12-01	12-15	.043 ± .011	4.78 ± .10	9.67 ± .09	1.65 ± .04	4.42 ± .17	<.042	ND	.452 ± .033	ND
12-15	01-01	.052 ± .009	5.52 ± .09	10.6 ± .1	1.74 ± .03	3.31 ± .14	ND	<.027	.346 ± .027	.013 ± .006

ND = Not Detectable

Barrow, Alaska, 1974 (contd)

Date ON	Date OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac
		DPM/10^3M^3							
12-28	01-13	.635 ± .049	ND	D	6.01 ± .24	<.054	14.1 ± .7	<.17	.296 ± .020
01-13	01-26	.634 ± .021	ND	1.36 ± .29	5.50 ± .10	.083 ± .016	41.7 ± .5	.057 ± .039	.087 ± .031
01-26	02-24	1.12 ± .02	ND	1.90 ± .31	11.2 ± .1	.113 ± .013	26.0 ± .3	.097 ± .031	<.031
02-24	03-01	1.98 ± .06	ND	2.51 ± .48	20.2 ± .3	.194 ± .040		ND	<.13
03-01	03-15	1.52 ± .03	ND	1.36 ± .15	17.0 ± .1	.135 ± .022	28.2 ± .4	.070 ± .047	<.055
03-15	04-01	2.37 ± .04	ND	1.72 ± .13	26.6 ± .17	.252 ± .026	37.9 ± .5	.075 ± .054	ND
04-01	04-15	.628 ± .020	ND	.250 ± .072	6.72 ± .09	.101 ± .045	9.08 ± .24	ND	.049 ± .033
04-15	05-01	5.17 ± .11	ND	2.29 ± .20	60.6 ± .3	.615 ± .038	24.5 ± .4	ND	<.072
05-01	05-15	6.44 ± .06	ND	1.77 ± .54	73.5 ± .3	.753 ± .045	17.7 ± .4	ND	ND
05-15	06-02	2.40 ± .06	ND	.86 ± .34	26.2 ± .3	.271 ± .038	3.54 ± .34	ND	ND
06-02	06-15	3.50 ± .05	ND	.63 ± .23	38.4 ± .2	.382 ± .034	3.05 ± .29	ND	ND
06-15	07-01	2.93 ± .04	ND	.31 ± .15	30.9 ± .2	.350 ± .026	1.25 ± .21	.093 ± .061	ND
07-01	07-15	.801 ± .023	ND	.092 ± .066	7.86 ± .10	.105 ± .015	.90 ± .13	ND	.094 ± .032
07-15	08-01	2.78 ± .06	ND	.34 ± .10	27.9 ± .3	.286 ± .040	3.19 ± .37	.110 ± .093	ND
08-01	08-15	1.82 ± .03	ND	.217 ± .055	17.1 ± .1	.202 ± .022	3.94 ± .22	<.13	.154 ± .053
08-15	08-31	1.21 ± .03	ND	.418 ± .028	10.5 ± .1	.132 ± .016	3.93 ± .18	.093 ± .043	.089 ± .036
08-31	09-15	3.22 ± .04	.82 ± .57	.958 ± .056	23.9 ± .2	.305 ± .027	9.05 ± .30	ND	<.12
09-15	10-01	.861 ± .022	D	.377 ± .024	7.62 ± .09	.099 ± .015	4.37 ± .18	ND	.034 ± .032
10-01	10-15	1.42 ± .030	1.86 ± .42	.726 ± .041	12.8 ± .1	.153 ± .020	14.9 ± .3	ND	.073 ± .044
10-15	11-01	.497 ± .016	D	.411 ± .022	4.82 ± .07	.075 ± .011	10.5 ± .2	.101 ± .033	.067 ± .028
11-01	11-15	.943 ± .024	D	.541 ± .022	7.27 ± .09	.110 ± .015	15.8 ± .3	.030 ± .033	.087 ± .035
11-15	12-01	.932 ± .023	.766 ± .076	1.16 ± .02	8.49 ± .09	.076 ± .016	25.0 ± .4	.053 ± .033	<.063
12-01	12-15	1.26 ± .03	.233 ± .076	1.12 ± .03	10.5 ± .1	.143 ± .019	30.8 ± .4	.083 ± .053	.035 ± .037
12-15	01-01	.972 ± .023	.340 ± .055	1.13 ± .02	8.97 ± .09	.132 ± .017	36.9 ± .4	.069 ± .034	.064 ± .028

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1975

Date		DPM/$10^3 M^3$									
ON	OFF	^{7}Be	^{22}Na	^{40}K	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y	^{95}Zr
01-01	01-15	99 ± 1	.009 ± .007	ND	.093 ± .010	.015 ± .005	<.015	.011 ± .010	<.033	.050 ± .011	5.96 ± .11
01-15	02-01	165 ± 1	.019 ± .010	.120 ± .012	.164 ± .014	.074 ± .007	.005 ± .015	<.014	.066 ± .027	.153 ± .015	12.4 ± .2
02-01	02-15	180 ± 1	.006 ± .009	ND	.241 ± .018	.015 ± .007	.024 ± .018	.018 ± .003	<.062	.181 ± .017	15.3 ± .2
02-15	03-01	157 ± 1	.024 ± .009	.182 ± .018	.224 ± .017	.021 ± .007	.027 ± .015	.011 ± .009	.018 ± .031	.171 ± .016	13.3 ± .2
03-01	03-15	163 ± 1	.020 ± .011	.253 ± .026	.283 ± .019	.010 ± .008	.041 ± .017	.004 ± .010	.048 ± .032	.208 ± .018	15.4 ± .2
03-15	04-01	263 ± 1	.034 ± .012	<.37	.441 ± .019	.008 ± .006	.015 ± .023	.018 ± .010	.125 ± .038	.253 ± .020	19.8 ± .2
04-01	04-15	214 ± 1	.016 ± .011	ND	.394 ± .022	.026 ± .009	.016 ± .018	.068 ± .013	<.080	.217 ± .018	16.0 ± .2
04-15	05-01	223 ± 1	.018 ± .012	.062 ± .008	.505 ± .023	.027 ± .009	.049 ± .021	<.023	.034 ± .037	.220 ± .019	15.5 ± .2
05-01	05-15	82.6 ± .8	.013 ± .009	.202 ± .018	.168 ± .015	<.008	<.028	<.010	.074 ± .027	.059 ± .015	5.21 ± .13
05-15	06-01	115 ± 1	.015 ± .009	ND	.229 ± .015	.008 ± .006	.011 ± .015	.007 ± .006	.040 ± .025	.100 ± .014	5.74 ± .11
06-01	06-15	39.7 ± .6	<.013	ND	.054 ± .011	.006 ± .003	.009 ± .011	<.012	.008 ± .024	.045 ± .014	1.32 ± .06
06-15	07-01	37.7 ± .5	<.002	.161 ± .013	.046 ± .007	.003 ± .003	.003 ± .006	.003 ± .005	.005 ± .013	.020 ± .008	.839 ± .044
07-01	07-16	40.2 ± .5	.009 ± .003	.893 ± .049	.035 ± .004	.003 ± .002	<.010	<..004	<.011	.010 ± .1007	.589 ± .038
08-05	08-11	40.3 ± 4.8	<.015	ND	.021 ± .009	.003 ± .004	ND	.010 ± .005	ND	ND	D
08-21	09-15	51.5 ± 5.4	.004 ± .002	.129 ± .008	.013 ± .003	.002 ± .002	ND	.003 ± .001	ND	ND	D
09-15	10-01	71.6 ± 5.9	.004 ± .003	.084 ± .006	.013 ± .004	.001 ± .003	ND	.001 ± .002	ND	ND	D
10-01	11-01	76.6 ± 3.3	.004 ± .002	ND	.015 ± .002	.003 ± .001	.032 ± .032	.003 ± .001	<.011	ND	D
11-01	12-01	127 ± 3	.010 ± .002	.064 ± .005	.017 ± .003	.001 ± .002	<.053	.001 ± .001	<.009	ND	D
12-01	01-01	140 ± 3	.012 ± .002	.035 ± .003	.014 ± .002	<.004	<.037	.001 ± .001	<.009	ND	.113 ± .052

ND = Not Detectable
D = Decayed Away Before Analysis

Barrow, Alaska, 1975 (contd)

Date ON	Date OFF	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs	^{137}Cs
		DPM/10³M³								
01-01	01-15	11.5 ± .1	2.15 ± .04	3.37 ± .16	.013 ± .019	.019 ± .018	.358 ± .030	ND	.007 ± .007	1.05 ± .03
01-15	02-01	25.2 ± .2	4.36 ± .05	8.39 ± .24	.029 ± .020	<.048	.848 ± .041	ND	<.004	1.98 ±.04
02-01	02-15	30.2 ± .2	4.99 ± .06	10.9 ± .3	<.054	<.051	.958 ± .048	ND	.009 ± .009	2.47 ± .04
02-15	03-01	26.3 ± .1	4.06 ± .05	11.1 ± .3	<.048	<.040	.993 ± .048	ND	.007 ± .008	2.51 ± .04
03-01	03-15	31.7 ± .2	4.26 ± .06	13.4 ± .3	<.052	<.046	1.16 ± .05	ND	.006 ± .009	3.16 ± .05
03-15	04-01	41.8 ± .2	5.07 ± .07	19.8 ± .3	<.057	<.058	2.05 ± .06	ND	.013 ±.013	4.85 ± .05
04-01	04-15	33.8 ± .2	3.55 ± .05	18.5 ± .4	<.062	.077 ± .030	1.92 ± .06	ND	<.021	4.51 ± .05
04-15	05-01	32.9 ± .2	3.47 ± .05	21.4 ± .4	.048 ± .030	<.059	2.01 ± .06	ND	.006 ± .010	5.25 ± .05
05-01	05-15	10.9 ± .1	1.11 ± .05	8.61 ± .24	.034 ± .024	.043 ± .032	.855 ± .037	ND	<.010	1.99 ± .04
05-15	06-01	12.3 ± .1	1.08 ± .04	11.3 ± .2	<.045	<.052	1.14 ± .04	ND	<.011	2.68 ± .04
06-01	06-15	2.96 ± .06	.307 ± .024	3.44 ± .18	<.049	.025 ± .018	.281 ± .030	ND	.004 ± .010	.811 ± .027
06-15	07-01	1.74 ± .04	.131 ± .014	1.86 ± .11	<.032	<.034	.237 ± .019	ND	.011 ± .004	.585 ± .018
07-01	07-16	1.30 ± .03	.086 ± .017	1.63 ± .08	ND	<.039	.202 ± .013	ND	.004 ± .003	.535 ± .012
08-05	08-11	D	D	.82 ± .11	ND	ND	.100 ± .014	ND	.003 ± .012	.257 ± .011
08-21	09-15	D	D	.652 ± .046	ND	ND	.096 ± .005	ND	.001 ± .001	.253 ± .005
09-15	10-01	D	D	.585 ± .062	ND	ND	.104 ± .007	ND	.003 ± .003	.279 ± .007
10-01	11-01	.296 ± .068	D	.536 ± .034	ND	ND	.087 ± .005	ND	.001 ± .002	.214 ± .002
11-01	12-01	.179 ± .052	D	.677 ± .037	ND	ND	.116 ± .006	ND	.003 ± .001	.362 ± .006
12-01	01-01	.210 ± .037	D	.742 ± .037	ND	ND	.138 ± .008	ND	.003 ± .001	.386 ± .006

ND = Not Detectable

D = Decayed Away Before Analysis

Barrow, Alaska, 1975 (contd)

Date		DPM/10^3M^3						
ON	OFF	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac
01-01	01-15	ND	1.12 ± .03	9.77 ± .07	.124 ± .013	38.8 ± .5	.034 ± .027	.007 ± .030
01-15	02-01	ND	2.38 ± .04	20.6 ± .1	.241 ± .025		.215 ± .060	<.10
02-01	02-15	ND	2.42 ± .04	26.0 ± .2	.257 ± .027	37.2 ± .5	.183 ± .070	<.13
02-15	03-01	ND	1.91 ± .03	25.6 ± .2	.286 ± .021	49.6 ± .6	.168 ± .076	.139 ± .064
03-01	03-15	ND	2.03 ± .04	32.3 ± .2	.410 ± .030	21.6 ± .4	.122 ± .072	.063 ± .066
03-15	04-01	ND	2.36 ± .05	47.9 ± .2	.449 ± .033		.019 ± .086	.073 ± .072
04-01	04-15	ND	1.60 ± .03	44.4 ± .2	.505 ± .035	38.9 ± .6	<.086	.101 ± .075
04-15	05-01	ND	1.26 ± .04	47.7 ± .2	.538 ± .033	26.9 ± .5	.040 ± .086	.065 ± .071
05-01	05-15	ND	.326 ± .038	17.0 ± .1	.196 ± .021	7.98 ± .29	.076 ± .059	<.07
05-15	06-01	ND	.362 ± .030	23.3 ± .1	.296 ± .022	6.97 ± .27	.114 ± .056	.076 ± .047
06-01	06-15	ND	.125 ± .017	6.07 ± .09	.069 ± .016	2.11 ± .20	.024 ± .028	.026 ± .031
06-15	07-01	ND	.042 ± .012	4.06 ± .06	.062 ± .011	1.59 ± .14	.094 ± .035	.080 ± .024
07-01	07-16	ND	.032 ± .024	3.52 ± .05	.048 ± .007	2.08 ± .10	ND	.068 ± .017
08-05	08-11	D	D	1.56 ± .07	.024 ± .009	1.46 ± .10	.026 ± .021	.027 ± .014
08-21	09-15	D	D	1.39 ± .03	.027 ± .003	4.25 ± .07	.021 ± .006	.015 ± .004
09-15	10-01	D	D	1.51 ± .04	.023 ± .003	5.18 ± .10	.008 ± .009	.030 ± .008
10-01	11-01	D	D	1.03 ± .02	.018 ± .002	11.0 ± .1	<.010	.006 ± .004
11-01	12-01	D	D	1.02 ± .02	.022 ± .004	33.7 ± .2	.023 ± .006	.012 ± .004
12-01	01-01	D	D	1.49 ± .03	.032 ± .004	45.5 ± .2	.031 ± .007	.006 ± .004

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1976

Date		DPM/10^{3}M^3								
On	Off	^{7}Be	^{22}Na	^{40}K	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
01-01	02-01	127 ± 2	.009 ± .002	.083 ± .006	ND	.014 ± .002	.003 ± .001	.018 ± .014	.002 ± .001	<.008
02-01	03-01	254 ± 3	.023 ± .003	.080 ± .006	ND	.033 ± .003	.003 ± .002	.003 ± .014	.004 ± .001	<.010
03-01	03-29	215 ± 3	.022 ± .003	.132 ± .009	ND	.022 ± .003	.001 ± .002	.001 ± .009	<.003	<.012
03-29	04-28	141 ± 3	.013 ± .002	.131 ± .009	ND	.015 ± .002	.003 ± .001	<.016	.001 ± .001	<.006
06-01	06-28	76.1 ± .7	.005 ± .002	.269 ± .016	ND	.009 ± .002	.002 ± .001	<.006	.001 ± .001	<.006
06-28	07-28	82.1 ± .6	.007 ± .002	.321 ± .008	ND	.007 ± .001	.001 ± .001	<.005	.001 ± .001	<.005
07-28	08-19	27.2 ± .4	.005 ± .002	.514 ± .028	ND	.003 ± .001	<.001	<.003	.001 ± .002	<.005
08-19	09-01	51.5 ± .5	.003 ± .003	.149 ± .010	ND	.001 ± .002	<.002	.001 ± .002	.001 ± .005	<.008
09-01	10-01	41.7 ± .3	.004 ± .001	.038 ± .003	ND	.002 ± .001	<.001	<.001	<.002	<.002
10-01	11-01	131 ± 1	.001 ± .003	.082 ± .006	ND	.037 ± .003	.017 ± .002	.200 ± .010	.005 ± .006	<.010
11-01	12-01	166 ± 1	.017 ± .002	.102 ± .008	ND	.097 ± .004	.047 ± .003	.460 ± .009	.007 ± .003	<.010
12-01	12-31	165 ± 1	.015 ± .003	.071 ± .005	<.005	.075 ± .003	.033 ± .002	.283 ± .007	.003 ± .002	<.007

ND = Not Detectable

Barrow, Alaska, 1976 (contd)

Date		DPM/10^{3}M^3								
On	Off	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb	^{134}Cs
01 01	02 01	ND	.058 ± .038	.138 ± .023	<.30	.564 ± .031	ND	ND	.128 ± .005	<.003
02-01	03-01	<.016	.768 ± .064	1.57 ± .05	3.04 ± .22	1.50 ± .05	<.016	<.12	.264 ± .008	<.003
03-01	03-29	ND	.121 ± .038	.203 ± .026	.29 ± .12	1.08 ± .04	ND	ND	.247 ± .008	.003 ± .002
03-29	04-28	ND	.022 ± .019	.044 ± .012	<.095	.668 ± .032	ND	ND	.145 ± .007	<.003
06-01	06-28	ND	.010 ± .007	.018 ± .004	.004 ± .014	.517 ± .027	ND	ND	.090 ± .006	<.002
06-28	07-28	ND	.012 ± .005	.008 ± .003	.014 ± .009	.319 ± .024	ND	ND	.089 ± .006	.004 ± .001
07 28	08-19	ND	<.009	.001 ± .003	<.010	.036 ± .019	ND	ND	.019 ± .003	.002 ± .002
08 19	09 01	ND	.002 ± .005	.007 ± .003	<.010	.117 ± .026	ND	ND	.022 ± .005	.002 ± .002
09 01	10 01	ND	.003 ± .001	.001 ±.001	<.003	.103 ± .012	ND	ND	.012 ± .003	.002 ± .001
10 01	11-01	ND	7.31 ± .08	10.1 ± .1	2.23 ± .04	.320 ± .059	ND	<.024	.043 ± .008	.001 ± .002
11-01	12-01	ND	14.0 ± .1	19.2 ± .1	20.1 ± .1	1.67 ± .07	ND	<.014	.089 ± .012	.001 ± .002
12-01	12-31	<.005	8.47 ± .03	13.7 ± .1	16.5 ± .1	2.27 ± .06	<.011	<.010	.115 ± .011	.001 ± .002

ND = Not Detectable

Barrow, Alaska, 1976 (contd)

Date		DPM/10^3M^3							
On	Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac
01-01	02-01	.374 ± .006	D	D	1.29 ± .02	.040 ± .003	26.7 ± .2	.009 ± .005	.008 ± .004
02-01	03-01	.928 ± .009	D	6.29 ± .67	2.88 ± .03	.064 ± .005	38.6 ± .2	.004 ± .006	.010 ± .005
03-01	03-29	.812 ± .009	D	D	2.39 ± .03	.055 ± .005	47.2 ± .2	.002 ± .009	.015 ± .006
03-29	04-28	.482 ± .007	D	D	1.33 ± .02	.032 ± .003	20.9 ± .1	<.014	.007 ± .005
06-01	06-28	.334 ± .006	D	D	.725 ± .015	.023 ± .003	3.04 ± .06	.019 ± .008	.011 ± .005
06-28	07-28	.309 ± .006	D	D	.614 ± .013	.025 ± .002	2.59 ± .06	.024 ± .007	.021 ± .004
07-28	08-19	.089 ± .004	D	.007 ± .012	.143 ± .008	.006 ± .002	2.04 ± .06	<.014	.030 ± .007
08-19	09-01	.110 ± .005	ND	.018 ± .012	.170 ± .012	.014 ± .004	4.27 ± .10	.039 ± .014	.026 ± .003
09-01	10-01	.056 ± .002	ND	.003 ± .004	.100 ± .005	.007 ± .001	4.12 ± .06	.033 ± .007	.004 ± .003
10-01	11-01	.189 ± .006	5.91 ± .51	7.24 ± .05	1.76 ± .05	.013 ± .004	19.5 ± .2	.010 ± .006	.018 ± .011
11-01	12-01	.452 ± .007	9.67 ± .20	11.7 ± .1	4.31 ± .03	.021 ± .006	28.8 ± .2	<.021	.012 ± .009
12-01	12-31	.551 ± .007	2.38 ± .11	12.6 ± .1	3.58 ± .03	.043 ± .008	43.6 ± .2	.010 ± .008	.011 ± .004

ND = Not Detectable

D = Decayed away before analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71°18'N, 156°47'W) in 1977

Date		DPM/10^{3}M^3							
On	Off	^{7}Be	^{22}Na	^{40}K	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co
01-01	01-31	197 ± 1	.013 ± .002	.101 ± .007	ND	.026 ± .002	.009 ± .001	.054 ± .003	<.003
01-31	03-01	239 ± 1	.022 ± .002	.111 ± .006	ND	.018 ± .002	<.002	.005 ± .002	<.003
03-01	04-04	209 ± 1	.017 ± .002	.058 ± .004	ND	.015 ± .002	.002 ± .001	.004 ± .002	<.002
04-04	04-30	185 ± 1	.021 ± .002	.044 ± .004	ND	.044 ± .003	.005 ± .002	.008 ± .002	<.003
04-30	06-02	116 ± 1	.015 ± .003	.009 ± .001	ND	.102 ± .005	.006 ± .003	.015 ± .005	<.005
06-02	07-01	48.9 ± .3	.006 ± .003	.306 ± .020	ND	.109 ± .005	.011 ± .002	.014 ± .005	<.005
07-01	08-02	71.4 ± .3	.012 ± .003	.183 ± .018	ND	.201 ± .005	.015 ± .002	.027 ± .006	.007 ± .002
08-02	08-31	43.3 ± .2	.007 ± .003	.147 ± .010	ND	.117 ± .004	.005 ± .003	.012 ± .003	<.006
08-31	10-01	56.3 ± .3	<.015	.069 ± .006	ND	.132 ± .004	.019 ± .003	.215 ± .006	<.015
10-01	11-01	103 ± 1	.003 ± .004	.195 ± .010	ND	.239 ± .006	.042 ± .003	.340 ± .009	<.007
11-01	12-01	130 ± 1	.015 ± .004	.083 ± .010	ND	.353 ± .008	.044 ± .003	.196 ± .008	<.006
12-01	12-31	151 ± 1	.006 ± .003	.124 ± .014	ND	.242 ± .007	.018 ± .003	.051 ± .009	<.005

ND – Not detectable

Barrow, Alaska (71°18'N, 156°47'W) in 1977 (contd)

Date		DPM/10^3M^3								
ON	OFF	^{65}Zn	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110M}Ag	^{124}Sb	^{125}Sb
01-01	01-31	<.008	.007 ± .002	3.05 ± .03	4.88 ± .03	5.57 ± .03	1.12 ± .04	<.009	<.009	.103 ± .009
01-31	03-01	<.006	.009 ± .001	2.84 ± .02	4.86 ± .03	3.18 ± .02	.93 ± .04	<.007	<.006	.143 ± .010
03-01	04-04	<.007	.011 ± .002	3.29 ± .03	6.11 ± .03	2.77 ± .02	1.03 ± .04	<.007	<.009	.145 ± .011
04-04	04-30	<.008	.036 ± .003	8.73 ± .01	16.1 ± .1	5.74 ± .02	2.83 ± .07	<.010	<.010	.272 ± .013
04-30	06-02	<.017	.075 ± .005	15.4 ± .1	29.9 ± .1	10.3 ± .1	7.44 ± .10	<.014	<.014	.538 ± .07
06-02	07-01	<.015	.066 ± .005	12.6 ± .1	25.5 ± .1	5.96 ± .03	6.72 ± .10	<.014	<.018	.575 ± .016
07-01	08-02	<.021	.094 ± .005	16.6 ± .1	34.9 ± .1	4.74 ± .03	9.14 ± .10	ND	<.020	1.01 ± .07
08-02	08-31	<.012	.055 ± .004	7.52 ± .04	15.8 ± .1	2.12 ± .02	6.63 ± .17	<.015	<.021	.621 ± .013
08-31	10-01	<.012	.047 ± .005	11.3 ± .1	15.4 ± .1	5.45 ± .03	6.59 ± .08	<.023	<.021	.619 ± .014
10-01	11-01	<.018	.066 ± .005	15.1 ± .1	25.2 ± .1	9.79 ± .04	10.9 ± .1	<.018	<.019	1.17 ± .02
11-01	12-01	<.027	.071 ± .006	10.8 ± .1	21.1 ± .1	6.77 ± .04	17.1 ± .1	<.021	<.017	1.98 ± .02
12-01	12-31	<.025	.053 ± .006	6.15 ± .06	13.4 ± .1	2.38 ± .02	13.4 ± .1	<.020	<.028	1.56 ± .02

ND – Not detectable

Barrow, Alaska (71°18'N, 156°47'W) in 1977 (contd)

Date		DPM/$10^3 M^3$								
On	Off	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac
01-01	01-31	ND	.435 ± .006	.666 ± .053	3.83 ± .02	1.71 ± .02	.018 ± .004	23.8 ± .2	.013 ± .008	.006 ± .007
01-31	03-01	<.002	.504 ± .007	.241 ± .036	2.25 ± .02	1.67 ± .02	.038 ± .005	27.8 ± .2	<.013	.022 ± .006
03-01	04-04	<.002	.487 ± .006	D	1.80 ± .02	2.09 ± .02	.045 ± .004	29.9 ± .2	.014 ± .008	.009 ± .005
04-04	04-30	<.003	.651 ± .009	.037 ± .016	3.07 ± .02	5.64 ± .03	.059 ± .007	25.3 ± .2	.022 ± .007	.002 ± .008
04-30	06-02	<.005	1.01 ± .01	D	4.52 ± .02	13.1 ± .1	.106 ± .010	10.3 ± .1	<.036	.032 ± .018
06-02	07-01	<.005	.937 ± .012	D	2.49 ± .02	13.2 ± .1	.102 ± .007	2.02 ± .07	.035 ± .020	.030 ± .016
07-01	08-02	<.005	1.69 ± .01	D	2.40 ± .02	23.3 ± .1	.195 ± .009	2.79 ± .07	.042 ± .019	<.031
08-02	08-31	<.005	1.01 ± .01	<.08	.749 ± .010	12.7 ± .1	.099 ± .008	3.58 ± .07	.027 ± .014	.007 ± .010
08-31	10-01	<.007	.977 ± .009	18.3 ± .2	9.12 ± .02	14.1 ± .1	.107 ± .009	2.83 ± .07	<.028	.028 ± .011
10-01	11-01	<.006	1.99 ± .01	9.42 ± .22	12.6 ± .1	9.04 ± .05	.219 ± .008	8.38 ± .11	<.031	.042 ± .015
11-01	12-01	<.007	3.59 ± .02	.536 ± .030	5.15 ± .02	37.0 ± .1	.394 ± .010	19.8 ± .1	<.055	<.050
12-01	12-31	.008 ± .003	2.69 ± .01	.13 ± .30	1.53 ± .02	27.2 ± .1	.327 ± .008	30.0 ± .2	<.046	<.042

D = Decayed away before analysis

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71° 18'N, 156° 47'W) in 1978

DATE		DPM/10^3 M^3								
ON	OFF	^{7}Be	^{22}Na	^{40}K	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
12-31	01-31	117 ± 1	.011 ± .003	.109 ± .009	ND	.173 ± .005	.009 ± .002	.009 ± .005	.042 ± .002	.008 ± .003
01-31	02-28	142 ± 1	.013 ± .003	.053 ± .008	ND	.272 ± .007	.016 ± .003	<.015	<.006	.004 ± .006
02-28	03-31	151 ± 1	.019 ± .003	.026 ± .002	ND	.308 ± .006	.021 ± .002	.011 ± .006	<.004	<.012
03-31	05-01	160 ± 1	.018 ± .003	.041 ± .003	ND	.339 ± .006	.030 ± .003	.022 ± .006	.006 ± .002	.030 ± .008
05-01	06-01	121 ± 1	.018 ± .003	.019 ± .002	ND	.303 ± .006	.017 ± .003	.091 ± 040	.004 ± .002	.012 ± .007
06-01	07-01	29.8 ± 2	.006 ± .002	.028 ± .002	ND	.062 ± .004	.007 ± .002	<.006	.002 ± .002	.005 ± .005
09-01	10-01	51.5 ± .6	.002 ± .001	.107 ± .028	<.002	.029 ± .002	.004 ± .001	<.002	.001 ± .001	<.003
10-01	11-01	94.2 ± .4	.004 ± .002	<.025	<.002	.035 ± .002	.002 ± 001	.002 ± .002	<.001	<.004

ND= Not Detectable

Alaska (71° 18'N, 156° 47'W) in 1978

DATE		DPM/10^{3}M^3								
ON	OFF	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb	^{134}Cs
12-31	01-31	.051 ± .005.	3.00 ± .04	6.77 ± .04	.527 ± .017	9.92 ± .09	<.014	<.023	1.17 ± .02	.004 ± .002
01-31	02-28	.058 ± .005	3.67 ± 04	8.21 ± 04	.312 ± .014	15.1 ± 1	<.018	<.025	1.94 ± 02	.006 ± .003
02-28	03-31	.057 ± .006	3.07 ± .04	6.84 ± .04	.271 ± .025	17.4 ± 1	<.014	.073 ± .018	2.24 ± .02	.006 ± .002
03-31	05-01	.066 ± .005	3.63 ± .04	7.73 ± .04	8.14 ± .05	21.2 ± .1	<.015	.291 ± .020	2.74 ± .02	.006 ± .003
05-01	06-01	.045 ± .004	2.09 ± .03	4.48 ± .03	3.00 ± .02	19.6 ± .1	<.013	.089 ± .011	2.43 ± .02	.008 ± .002
06-01	07-01	.006 ± .003	.275 ± .012	.650 ± .013	.053 ± .006	4.32 ± .07	<.012	.005 ± .007	.570 ± .012	.002 ± .002
09-01	10-01	.002 ± .002	.081 ± .008	.140 ± .007	.011 ± .005	1.65 ± .04	<.004	<.006	.290 ± .008	.001 ± .002
10-01	11-01	.006 ± .002	.061 ± .006	.139 ± .005	.010 ± .004	2.29 ± .05	<.004	.006 ± .004	.389 ± .010	.001 ± .002

Alaska (71° 18'N, 156° 47'W) in 1978 (contd)

DATE		DPM/$10^3 M^3$							
ON	OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac
12-31	01-31	2.13 ± .01	ND	.220 ± .020	18.4 ± .1	.220 ± .009	16.5 ± .1	<.020	.007 ± .010
01-31	02-28	3.51 ± .02	ND	.079 ± .015	30.9 ± .1	.385 ± .012	21.8 ± .2	.061 ± .022	<.036
02-28	03-31	4.03 ± .02	ND	.066 ± .030	31.7 ± .1	.444 ± .010	27.3 ± .1	.026 ± .009	.002 ± .010
03-31	05-01	4.93 ± .02	5.39 ± .64	4.35 ± .04	24.6 ± .1	.556 ± .011	21.1 ± .1	.007 ± .013	.014 ± .013
05-01	06-01	4.40 ± .02	.84 ± .11	1.07 ± .02	20.1 ± .1	.483 ± .010	7.95 ± .08	.006 ± .011	.022 ± .011
06-01	07-01	1.02 ± .011	<.09	.009 ± .008	6.73 ± .04	.110 ± .007	1.87 ± .06	.022 ± .011	.021 ± .009
09-01	10-01	.565 ± .007	.24 ± .16	<.009	2.96 ± .02	.059 ± .004	2.81 ± .08	.013 ± .008	.007 ± .006
10-01	11-01	.862 ± .009	<.031	<.006	4.09 ± .03	.089 ± .005	8.65 ± .09	<.006	.011 ± .006

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Barrow, Alaska (71° 18'N, 156° 47'W) in 1979

DATE ON	DATE OFF	DPM/$10^3 M^3$ ^{7}Be	^{22}Na	^{40}K	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
01-01	02-01	153 ± 1	.012 ± .002	.300 ± .024	.003 ± .002	.045 ± .002	.004 ± .001	.024 ± .016	<.001	<.002
02-01	03-01	138 ± 1	.008 ± .002	.024 ± .026	.002 ± .003	.034 ± .002	<.001	<.002	.001 ± .001	.001 ± .006
03-01	04-01	144 ± 1	.014 ± .002	.116 ± .023	.003 ± .002	.046 ± .002	.003 ± .001	.001	.001 ± .001	.002 ± .002
04-01	05-01	171 ± 1	.021 ± .002	.389 ± .032	<.002	.052 ± .003	.003 ± .001	<.003	.005 ± .001	<.006
05-01	06-01	109 ± 1	.011 ± .002	.085 ± .028	<.003	.035 ± .002	.002 ± .001	.002 ± .003	<.001	.003 ± .003
06-01	07-01	46.4 ± .3	.004 ± .002	.188 ± .031	.002 ± .002	.012 ± .002	<.001	.001 ± .001	<.001	.003 ± .003
08-01	09-01	27.1 ± .3	.002 ± .001	.118 ± .030	.003 ± .002	.004 ± .001	<.001	.001 ± .005	<.002	<.004
09-01	10-01	48.2 ± .3	.005 ± .002	.133 ± .029	<.004	.006 ± .001	.002 ± .001	<.003	<.002	<.003
10-01	11-01	16.0 ± .2	<.002	.062 ± .027	<.003	.002 ± .001	.001 ± .001	<.002	<.001	<.002
11-01	11-31	110 ± 1	.005 ± .002	.107 ± .026	<.004	.006 ±.001	<.002	.002 ± .003	.003 ± .001	<.005
12-01	01-01	86.3 ± .4	.005 ± .001	.123 ± .028	<.003	.002 ± .001	<.002	<.003	<.001	<.004

Barrow, Alaska (71° 18'N, 156° 47'W) in 1979

DATE ON	DATE OFF	^{88}Y	^{95}Zn	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb	^{134}Cs
		DPM/10^3M^3								
01 01	02-01	.005 ± .002	.110 ± .006	.165 ± .006	.566 ± .010	2.86 ± .05	.001 ± .013	.017 ± .005	.518 ± .011	<.002
02 01	03-01	.002 ± .002	.024 ± .005	.051 ± .004	.022 ± .008	2.11 ± .05	<.004	<.008	.430 ± .010	.001 ± .001
03 01	04-01	.005 ± .002	.020 ± .003	.045 ± .003	.005 ± .004	2.57 ± .04	<.003	<.005	.531 ± .009	<.001
04 01	05 01	.001 ± .004	.022 ± .006	.047 ± .004	.011 ± .005	3.40 ± .05	.007 ± .004	<.004	.759 ± .012	.002 ± .001
05 01	06 01	.004 ± .002	.003 ± .012	.031 ± .004	.009 ± .007	2.69 ± .05	<.004	.007 ± .008	.524 ± .011	<.001
06 01	07 01	.001 ± .005	.001 ± .007	.005 ± .002	<.003	1.05 ± .03	<.003	.005 ± .005	.221 ± .008	<.001
08 01	09 01	<.004	<.007	.005 ± .002	<.011	.185 ± .018	<.008	<.015	.058 ± .004	<.002
09 01	10 01	<.004	.006 ± .003	.003 ± .001	.005 ± .003	.382 ± .022	<.007	<.013	.100 ± .005	<.002
10-01	11 01	<.002	.003 ± .002	.002 ± .001	<.003	.056 ± .012	<.006	<.006	.019 ± .003	<.001
11 01	11-30	.002 ± .002	<.008	<.005	<.012	.362 ± .021	<.006	.010 ± .008	.089 ± .006	<.002
12 01	01 01	.001 ± .003	<.007	.002 ± .003	.002 ± .003	.264 ± .018	<.006	.004 ± .006	.080 ± .006	<.002

Barrow, Alaska (71°18'N, 156°47'W) in 1979 (contd)

Date ON	Date OFF	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac
		DPM/10^3M^3							
01-01	02-01	1.14 ± .01	.887 ± .072	.817 ± .012	4.29 ± .03	.100 ± .006	19.8 ± .1	.008 ± .005	.009 ± .005
02-01	03-01	.944 ± .009	<.29	.022 ± .016	3.30 ± .03	.094 ± .005	22.2 ± .1	.018 ± .006	.018 ± .004
03-01	04 01	1.21 ± .01	.01 ± .59	.011 ± .009	3.93 ± .02	.123 ± .005	25.0 ± .1	.008 ± .008	.008 ± .004
04 01	05 01	1.75 ± .01	.006 ± .090	.008 ± .007	5.71 ± .03	.180 ± .006	18.3 ± .1	.012 ± .011	<.010
05-01	06-01	1.15 ± .01	<.29	.004 ± .005	3.19 ± .03	.112 ± .005	7.00 ± .08	.014 ± .006	.015 ± .006
06 01	07-01	.408 ± .007	<.07	.006 ± .006	1.34 ± .02	.052 ± .003	1.93 ± .05	.022 ± .006	.013 ± .005
08-01	09 01	.163 ± .004	.9 ± 1.1	<.020	.315 ± .009	.015 ± .002	2.83 ± .05	.011 ± .005	.010 ± .005
09-01	10-01	.198 ± .004	<.47	.005 ± .012	.475 ± .011	.018 ± .001	2.61 ± .05	.015 ± .005	.004 ± .004
10-01	11 01	.046 ± .002	<.12	.005 ± .003	.087 ± .005	.005 ± .001	2.14 ± .05	.014 ± .005	.010 ± .004
11-01	11-30	.263 ± .005	.16 ± .64	.005 ± .015	.465 ± .011	.020 ± .003	12.7 ± .1	<.008	.014 ± .005
12-01	01-01	.214 ± .005	.03 ± .13	.013 ± .009	.385 ± .010	.020 ± .003	19.3 ± .1	.002 ± .005	.008 ± .004

Radionuclide Concentrations in Surface Air at Makah, Washington
(48°22'N, 124°37'W) in 1967 and 1968.

Date ON	Date OFF	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
		DPM/10^3M^3								
10-01-67	10-8-67	82.4 ± .8[a]	.007 ± .001	.001 ± .001	.051 ± .004	.002 ± .010[a]	.029 ± .007	.005 ± .001	.037 ± .007	.001 ± .001
10-15	11-01	124 ± 2	.012 ± .002	<.003	.066 ± .010	.065 ± .024	.063 ± .013	.014 ± .002	.093 ± .014	.001 ± .001
11-01	11-14	225 ± 2	.016 ± .001	<.003	.631 ± .010	.059 ± .025	.086 ± .013	.012 ± .002	.066 ± .012	.001 ± .001
11-14	11-28	107 ± 1	.010 ± .001	.003 ± .001	.163 ± .007	.025 ± .014	.066 ± .009	.008 ± .001	.027 ± .009	.001 ± .001
01-10-68	02-18-68	151 ± 1			.539 ± .018[a]	.049 ± .017			.348 ± .037[a]	
02-21-68	03-9-68	120 ± 1			.619 ± .029	.102 ± .026			.344 ± .060	
03-12	04-02	136 ± 1	.029 ± .002	<.011	.709 ± .027	.089 ± .023	.199 ± .024	.052 ± .002	.395 ± .057	.003 ± .001
04-02	05-04	247 ± 2	.038 ± .002	<.009	1.56 ± .03	.149 ± .029	.210 ± .019	.081 ± .002	.892 ± .050	.006 ± .001
08-03	09-02	124 ± 1	.028 ± .003	<.016	.699 ± .024	.108 ± .016	.031 ± .029	.057 ± .003	.295 ± .055	.003 ± .001
09-05	09-11	159 ± 2	.070 ± .006	<.026	.402 ± .1048	.103 ± .035	.058 ± .052	.029 ± .006	.70 ± .11	.005 ± .003
09-12	10-01	140 ± 1	.021 ± .002	<.006	.377 ± .021	.025 ± .015	.029 ± .012	.036 ± .002	.325 ± .051	.002 ± .001
10-02	11-05	81.3 ± .5	.006 ± .001	<.004	.216 ± .014	.078 ± .009	.018 ± .008	.021 ± .001	.135 ± .029	.001 ± .001
11-05	11-18	156 ± 1	.024 ± .002	<.008	.380 ± .029	.049 ± .018	.028 ± .015	.027 ± .002	.276 ± .070	.001 ± .001
11-25	01-01	12.9 ± .2	.001 ± .001	<.003	.067 ± .006	.016 ± .004	.004 ± .005	.006 ± .001	.042 ± .015	<.001

(a) - First Analysis by Ge (Li) Diode

Radionuclide Concentrations in Surface Air at Makah, Washington
(48°22 'N, 124°37'W) in 1967 and 1968. (contd)

Date ON	Date OFF	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
		DPM/10^3M^3								
10-01-67	10-08-17	6.71 ± .12	9.24 ± .09[a]	1.04 ± .09[a]	.702 ± .002	.001 ± .002	.001 ± .002	.306 ± .079[a]	<.002	1.12 ± .01
10-15	11-01	9.24 ± .23	13.9 ± .2	1.43 ± .16	1.25 ± .04	.004 ± .004	<.004	.91 ± .16	<.004	2.20 ± .01
11-01	11-14	27.4 ± .3	50.3 ± .3	3.31 ± .17	2.05 ± .05	.003 ± .004	.003 ± .003	1.45 ± .23	<.003	3.68 ± .01
11-14	11-28	12.7 ± .2	21.4 ± .2	2.17 ± .17	1.31 ± .03	.006 ± .003	<.003	.54 ± .15	<.002	1.86 ± .01
01-10-68	02-18-68	54.2 ± .3	47.1 ± .1	47.6 ± .3				2.16 ± .11		4.87 ± .05[a]
02-21	03-09	42.1 ± .3	63.9 ± .2	23.2 ± .2				2.98 ± .20		6.22 ± .08
03-12	04-02	35.2 ± .3	63.7 ± .2	14.6 ± .2	30.1 ± .1	.016 ± .004	<.010	4.34 ± .18	<.004	6.68 ± .07
04-02	05-04	47.8 ± .3	92.8 ± .3	13.3 ± .2	49.0 ± .1	.031 ± .004	<.008	6.61 ± .16	.029 ± .003	11.0 ± .1
08-03	09-02	5.62 ± .08	13.4 ± .1	.753 ± .046	40.9 ± .2	.017 ± .006	<.013	4.16 ± .09	.006 ± .004	6.80 ± .05
09-05	09-11	7.66 ± .21	14.3 ± .2	2.04 ± .12	27.9 ± .4	.019 ± .015	<.024	2.87 ± .18	<.015	4.51 ± .12
09-02	10-01	3.84 ± .08	7.98 ± .08	1.02 ± .05	23.3 ± .1	.012 ± .003	<.005	2.45 ± .08	<.004	4.11 ± .05
10-02	11-05	2.06 ± .05	4.27 ± .05	.748 ± .034	9.83 ± .05	.003 ± .002	<.003	1.61 ± .05	<.002	1.98 ± .03
11-05	11-18	2.89 ± .10	5.68 ± .08	.909 ± .058	18.1 ± .1	.010 ± .004	<.006	2.19 ± .10	.004 ± .002	4.00 ± .06
11-25	01-01	.416 ± .021	.931 ± .019	.094 ± .012	1.89 ± .04	.004 ± .002	<.002	.452 ± .023	<.001	.341 ± .011

(a) - First Analysis by Ge (Li) Diode

Radionuclide Concentrations in Surface Air at Makah, Washington
(48°22 'N, 124°37'W) in 1967 and 1968.

Date		DPM/$10^3 M^3$				
ON	OFF	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Th	^{232}Ra
10-01-67	10-08-67	.040 ± .011	1.64 ± .05[(a)]	2.78 ± .12[(a)]	.003 ± .003	.021 ± .005
10-15	11-01	.044 ± .009	2.16 ± .09	5.05 ± .23	.001 ± .006	.006 ± .009
11-01	11-14	.045 ± .011	5.49 ± .11	16.1 ± .2	.014 ± .010	.023 ± .008
11-14	11-28	.019 ± .006	2.04 ± .07	7.12 ± .20	.009 ± .005	.008 ± .006
01-10-68	02-18-67	65.7 ± 1.5	64.7 ± .2	49.5 ± .2		
02-21	03-09	7.52 ± .22	22.4 ± .2	63.0 ± .3		
03-12	04-02	1.52 ± .26	12.2 ± .1	89.2 ± .2	.010 ± .008	.019 ± .004
04-02	05-04	<.43	15.8 ± .2	156 ± 1	.020 ± .009	.029 ± .004
08-03	09-02	.039 ± .080	.579 ± .049	91.8 ± .3	<.030	.017 ± .006
09-05	09-11	1.78 ± .13	6.16 ± .15	63.9 ± .5	.033 ± .033	.048 ± .027
09-12	10-01	.571 ± .019	1.99 ± .06	53.1 ± .2	<.015	.009 ± .004
10-02	11-05	.288 ± .028	1.75 ± .04	34.5 ± .2	.003 ± .004	.011 ± .003
11-05	11-18	.141 ± .020	1.86 ± .07	41.2 ± .3	.010 ± .009	.008 ± .006
11-25	01-01	.012 ± .007	.184 ± .014	7.30 ± .07	.005 ± .004	.001 ± .003

(a) = First Analysis by Ge (Li) Diode

Radionuclide Concentrations in Surface Air at Makah, Washington (48°22 'N, 124°37'W) in 1969 and 1970.

Date ON	Date OFF	^{7}Be	^{22}Na	^{46}Se	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
		DPM/10^3M^3								
01-01-69	02-05-69	58.1 ± .4	.006 ± .001	<.004	.196 ± .011	.027 ± .008	.007 ± .010	.023 ± .001	.125 ± .026	<.001
02-05	02-23	87.3 ± .6			.147 ± .017	.033 ± .012			.101 ± .036	
02-24	03-18	145 ± 1			.218 ± .018	.075 ± .015			.082 ± .038	
03-18	04-07	141 ± 1			.294 ± .019	.047 ±.016			.082 ± .032	
04-07	05-06	65.5 ± .6	.004 ± .001	<.006	.161 ± .011	.045 ± .011	<.034	.016 ± .011	.116 ± .022	.002 ± .001
05-10	06-12	110 ± 1	.004 ± .002	.002 ± .005	.455 ± .020	.099 ± .019	<.051	.027 ± .001	.215 ± .040	.008 ± .001
06-12	07-29	53.8 ± .7	.026 ± .002	<.015	.300 ± .014	.069 ± .014	.013 ± .031	.025 ± .002	.089 ± .029	.016 ± .001
07-29	09-25	99.1 ± .7	<.002	<.009	.526 ± .016	.075 ± .015	<.039	.013 ± .001	.067 ± .024	.011 ± .001
09-25	10-20	142 ± 1	<.003	<.005	.431 ± .022	.063 ± .018	.027 ± .026	.012 ± .002	.087 ± .046	.008 ± .001
10-22	11-16	41.9 ± .7	<.002		.107 ± .011	.011 ± .008	<.021	.001 ± .001	.004 ± .023	.002 ± .001
12-12	01-08-70	83.8 ± .7			.154 ± .013	.020 ± .010			.021 ± .027	
01-09-70	02-05-70	66.5 ± .5	.009 ± .001	<.005	.123 ±.012	.022 ± .008	.017 ± .006	.003 ± .001	<.050	.004 ± .001
02-09	03-20	38.7 ± .4	.003 ± .002	.001 ± .004	.098 ± .009	.031 ± .007	.002 ± .018	.004 ± .001	.045 ± .020	.020 ± .003
03-24	05-16	128 ± 2	.035 ± .002	<.010	.509 ± .023	.156 ± .021	.133 ± .022	.021 ± .001	ND	.103 ± .003
05-10	06-28	119 ± 1	.039 ± .002	<.008	1.44 ± .03	.199 ± .025	.144 ± .016	.018 ± .001	ND	.134 ± .003
06-28	07-30	98.1 ± 3.7			.732 ± .086	.203 ± .054			ND	
07-31	09-22	83.7 ± .6			.305 ± .014	.093 ± .011			ND	
10-15	11-03	305 ± 1			.561 ± .030	.207 ± .027			.106 ± .062	

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Makah, Washington
(48°22 'N, 124°37'W) in 1969 and 1970.

Date On	Date Off	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
		DPM/10³M³								
01 01 69	02-05 69	2.76 ± .005	4.18 ± .04	2.54 ± .04	5.31 ± .04	.006 ± .002	.002 ± .003	1.33 ± .04	<.002	1.48 ± .02
02 05	02-23	5.69 ± .009	7.85 ± .07	7.37 ± .07	6.71 ± .23			1.15 ± .07		2.48 ± .04
02 24	03 18	10.7 ± .1	18.2 ± .1	12.5 ± .1	11.1 ± .3			2.21 ± .08		4.19 ± .04
03 18	04 07	14.7 ± .1	24.8 ± .1	14.8 ± .1	12.7 ± .3			2.47 ± .09		4.74 ± .05
04 07	05 06	8.22 ± .10	16.7 ± .1	8.19 ± .09	6.60 ± .05	.002 ± .002	.001 ± .005	1.27 ± .05	<.002	2.36 ± .03
05-10	06-12	45.3 ± .2	94.2 ± .2	36.3 ± .2	25.7 ± .1	.012 ± .003	.008 ± .007	3.28 ± .10	.008 ± .002	5.15 ± .04
06-12	07-29	31.1 ± .2	69.0 ± .2	19.7 ± .1	59.3 ± .2	.010 ± .004	<.015	2.18 ± .07	.016 ± .004	3.04 ± .03
07-29	09-25	37.0 ± .2	83.2 ± .2	14.8 ± .1	35.5 ± .1	.014 ± .002	<.011	3.35 ± .08	.020 ± .002	5.27 ± .03
09-25	10-20	19.5 ± .2	45.7 ± .2	6.50 ± .11	26.5 ± .2	.009 ± .003	.012 ± .005	2.87 ± .09	.012 ± .005	4.54 ± .04
10 22	11-16	3.64 ± .10	8.27 ± .10	1.57 ± .09	5.85 ± .05	.003 ± .002	<.007	.624 ± .039	<.002	.924 ± .020
12-12	01-08 70	4.54 ± .08	9.81 ± .08	2.27 ± .06	6.61 ± .18			1.03 ± .05		1.15 ± .02
01 09 70	02 05 70	4.13 ± .07	8.34 ± .06	2.44 ± .04	7.91 ± .05	.003 ± .002	<.003	.978 ± .049	<.002	1.35 ± .02
02 09	03 20	7.64 ± .08	16.5 ± .1	5.76 ± .07	6.91 ± .08	.006 ± .004	<.008	.838 ± .044	<.003	1.33 ± .02
03-24	05-10	43.6 ± .4	98.8 ± .4	22.5 ± .3	51.5 ± .1	.006 ± .002	<.011	4.26 ± .10	.010 ± .002	6.17 ± .04
05-10	06 28	55.1 ± .2	125 ± 1	21.7 ± .1	66.8 ± .1	.005 ± .002	<.007	6.42 ± .11	.035 ± .003	8.34 ± .04
06 28	07-30	39.4 ± .7	88.8 ± .7	12.8 ± .7	39.2 ± 1.1[a]			6.13 ± .27		7.25 ± .13
07 31	09-22	13.3 ± .1	30.7 ± .1	3.08 ± .07	21.4 ± .2			3.19 ± .06		4.22 ± .03
10 15	11-3	23.3 ± .2	42.4 ± .2	20.6 ± .2	34.3 ± .5			5.32 ± .14		7.68 ± .07

(a) - First Analysis By Ge (Li) Diode

Radionuclide Concentrations in Surface Air at Makah, Washington (48°22 'N, 124°37'W) in 1969 and 1970.

Date		DPM/10^3M^3				
ON	OFF	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{232}Th
01-01-69	02-05-69	5.97 ± .26	2.97 ± .04	22.6 ± .1	<.006	.007 ± .002
02-05	02-23	1.27 ± .02	10.8 ± .1	23.3 ± .2		
02-24	03-18	3.64 ± .07	16.9 ± .1	38.3 ± .2		
03-18	04-07	D	11.2 ± .1	43.4 ± .2		
04-07	05-06	D	35.5 ± .2	25.3 ± .1	.001 ± .005	.022 ± .004
05-10	06-12	D	16.9 ± .1	84.2 ± .3	.008 ± .008	.022 ± .003
06-12	07-29	D	10.4 ± .1	69.6 ± .2	<.021	.018 ± .004
07-29	09-25	D	4.55 ± .13	100 ± 1	<.009	.014 ± .002
09-25	10-20	.900 ± .069	2.08 ± .12	86.8 ± .3	.036 ± .011	.023 ± .004
10-22	11-16	.58 ± .26	2.67 ± .07	17.5 ± .1	<.007	.008 ± .003
12-12	01-08-70	D		24.5 ± .2		
01-09-70	02-05-70	.090 ± .008	2.55 ± .04	23.0 ± .1	<.007	.007 ± .003
02-09	03-20	D	5.34 ± .06	23.3 ± .1	<.012	.011 ± .005
03-24	05-10	D	22.5 ± .3	134 ± 1	.035 ± .008	.040 ± .004
05-10	06-28	.058 ± .031	16.4 ± .1	199 ± 1	.067 ± .009	.026 ± .003
06-28	07-30		9.88 ± .81	173 ± 1		
07-31	09-22		4.06 ± .08	84.9 ± .2		
10-15	11-03	32.9 ± .4	30.2 ± .2	129 ± 1		

D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Quillayute, Washington (47° 57'N, 124° 23'W) in 1973.

Date		DPM/10^3M^3							
ON	Off	^{7}Be	^{22}Na	^{40}K	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
02-15	02-23	207 ± 1	.031 ± .008	1.17 ± .09	ND	ND	.058 ± .009	ND	.017 ± .020
02-23	03-13	103 ± 1	.010 ± .004	.687 ± .054	.032 ± .003	.011 ± .003	ND	.007 ± .003	ND
03-13	03-31	133 ± 1	.009 ± .003	.060 ± .005	.027 ± .003	ND	ND	.132 ± .026	ND
03-31	04-15	193 ± 1	.014 ± .005	.778 ± .065	.041 ± .004	ND	ND		.012 ± .002
04-15	04-30	126 ± 1	.019 ± .004	.587 ± .060	.033 ± .004	ND	ND	ND	.022 ± .010
05-06	05-20	191 ± 1	.032 ± .006	.918 ± .060	.064 ± .005	ND	ND	ND	.010 ± .011
05-20	06-03	173 ± 1	.019 ± .003	.821 ± .063	.031 ± .003	.024 ± .003	ND	ND	ND
06-03	06-17	73.4 ± .3	.002 ± .002	.664 ± .045	.015 ± .002	.006 ± .001	ND	ND	ND
06-17	07-01	86.6 ± .4	.008 ± .002	.715 ± .048	.016 ± .002	.013 ± .002	ND	ND	ND
07-01	07-09	83.4 ± .9	ND	2.35 ± .34	.024 ± .018	ND	ND	ND	ND
07-09	07-22	86.3 ± .5	ND	14.3 ± .3	.027 ± .007	ND	ND	ND	ND
08-01	08-10	56.9 ± .3	.007 ± .003	.689 ± .050	.008 ± .002	ND	ND	ND	ND
08-10	08-20	80.8 ± .5	.003 ± .003	.671 ± .048	.013 ± .002	ND	ND	ND	ND
08-20	08-31	132 ± 1	.008 ± .002	.597 ± .041	.014 ± .002	ND	ND	ND	ND
08-31	09-15	109 ± 1	.009 ± .003	.332 ± .026	.008 ± .003	ND	ND	ND	ND
09-15	09-17	262 ± 1	ND	3.32 ± .27	.020 ± .011	ND	ND	ND	ND
09-19	09-22	78.8 ± 1.2	ND		ND	ND	ND	ND	ND
10-07	10-10	108 ± 2	ND	2.42 ± .20	ND	ND	ND	ND	ND
10-14	10-28	150 ± 1	.012 ± .003	.774 ± .054	.011 ± .002	.003 .002	ND	ND	ND
10-28	11-11	123 ± 1	.006 ± .002	.624 ± .048	.014 ± .003	ND	ND	ND	ND
11-11	11-25	99.1 ± .9	ND	.727 ± .056	.010 ± .003	ND	ND	ND	ND
11-25	12-09	99.2 ± .8	.007 ± .002	.686 ± .052	.023 ± .008	ND	.010 ± .006	ND	ND

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Quillayute, Washington (47° 57'N, 124° 23'W) in 1973.

Date		DPM/10^{3}M^3							
ON	OFF	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb
02-15	02-23	ND	.254 ± .019	.595 ± .022	.115 ± .011	3.20 ± .11	ND	ND	.533 ± .029
02-23	03-13	ND	.128 ± .010	.269 ± .007	.036 ± .007	1.38 ± .04	.013 ± .009	ND	.334 ± .010
03-13	03-31	ND	.126 ± .013	.224 ± .009	.050 ± .012	1.56 ± .05	ND	ND	.370 ± .015
03-31	04-15	ND	.082 ± .014	.226 ± .009	.041 ± .009	2.13 ± .07	ND	ND	.597 ± .024
04-15	04-30	ND	.068 ± .012	.120 ± .008	.013 ± .005	1.53 ± .06	ND	ND	.386 ± .019
05-06	05-20	ND	.074 ± .011	.166 ± .008	.022 ± .006	1.61 ± .05	ND	ND	.734 ± .027
05-20	06-03	ND	.027 ± .008	.096 ± .006	ND	1.79 ± .06	ND	ND	.458 ± .016
06-03	06-17	ND	.012 ± .003	.040 ± .003	ND	.064 ± .012	ND	ND	.186 ± .010
06-17	07-01	ND	.020 ± .005	.035 ± .003	ND	.733 ± .034	ND	ND	.226 ± .008
07-01	07-09	ND	.913 ± .071	.275 ± .029	2.87 ± .06	.49 ± .18	ND	ND	.113 ± .063
07-09	07-22	ND	.420 ± .024	.222 ± .012	1.67 ± .02	.651 ± .067	ND	ND	.186 ± .023
08-01	08-10	ND	.567 ± .018	.613 ± .017	1.28 ± .02	.461 ± .031	ND	ND	.101 ± .009
08-10	08-20	ND	.300 ± .012	.370 ± .009	.552 ± .010	.354 ± .028	ND	ND	.114 ± .009
08-20	08-31	ND	.721 ± .016	.878 ± .012	1.26 ± .01	.526 ± .029	ND	ND	.135 ± .011
08-31	09-15	ND	1.39 ± .04	1.55 ± .02	1.63 ± .03	.503 ± .043	ND	ND	.081 ± .014
09-15	09-17	ND	2.98 ± .28	5.82 ± .25	3.26 ± .36	1.26 ± .16	ND	ND	.189 ± .029
09-19	09-22	ND	.612 ± .077	1.57 ± .07	1.18 ± .06	--	ND	ND	.060 ± .036
10-07	10-10	ND	1.22 ± .13	2.69 ± .13	1.32 ± .16	.222 ± .088	ND	ND	.043 ± .016
10-14	10-28	ND	2.41 ± .04	3.78 ± .03	2.13 ± .02	.626 ± .044	ND	ND	.108 ± .013
10-28	11-11	ND	2.43 ± .07	5.01 ± .07	1.76 ± .06	.626 ± .048	ND	ND	.081 ± .008
11-11	11-25	ND	2.53 ± .08	5.21 ± .07	1.77 ± .06	.786 ± .047	ND	ND	.083 ± .009
11-25	12-09	ND	4.13 ± .09	8.72 ± .08	2.22 ± .6	1.15 ± .06	ND	ND	.120 ± .010

ND - Not Detectable

Radionuclide Concentrations in Surface Air at Quillayute, Washington (47° 57'N, 124° 23'W) in 1973.

Date ON	Date OFF	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{228}Ac
		DPM/10^3M^3							
02-15	02-23	.004 ± .006	1.73 ± .03	ND	ND	5.55 ± .06	.156 ± .031	ND	.064 ± .032
02-23	03-13	.008 ± .003	.928 ± .009	ND	.033 ± .013	2.56 ± .02	.078 ± .007	ND	.021 ± .010
03-13	03-31	ND	1.08 ± .02	ND	ND	2.74 ± .03	.091 ± .009	ND	ND
03-31	04-15	ND	1.73 ± .02	ND	ND	3.96 ± .05	.125 ± .016	ND	.027 ± .018
04-15	04-30	ND	1.17 ± .02	ND	ND	2.71 ± .04	.092 ± .014	ND	.010 ± .016
05-06	05-20	ND	2.33 ± .02	ND	ND	4.59 ± .05	.154 ± .018	ND	.010 ± .020
05-20	06-03	ND	1.58 ± .02	ND	ND	2.96 ± .03	.114 ± .008	ND	ND
06-03	06-17	ND	.691 ± .011	ND	ND	1.33 ± .02	.054 ± .005	ND	ND
06-17	07-01	ND	.794 ± .012	ND	ND	1.40 ± .02	.054 ± .005	ND	ND
07-01	07-09	ND	.854 ± .040	3.71 ± .20	1.30 ± .04	1.10 ± .11	.477 ± .049	ND	ND
07-09	07-22	.021 ± .007	.720 ± .016	1.56 ± .09	.488 ± .014	.897 ± .004	.003 ± .017	ND	.324 ± .042
08-01	08-10	ND	.476 ± .009	.557 ± .057	.748 ± .010	.770 ± .018	.024 ± .005	ND	ND
08-10	08-20	ND	.540 ± .009	.234 ± .029	.382 ± .007	.708 ± .017	.034 ± .005	ND	ND
08-20	08-31	ND	.683 ± .010	.358 ± .030	.803 ± .008	1.06 ± .02	.042 ± .005	ND	ND
08-31	09-15	ND	.567 ± .013	.018 ± .003	1.01 ± .02	.904 ± .025	.046 ± .008	ND	ND
09-15	09-17	ND	1.10 ± .04	ND	3.10 ± .55	2.26 ± .09	.073 ± .013	ND	.054 ± .033
09-19	09-22	ND	.276 ± .024	ND	.695 ± .048	.480 ± .063	ND	.71 ± .14	ND
10-07	10-10	ND	.269 ± .016	ND	1.13 ± .17	.883 ± .048	ND	ND	ND
10-14	10-28	ND	.163 ± .009	.081 ± .011	1.34 ± .01	1.57 ± .03	.028 ± .008	ND	ND
10-28	11-11	ND	.311 ± .008	ND	1.15 ± .06	1.67 ± .03	.021 ± .005	ND	.022 ± .008
11-11	11-25	ND	.293 ± .008	ND	1.07 ± .06	1.78 ± .03	.022 ± .004	.028 ± .011	.027 ± .009
11-25	12-09	ND	.318 ± .008	ND	1.40 ± .05	2.87 ± .04	.027 ± .005	.035 ± .011	.017 ± .010

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Quillayute, Washington (47° 57'N, 124° 23'W) in 1974 and 1975.

Date ON	Date OFF	^{7}Be	^{22}Na	^{40}K	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
		DPM/10^3M^3							
02-15-74	02-26-75	82.3 ± .5	.006 ± .003	1.71 ± .10	.066 ± .007	ND	ND	ND	ND
02-26	03-26	107 ± 1	ND	.530 ± .064	.220 ± .007	.010 ± .005	.013 ± .007	ND	ND
03-26	04-29	60.1 ± .2	.008 ± .003	.231 ± .034	.273 ± .022	.018 ± .003	.024 ± .004	ND	ND
04-30	05-15	77.4 ± .5	.003 ± .005	.61 ± .01	.334 ± .012	.014 ± .005	ND	.013 ± .005	.078 ± .027
05-15	05-31	170 ± 1	.014 ± .008	.63 ± .14	.692 ± .019	.028 ± .008	ND	.002 ± .008	.043 ± .034
05-31	06-14	120 ± 1	.023 ± .008	.75 ± .14	.559 ± .018	.024 ± .007	ND	.008 ± .007	.083 ± .033
06-14	06-30	57.2 ± .3	.005 ± .004	.532 ± .063	.218 ± .008	.011 ± .003	.013 ± .006	.005 ± .003	.025 ± .012
06-30	07-15	102 ± 1	.005 ± .006	.79 ± .12	.323 ± .013	.025 ± .006	ND	ND	.059 ± .025
07-15	07-28	120 ± 1	.022 ± .011	.83 ± .12	.318 ± .024	.018 ± [illegible]	ND	ND	.081 ± .048
07-28	08-15	101 ± 1	ND	.58 ± .17	.214 ± .014	.008 ± [illegible]	ND	ND	.036 ± .025
08-15	09-02	51.2 ± .5	.008 ± .006	.49 ± .10	.063 ± .010	.005 ± [illegible]	ND	ND	.037 ± .039
09-02	09-15	139 ± 1	.017 ± .006	.838 ± .091	.171 ± .010	.011 ± .004	ND	.007 ± .004	.018 ± .020
09-15	09-29	176 ± 1	.027 ± .009	.60 ± .13	.143 ± .014	ND	ND	ND	ND
09-29	10-14	139 ± 1	.009 ± .006	.70 ± .12	.108 ± .012	.019 ± .005	ND	ND	.033 ± .023
10-14	10-31	174 ± 1	.016 ± .003	.583 ± .058	.077 ± .006	.011 ± .003	.001 ± .005	.001 ± .003	.008 ± .010
10-31	11-14	104 ± 1	.007 ± .004	.065 ± .090	.084 ± .006	.005 ± .003	.001 ± .006	.006 ± .004	.025 ± .012
11-14	11-28	88.1 ± .3	.007 ± .004	.106 ± .012	.109 ± .007	.007 ± .003	.010 ± .006	.001 ± .003	.012 ± .014
11-29	12-15	106 ± 1	.006 ± .004	.127 ± .015	.196 ± .008	.017 ± .004	.012 ± .007	.004 ± .003	.021 ± .012
12-15	01-02-75	97.3 ± .4	.011 ± .004	.057 ± .007	.155 ± .007	.005 ± .003	.011 ± .006	ND	.007 ± .012
01-03-75	01-19	87.5 ± .3	.008 ± .003	.039 ± .005	.121 ± .006	.009 ± .003	.014 ± .005	.003 ± .003	.026 ± .011
01-19	01-31	142 ± 1	.009 ± .007	.070 ± .012	.304 ± .015	.010 ± .006	.051 ± .012	ND	.035 ± .027
01-31	02-16	178 ± 2	.012 ± .005	.163 ± .019	.334 ± .014	.023 ± .006	ND	.005 ± .004	.040 ± .025
02-16	03-03	112 ± 2	ND	ND	.274 ± .015	.017 ± .005	ND	<.006	.087 ± .026
03-03	03-17	164 ± 1	.019 ± .006	.086 ± .015	.410 ± .014	.024 ± .006	<.05	<.006	.092 ± .027
03-17	04-01	180 ± 1	.034 ± .006	.260 ± .030	.371 ± .015	.037 ± .006	.043 ± .034	.010 ± .004	<.04
04-01	04-15	165 ± 1	.018 ± .006	.138 ± .021	.372 ± .015	.028 ± .006	.049 ± .033	.015 ± .005	<.04
04-15	05-01	126 ± 1	.020 ± .003	.300 ± .019	.330 ± .007	.022 ± .005	ND	.108 ± .002	.031 ± .007

ND - Not Detectable

Radionuclide Concentrations in Surface Air at Quillayute, Washington (47° 57'N, 124° 23'W) in 1974 and 1975.

Date ON	Date OFF	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110}Ag	^{124}Sb	^{125}Sb
		DPM/$10^3 M^3$							
02-15-74	02-26-74	ND	6.06 ± .08	12.8 ± .1	1.74 ± .03	2.59 ± .10	ND	ND	.364 ± .019
02-26	03-26	ND	16.4 ± .1	34.5 ± .1	4.56 ± .03	9.82 ± .11	ND	ND	1.06 ± .02
03-26	04-29	ND	16.6 ± .1	29.0 ± .1	3.35 ± .02	10.2 ± .1	ND	ND	1.41 ± .02
04-30	05-15	ND	13.4 ± .1	29.9 ± .1	3.03 ± .04	14.7 ± .2	ND	ND	1.71 ± .03
05-15	05-31	ND	30.5 ± .2	66.0 ± .2	5.26 ± .06	34.8 ± .3	ND	ND	3.57 ± .05
05-31	06-14	ND	19.5 ± .1	43.3 ± .1	3.15 ± .04	25.3 ± .2	ND	ND	2.78 ± .04
06-14	06-30	ND	6.54 ± .06	14.8 ± .1	.948 ± .015	9.88 ± .13	ND	ND	1.17 ± .02
06-30	07-15	ND	10.2 ± .1	22.1 ± .1	1.40 ± .02	17.4 ± .1	ND	ND	1.85 ± .04
07-15	07-28	ND	8.34 ± .14	18.3 ± .1	1.32 ± .05	14.9 ± .3	ND	ND	1.70 ± .05
07-28	08-15	ND	5.22 ± .09	11.2 ± .1	.925 ± .029	10.5 ± .2	ND	ND	1.41 ± .04
08-15	09-02	.036 ± .008	4.53 ± .08	6.36 ± .07	1.32 ± .03	3.22 ± .14	ND	ND	.307 ± .037
09-02	09-15	.032 ± .006	7.92 ± .08	13.8 ± .07	2.00 ± .03	8.81 ± .14	ND	ND	1.10 ± .03
09-15	09-29	.136 ± .015	14.6 ± .2	24.7 ± .2	2.82 ± .05	6.71 ± .18	ND	ND	.878 ± .047
09-29	10-14	.033 ± .023	9.47 ± .11	15.8 ± .1	1.25 ± .03	5.06 ± .16	ND	ND	.679 ± .036
10-14	10-31	.082 ± .006	9.78 ± .07	17.3 ± .1	2.44 ± .02	5.01 ± .10	ND	ND	.694 ± .022
10-31	11-14	.073 ± .007	7.68 ± .07	13.5 ± .1	2.04 ± .07	3.45 ± .10	.002 ± .009	ND	.385 ± .020
11-14	11-28	.107 ± .007	11.2 ± .1	20.8 ± .1	3.21 ± .03	3.53 ± .10	ND	ND	.512 ± .021
11-29	12-15	.149 ± .008	17.8 ± .1	33.8 ± .1	4.35 ± .03	4.38 ± .02	.001 ± .009	ND	.841 ± .023
12-15	01-02-75	.128 ± .007	12.6 ± .1	24.3 ± .1	3.37 ± .03	3.93 ± .10	ND	.007 ± .009	.569 ± .021
01-03-75	01-19	.105 ± .001	9.73 ± .07	19.0 ± .1	2.78 ± .02	3.84 ± .09	ND	ND	.472 ± .019
01-19	01-31	.235 ± .012	21.2 ± .1	40.1 ± .1	6.23 ± .04	8.85 ± .20	ND	ND	1.12 ± .04
01-31	02-16	.285 ± .020	21.4 ± .3	46.4 ± .3	6.04 ± .24	13.4 ± .2	ND	ND	1.40 ± .03
02-16	03-03	.165 ± .019	15.0 ± .2	31.6 ± .2	3.50 ± .21	9.60 ± .18	ND	ND	1.16 ± .03
03-03	03-17	.275 ± .020	19.5 ± .1	43.0 ± .2	5.07 ± .17	17.5 ± .2	ND	ND	1.70 ± .03
03-17	04-01	.190 ± .017	15.7 ± .2	33.7 ± .2	3.20 ± .13	16.0 ± .2	ND	ND	1.70 ± .04
04-01	04-15	.204 ± .017	14.0 ± .2	29.8 ± .2	3.10 ± .13	15.5 ± .2	<.03	ND	1.66 ± .03
04-15	05-01	.149 ± .009	10.2 ± .1	21.9 ± .1	1.93 ± .05	11.4 ± .1	ND	ND	1.70 ± .02

ND - Not Detectable

Radionuclide Concentrations in Surface Air at Quillayute, Washington (47° 57'N, 124° 23'W) in 1974 and 1975.

Date ON	Date OFF	^{134}Cs (DPM/10^3 M^3)	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{228}Ac
02-15-74	02-26-74	ND	1.17 ± .02	ND	1.22 ± .02	10.6 ± .1	.094 ± .009	.096 ± .027	.056 ± .022
02-26	03-26	ND	2.32 ± .02	ND	2.10 ± .02	28.2 ± .1	.248 ± .013	ND	ND
03-26	04-29	ND	2.97 ± .02	ND	1.87 ± .01	36.6 ± .1	.359 ± .013	ND	ND
04-30	05-15	.004 ± .005	3.82 ± .03	ND	1.30 ± .03	47.4 ± .1	.468 ± .019	.062 ± .051	.076 ± .043
05-15	05-31	.009 ± .008	7.96 ± .04	ND	1.85 ± .04	57.7 ± .1	.918 ± .030	.192 ± .074	ND
05-31	06-14	ND	6.38 ± .04	.021 ± .062	1.13 ± .03	76.2 ± .2	.732 ± .026	ND	ND
06-14	06-30	ND	2.75 ± .02	.057 ± .008	.373 ± .011	29.2 ± .1	.291 ± .015	.002 ± .025	.057 ± .023
06-30	07-15	ND	4.27 ± .03	.083 ± .024	.462 ± .015	12.2 ± .1	.505 ± .022	.018 ± .056	ND
07-15	07-28	ND	3.95 ± .05	.31 ± .12	.754 ± .038	39.9 ± .2	.435 ± .035	ND	.108 ± .062
07-28	08-15	ND	3.14 ± .04	.252 ± .058	.645 ± .024	30.5 ± .2	.337 ± .026	ND	.003 ± .013
08-15	09-02	.010 ± .005	.942 ± .024	.816 ± .054	1.84 ± .03	8.06 ± .09	.095 ± .017	.113 ± .039	ND
09-02	09-15	.001 ± .005	2.70 ± .03	.238 ± .032	2.38 ± .02	23.0 ± .1	.290 ± .017	ND	ND
09-15	09-29	ND	2.39 ± .04	.681 ± .095	4.55 ± .05	20.5 ± .2	.230 ± .029	.086 ± .060	ND
09-29	10-14	ND	1.56 ± .03	.189 ± .033	2.02 ± .03	17.4 ± .1	.186 ± .021	ND	ND
10-14	10-31	ND	1.76 ± .02	.261 ± .027	2.77 ± .02	16.7 ± .1	.194 ± .013	.012 ± .020	.036 ± .021
10-31	11-14	ND	.982 ± .017	.056 ± .022	2.13 ± .02	10.4 ± .1	.144 ± .012	ND	.003 ± .002
11-14	11-28	.004 ± .003	1.15 ± .02	.109 ± .021	3.03 ± .01	13.9 ± .1	.144 ± .013	ND	.057 ± .022
11-29	12-15	.004 ± .003	1.22 ± .02	.086 ± .034	4.73 ± .03	22.1 ± .1	.221 ± .014	.006 ± .026	ND
12-15	01-02-75	.001 ± .003	1.06 ± .02	.008 ± .015	3.00 ± .02	16.1 ± .1	.171 ± .012	.052 ± .024	ND
01-03-75	01-19	ND	1.05 ± .01	.026 ± .010	2.10 ± .02	14.2 ± .1	.124 ± .012	.041 ± .026	ND
01-19	01-31	ND	2.25 ± .03	.053 ± .018	4.22 ± .03	32.0 ± .1	.344 ± .024	.15[illegible] .073	ND
01-31	02-16	ND	3.14 ± .03	ND	3.20 ± .40	36.8 ± .1	.379 ± .015	ND	ND
02-16	03-03	ND	2.32 ± .02	ND	2.15 ± .34	30.1 ± .1	.307 ± .015	.076 ± .004	ND
03-03	03-17	ND	3.90 ± .03	ND	2.28 ± .25	42.2 ± .1	.420 ± .016	<.05	.040 ± .030
03-17	04-01	ND	4.00 ± .03	ND	1.60 ± .18	40.3 ± .1	.400 ± .017	<.06	.058 ± .039
04-01	04-15	<.008	4.02 ± .03	ND	1.35 ± .17	38.4 ± .1	.395 ± .017	<.07	<.05
04-15	05-01	.004 ± .002	3.46 ± .02	ND	.800 ± .095	32.2 ± .1	.310 ± .014	<.03	.035 ± .010

ND - Not Detectable

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1961

Date		DPM/10^3M 3			
On	Off	^{95}Zr Nb	^{103}Ru	^{140}Ba	^{141}Ce
11-8	11-15	26,100	12,500	19,800	26,000
11-15	11-21	5,390	7,770	7,130	7,490
12-1	12-15	8,900	4,340	2,650	3,740
12-15	1-2	3,390	2,670	1,300	2,050

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1962

Date		DPM/$10^3 M^3$								
On	Off	^{22}Na	^{54}Mn	^{60}Co	^{65}Zn	^{95}Zr Nb	^{88}Y	^{103}Ru	^{106}Ru	^{124}Sb
12-29	1-31	.420 ± .021	66.0 ± 2.4	.93 ± .21	ND	10,100 ± 600	D	5,810	727 ± 14	
2-2	2-5	1.21 ± .09	60 ± 12	2.94 ± .64	ND	12,300 ± 600	D	D	1,290 ± 30	
3-2	3-5	.04 ± .43	25.5 ± 4.0	.992 ± .021	7.80	3,030 ± 150	D	1,590	406 ± 8	
4-6	5-1	.477 ± .024	124	.925 ± .022	ND	2,100 ± 110	3.24 ± .32	1,810	1,510 ± 30	
5-1	6-1	.313 ± .015	47.7	.530 ± .021	23.4	4,030 ± 200	.56 ± .10	1,160	883 ± 17	
6-1	7-1	.558 ± .026	81.6	.667 ± .022	7.27	3,990 ± 200	.90 ± .10	974	1,200 ± 20	
7-1	8-1	.406 + .021	77.0	.611 ± .022	18.2	2,940 ± 150	.65 ± .11	521	915 ± 19	
8-1	8-31	.266 ± .014	53.0	4.77 ± .02	ND	1,550 + 80	D	584	470 ± 10	
9-4	9-28	.448 + .025	98.9	.703 ± .024	73.8	3,460 ± 170	.69 ± .12	3,030	730 ± 15	
10-1	10-31	.173 ± .009	44.5	.374 + .018	9.10	2,490 ± 120	.48 ± .11	5,110	400 ± 10	
10-31	11-29	.207 ± .011	57.9	.459 ± .021	ND	3,380 ± 170	.91 ± .21	2,930	370 ± 7	13.8 ± 2.0
11-30	12-29	.140 ± .007	42.7	.339 ± .020	.25	3,170 ± 160	.24 ± .24	1,800	2.86 ± 7	3.28 ± .33

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1962 (contd)

Date		DPM/10^3M^3									
On	Off	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{238}Pu	^{239}Pu	^{241}Am
12-29	1-31	91.5 ± 2.4	.24 ± .18	96.4 ± 1.0	1,070	4,290	1,890 ± 250	157 ± 60	.023 ± .011	1.14 ± .12	
2-2	2-5	149 ± 11	.87 ± .65	150 ± 2	D	D	3,190 ± 740			1.00 ± .10	
3-2	3-5	52.6 ± 3.6	.08 ± .16	51.9 ± 1.0	D	938	440 ± 170			.920 ± .089	
4-6	5-1	67.1	.63 ± .12	156	D	1,070	3,040 ± 130			.905 ± .091	.052 ± 0.21
5-1	6-1	87.2	.321 ± .051	138	D	818	1,540 ± 50	136 ± 5		1.05 ± .11	.044 ± .016
6-1	7-1	184	.41 ± .12	160	D	1,070	2,080 ± 120			1.31 ± .13	.029 ± .015
7-1	8-1	128	.38 ± .11	131	451	804	1,520 ± 100			1.07 ± .11	
8-1	8-31	66.7	.201 ± .039	63.9	1,000	733	725 ± [illegible]			.639 ± .064	
9-4	9-28	102	.60 ± .15	97.1	5,180	2,870	1,290 ± [illegible]			.864 ± .086	
10-1	10-31	41.3	.332 ± .065	45.6	10,300	4,030	700 ± 62			.593 ± .059	
10-31	11-29	45.2	.342 ± .056	51.2	4,470	2,400	705 ± 46			.461 ± .046	
11-30	12-29	35.2	.102 ± .029	36.4	1,450	1,310	680 ± 31			.349 ± .035	

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1963

Date		DPM/$10^3 M^3$									
On	Off	^{22}Na	^{54}Mn	^{60}Co	^{65}Zn	^{90}Sr	^{95}Zr Nb	^{88}Y	^{103}Ru	^{106}Ru	^{110m}Ag
12-31	1-15	.153 ± .008	59.0 ± .3	2.05 ± .04	4.66	32.8 ± 1.5	5,510 ± 230	.724 ± .033	D	340 ± 9	
1-15	1-31	.381 + .018	179 + 1	2.19 ± .05	28.3		15,400 ± 700	1.42 ± .07	D	1,140 ± 20	
1-31	2-14	.367 ± .017	113 ± 1	11.4 ± .1	9.57	88.3 ± 4.5	6,640 ± 330	.738 ± .035	D	685 ± 13	
2-15	3-1	.175 ± .009	81.9	.53 ± .03	ND		3,170 ± 190	.600 ± .030	D	500 ± 10	
3-1	3-15	.427 ± .023	143	1.02 ± .02	1.29	173 ± 10	5,580 ± 230	1.21 ± .06	D	710 ± 15	
3-15	4-1	.331 ± .016	163	.88 ± .04	8.23		5,010 ± 250	.798 ± .040	D	690 ± 14	
4-1	4-16	.491 + .025	208	1.13 ± .02	5.12	134 ± 7	5,120 ± 260	.862 ± .043	D	894 ± 18	.100 ± .020
4-16	5-2	.802 ± .041	293	1.56 ± .03	4.52		6,180 ± 310	1.15 ± .06	D	1,170 ± 20	.057 ± .011
5-2	5-15	.982 ± .049	385	2.00 ± .04	12.3	187 ± 10	6,500 ± 330	1.70 ± .09	D	1,540 ± 30	.115 ± .023
5-15	5-31	1.94 ± .09	908	3.78 ± .07	78.8		10,800 ± 500	3.50 ± .17	D	2,740 ± 60	.315 ± .062
5-31	6-14	.752 ± .038	325	1.49 ± .03	8.90	152 ± 7	3,520 ± 180	.985 ± .049	D	1,080 ± 20	.087 ± .018
6-14	7-2	.982 ± .049	477	2.07 ± .04	31.0		4,730 ± 240	1.89 ± .10	D	1,380 ± 30	.192 ± .038
7-2	7-16	1.20 ± .06	427	1.93 ± .04	16.9	145 ± 7	3,710 ± 190	1.83 ± .09	D	1,300 ± 30	.244 ± .049
7-16	7-30	1.39 ± .07	477	2.12 ± .04	14.8		3,740 ± 190	2.37 ± .12	D	1,600 ± 30	.266 ± .054
7-30	8-16	1.39 ± .07	420	1.85 ± .04	29.9	58.3 ± 3.2	3,260 ± 160	2.73 ± .14	D	1,490 ± 30	.267 ± .054
8-16	8-30	.872 ± .044	284	1.26 ± .03	40.6		2,010 ± 100	2.04 ± .11	D	1,030 ± 21	.197 ± .039
8-30	9-18	.579 ± .029	189	.88 ± .03	81.2	54.7 ± 2.9	1,270 ± 64	1.57 ± .08	D	725 ± 15	.138 ± .027
9-18	10-1	.537 ± .027	173	2.73 ± .06	10.0		1,170 ± 59	1.61 ± .08	D	665 ± 13	.215 ± .043
10-1	10-18	.632 ± .032	131	1.35 ± .03	ND	72.4 ± 3.5	749 ± 38	1.56 ± .08	D	620 ± 12	.070 ± .014
10-18	11-1	.205 ± .011	65.3	.357 ± .018	3.19		342 ± 18	.643 ± .033	D	290 ± 6	
11-1	11-18	.227 ± .012	61.1	.280 ± .025	ND	32.8 ± 1.7	226 ± 14	.597 ± .029	D	250 ± 5	
11-18	11-27	.218 ± .011	77.3	.403 ± .028	ND		326 ± 17	.826 ± .041	D	330 ± 7	
12-6	12-13	.203 ± .010	34.0	.220 ± .020	ND	17.7 ± .9	93 ± 10	.445 ± .023	D	195 ± 4	
12-20	12-30	.198 ± .010	52.6	.243 ± .009	ND		181 ± 11	.618 ± .032	D	215 ± 5	

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington 1963 (contd)

Date On	Date Off	DPM/10^{3}M^3 ^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{239}Pu	^{241}Am
12-31	1-15	2.40 ± .12	47 ± 1	.346 ± .057	52.7 ± .3	D	D	795 ± 40		.573	
1-15	1-31	14.1 ± .7	153 ± 1	.759 ± .078	156 ± 1	D	D	2,460 ± 60			
1-31	2-14	7.13 ± .36	205 ± 1	.321 ± .057	92.2 ± .3	D	D	1,360 ± 50		.475	
2-15	3-1	2.61 ± .13	60	.166 ± .062	61.1	D	D	964 ± 52			
3-1	3-15	7.10 ± .36	102	.293 ± .068	109	D	D	1,600 ± 50		.492	
3-15	4-1	4.77 ± .24	103	.265 ± .059	105	D	D	1,610 ± 50			
4-1	4-16	5.62 ± .28	114	.314 ± .066	181	D	D	1,970 ± 50	66.8 ± 5.4	.468	.15 ± .03
4-16	5-2	5.62 ± .28	189	.424 ± .077	179	D	D	2,580 ± 60			.35 ± .04
5-2	5-15	5.12 ± .26	225	.60 ± .10	231	D	D	3,180 ± 70	124 ± 10	1.37	.26 ± .04
5-15	5-31	14.9 ± .8	434	1.53 ± .13	473	D	D	5,720 ± 90			
5-31	6-14	4.41 ± .22	180	.52 ± .09	177	D	D	2,100 ± 60	93.3 ± 6.9	.810	
6-14	7-2	5.90 ± .29	297	.74 ± .16	261	D	D	2,750 ± 60			
7-2	7-16	4.84 ± .24	228	.667 ± .09	212	D	D	2,140 ± 50	128 ± 10	1.03	
7-16	7-30	6.53 ± .32	243	.731 ± .10	244	D	D	3,040 ± 60			
7-30	8-16	5.97 ± .29	253	1.03 ± .09	246	D	D	300 ± 60	131 ± 11	.636	
8-16	8-30	3.88 ± .19	120	.477 ± .078	178	D	D	1,980 ± 50			
8-30	9-18	3.50 ± .18	139	.543 ± .063	135	D	D	1,430 ± 30	95 ± 1	.707	
9-18	10-1	2.97 ± .15	160	.364 ± .064	137	D	D	978 ± 35			
10-1	10-18	3.43 ± .17	92.5	.406 ± .060	106	D	D	1,190 ± 30	50 ± 1	.335	
10-18	11-1	1.06 ± .05	52.3	.205 ± .046	57.2	D	D	583 ± 25			
11-1	11-18	1.17 ± .06	50.9	.759 ± .060	72.7	D	D	452 ± 20	47 ± 1	.224	
11-18	11-27	1.84 ± .09	57.2	.314 ± .064	76.6	D	D	576 ± 29			
12-6	12-13	1.20 ± .06	26.9	.205 ± .057	36.4	D	D	323 ± 26	28 ± 1	.116	
12-20	12-30	1.34 ± .07	55.8	.286 ± .053	60:0	D	D	346 ± 25			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland Washington (46°21'N, 119°17'W) in 1964

Date		DPM/10^3M^3								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{60}Co	^{65}Zn	^{90}Sr	^{95}Zr Nb
12-30	1-16	153 ± 1	.121 ± .006		28.0 ± .1		.417 ± .022		17.0 ± .9	114 ± 6
1-16	1-29	93 ± 1	.142 ± .007		30.6 ± .2		.171 ± .024			87 ± 4
1-31	2-12	223 ± 1	.339 ± .007		76.6 ± .3		.480 ± .029		44.1 ± 2.2	201 ± 10
2-12	2-25	168	.335 ± .017		65.0		1.37 ± .03			158 ± 8
2-25	3-16	134	.255 ± .013		47.0		.340 ± .027			113 ± 6
3-16	4-2	211	.410 ± .021		69.6		.519 ± .021		47.7 ± 2.4	154 ± 8
4-2	4-15	124	.459 ± .023		57.6		.961 ± .019		54.7 ± 2.8	115 ± 6
4-15	4-30	215	.494 ± .025		77.3		.713 ± .024			139 ± 7
4-30	5-15	256	.685 ± .035		120		.862 ± .026	10.5 ± 2.1	81.2 ± 4.1	151 ± 8
5-15	6-1	308	1.21 ± .06	.082 ± .031	181		4.80 ± .10	25.2 ± 5.0		221 ± 11
6-1	6-16	186	.575 ± .029		57.9		.724 ± .024		67.1 ± 3.4	84.4 ± 4.2
6-16	6-30	221	.586 ± .029		77.3	252	.932 ± .028		61.1 ± 1.8	87.2 ± 4.3
6-30	7-15	226	.452 ± .023		75.6	251	.770 ± .025	9.4 ± 1.9	49.4 ± .8	68.9 ± 3.9
7-15	7-30	226	.374 ± .018		57.9	130	.569 ± .022	27.1 ± 5.4	55.0 ± .8	38.5 ± 1.9
7-30	8-15	137	.250 ± .013		32.0	109	.307 ± .026	4.2 ± .8	26.8 ± .5	29.5 ± 1.5
8-15	8-31	182	.272 ± .014		38.8	170	.593 ± .022	41.3 ± 8.2	31.7 ± .4	26.5 ± 1.3
8-31	9-15	228	.244 ± .013	.302 ± .030	35.1	122	.724 ± .024	102 ± 10	34.6 ± .9	26.2 ± 1.3
9-15	9-30	138	.109 ± .006	.167 ± .017	16.6	80.9	.261 ± .025	59.7 ± 6.0	18.1 ± .5	8.7 ± .4
9-30	10-15	158	.137 ± .007	.160 ± .016	14.4	38.5	.540 ± .021	22.6 ± 2.3	14.8 ± .3	10.6 ± .5
10-15	11-1	136	.157 ± .008	.370 ± .033	13.6	49.8	.427 ± .029	8.1 ± 8.1	15.7 ± .5	26.9 ± 1.3
11-1	11-16	67	.073 ± .005	.221 ± .022	6.46	24.6	.288 ± .026	.890 ± .089	17.5 ± .3	28.7 ± 1.4
11-16	11-30	87	.081 ± .005	.155 ± .016	6.92	29.7	.160 ± .024		10.7 ± .4	17.8 ± .9
11-30	12-6	127	.072 ± .005	.073 ± .017	6.62	110	.611 ± .022		7.2 ± .4	7.5 ± .4
12-16	12-31	66	.065 ± .005	.285 ± .029	5.72	18.6	.255 ± .026	1.10 ± .11	20.2 ± .6	33.0 ± 1.6

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1964 (contd)

Date		DPM/10^3M^3								
On	Off	^{88}Y	^{110m}Ag	^{103}Ru	^{106}Ru	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba
12-30	1-16	.308 ± .016			150 ± 3	1.02 ± .17	24.0 ± .3	.191 ± .049	30.7 ± .1	
1-16	1-29	.329 ± .017			157 ± 3	.92 ± .19	30.2 ± .3	.152 ± .085	36.0 ± .2	
1-31	2-12	.897 ± .045			392 ± 8	2.56 ± .26	81.9 ± .5	.357 ± .047	92.5 ± .3	
2-12	2-25	.706 ± .035			311 ± 6	2.37 ± .22	62.9	.300 ± .042	75.6	
2-25	3-16	.569 ± .028			267 ± 5	2.15 ± .18	46.6	.085 ± .039	55.4	
3-16	4-2	.893 ± .045			488 ± 8	3.40 ± .24	73.1	.466 ± .042	93.2	
4-2	4-15	.848 ± .043			328 ± 8	2.29 ± .17	62.9	.222 ± .042	79.5	
4-15	4-30	1.21 ± .06			523 ± 10	3.85 ± .20	86.5	.328 ± .043	115	
4-30	5-15	1.44 ± .07			639 ± 12	4.38 ± .17	153	.178 ± .048	175	
5-15	6-1	1.85 ± .09	.52 ± .11		1,020 ± 20	6.32 ± .18	249	.463 ± .047	264	.519
6-1	6-16	1.16 ± .06			484 ± 10	3.32 ± .16	162	.258 ± .047	123	
6-16	6-30	1.07 ± .05			452 ± 9	1.41 ± .10	109	.533 ± .047	119	.865
6-30	7-15	.901 ± .045			399 ± 8	2.05 ± .14	118	.261 ± .039	120	1.60
7-15	7-30	.717 ± .036			303 ± 6	1.52 ± .13	91.5	.290 ± .017	95.3	
7-30	8-15	.392 ± .020			166 ± 3	.706 ± .071	56.5	.675 ± .040	56.5	
8-15	8-31	.388 ± .019			188 ± 4	.812 ± .081	62.2	.162 ± .046	66.4	.463 ± .011
8-31	9-15	.353 ± .018			148 ± 3	.522 ± .060	59.0	.371 ± .033	60.7	.950 ± .027
9-15	9-30	.148 ± .008			71.0 ± 1.4	.208 ± .038	26.9	.201 ± .026	33.1	.562 ± .017
9-30	10-15	.126 ± .006		43.4 ± 4.3	69.6 ± 1.4	.579 ± .098	71.7	.346 ± .041	31.3	.886 ± .024
10-15	11-1	.109 ± .005		28.9 ± 2.9	66.0 ± 1.3	.273 ± .045	28.9	.388 ± .051	33.8	114 ± 3
11-1	11-16	.048 ± .005		20.6 ± 2.1	46.6 ± .9	ND	13.3	1.30 ± .08	34.2	37.1 ± 1.1
11-16	11-30	.052 ± .005			55.1 ± 1.1	ND	13.1	.664 ± .056	26.0	12.4 ± .3
11-30	12-6	.031 ± .005			46.3 ± .9	.096 ± .039	11.8	.098 ± .021	15.5	6.60 ± .19
12-16	12-31	.035 ± .005			45.6 ± .9	.079 ± .045	12.5	1.91 ± .07	49.1	4.03 ± .12

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington 1964 (contd)

Date		DPM/10^{3}M^3					
On	Off	^{144}Ce	^{155}Eu	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
12-30	1-16	248 ± 14	23 ± 1			.143	
1-16	1-29	250 ± 16					
1-31	2-12	636 ± 26	60 ± 1			.336	
2-12	2-25	576 ± 24					
2-25	3-16	441 ± 17	67 ± 1			.238	
3-16	4-2	664 ± 22					
4-2	4-15	600 ± 23	89 ± 2			.340	.10 ± .03
4-15	4-30	837 ± 25					.19 ± .03
4-30	5-15	1,050 ± 30		.099 ± .032		.790	.07 ± .02
5-15	6-1	1,510 ± 30	199 ± 2	.357 ± .036			
6-1	6-16	850 ± 26		.119 ± .031		.363	
6-16	6-30	752 ± 24	95 ± 5	.111 ± .032			
6-30	7-15	689 ± 23		.270 ± .027	.019 ± .004	1.41 ± .03	
7-15	7-30	530 ± 22	81 ± 1	.158 ± .028			
7-30	8-15	292 ± 14		.074 ± .031	.011 ± .001	.67 ± .02	
8-15	8-31	360 ± 16	50 ± 1	.067 ± .033			
8-31	9-15	300 ± 15		.192 ± .084	.007 ± .002	.460 ± .014	
9-15	9-30	138 ± 10	32 ± 1	.155 ± .077			
9-30	10-15	118 ± 10		.162 ± .079	.001 ± .001	.480 ± .027	
10-15	11-1	144 ± 10		.072 ± .061			
11-1	11-16	94 ± 10			.001 ± .002	.133 ± .019	
11-16	11-30	70.6 ± 3.7	2 ± 1				
11-30	12-6	75.6 ± 8.2		.091 ± .066	.001 ± .001	.281 ± .054	
12-16	12-31	75.9 ± 9.4	7 ± 1				

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1965

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{60}Co	^{65}Zn	^{90}Sr	^{88}Y
		DPM/10^{3}M^{3}								
1-31	1-15	67	.067 ± .005	.544 ± .007	6.28	25.8 ± 2.6	2.01 ± .04	12.6	12.8 ± .4	.032 ± .005
1-15	2-1	16	.031 ± .003	.290 ± .015	2.57	43.4	3.19 ± .06	1.39	4.69 ± .20	.007 ± .005
2-1	2-15	101	.108 ± .006	.766 ± .023	11.1	273	4.56 ± .09	6.46	15.8 ± .4	.064 ± .005
2-15	3-2	145	.138 ± .007	.148 ± .011	13.2	127	.255 ± .026	ND	15.4 ± .7	.072 ± .005
3-2	3-18	252	.260 ± .013	.614 ± .023	26.2	159	4.06 ± .08	1.77	33.4 ± .5	.135 ± .007
3-18	4-2	248	.228 ± .011	.275 ± .013	20.5	107	.752 ± .025	.62	31.1 ± .2	.096 ± .005
4-2	4-16	205	.218 ± .011	.204 ± .013	18.1	84	.719 ± .024	.82	24.6 ± .2	.093 ± .005
4-16	4-30	173	.229 ± .012	.230 ± .039	18.4	102	1.32 ± .03	1.56	29.5 ± .5	.081 ± .005
4-30	5-17	295	.253 ± .013	.126 ± .035	22.1	150	.540 ± .011	1.51	31.1 ± .2	.099 ± .005
5-17	5-30	200	.236 ± .012	.278 ± .039	19.7	116	1.53 ± .03	1.43	32.4 ± .2	.083 ± .005
5-30	6-15	212	.301 ± .015	.120 ± .024	23.8	149	.586 ± .022	3.92	44.8 ± .5	.099 ± .005
6-15	6-30	143	.152 ± .008	.139 ± .027	13.1	53.3	.487 ± .021	6.71	22.2 ± .2	.045 ± .005
6-30	7-16	115	.135 ± .007	.117 ± .023	10.9	121	.632 ± .023	14.2	27.5 ± .3	.017 ± .005
7-16	7-29	221	.122 ± .007	.072 ± .021	9.64	69.6	.343 ± .027	8.37	21.0 ± .2	.030 ± .005
7-29	8-16	227	.105 ± .005	.161 ± .020	8.33	75.9	.244 ± .025	6.39	15.2 ± .2	.031 ± .005
8-16	8-30	167	.066 ± .006	.071 ± .021	4.80		.261 ± .025	13.6	9.40 ± .13	.014 ± .005
8-30	9-11	159	.049 ± .005	.075 ± .022	2.11	29.4	.252 ± .025	18.0	9.65 ± .11	.008 ± .005
9-11	9-22	146	.073 ± .007	.238 ± .024	4.38	27.1	.185 ± .024	26.3	9.49 ± .15	.016 ± .005
9-22	9-30	164	.051 ± .005	.088 ± .021	3.57	38.8	.227 ± .024	12.1	4.91 ± .23	.011 ± .005
10-1	10-15	149	.065 ± .006	.221 ± .015	3.57	26.0	.199 ± .024	12.7	10.7 ± .4	.007 ± .005
10-15	11-1	199	.036 ± .005	.713 ± .019	2.14	33.7	.163 ± .029	9.04	6.07 ± .12	.006 ± .005
11-1	11-12	91	.026 ± .005	.545 ± .017	1.43	22.7	.614 ± .022	7.38	5.50 ± .12	.004 ± .005
11-12	11-28	119	.030 ± .005	.153 ± .009	2.14	13.0	.918 ± .028	1.51	5.27 ± .12	.003 ± .005
11-28	12-10	110	.037 ± .005	.625 ± .019	1.86	7.8 ± 1.1	.413 ± .028	3.60	4.55 ± .10	.003 ± .005
12-10	12-20	101	.025 ± .005	.473 ± .016	1.17	14.3	.055 ± .024	.66	4.52 ± .11	.003 ± .005
12-20	12-26	94	.021 ± .005	.231 ± .013	1.22	5.9 ± 1.0	.060 ± .024	.63	3.57 ± .10	.014 ± .005

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1965 (contd)

Date		DPM/10^3M^3								
On	Off	^{95}Zr Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba
12-31	1-15	5.30 ± .27		47.3 ± .9	.221 ± .044	ND	12.0	.360 ± .036	23.4	3.57 ± .10
1-15	2-1	1.30 ± .65		14.0 ± .3	ND	.068 ± .047	4.7	.221 ± .032	8.62	3.35 ± .10
2-1	2-15	2.95 ± .15		54.7 ± 1.2	ND	.102 ± .056	21.6	.176 ± .048	26.7	1.79 ± .10
2-15	3-2	42.4 ± 2.1		70.6 ± 1.4	ND	ND	27.9	.171 ± .048	34.9	1.00 ± .03
3-2	3-18	5.76 ± .29		141 ± 3	.120 ± .024	.114 ± .042	59.7	.420 ± .016	79.5	.92 ± .03
3-18	4-2	4.13 ± .20		109 ± 2	.089 ± .018	.129 ± .025	49.4	.140 ± .014	60.4	2.56 ± .08
4-2	4-16	5.01 ± .25		104 ± 2	.102 ± .020	.57 ± .11	96.4	.119 ± .010	55.4	.99 ± .03
4-16	4-30	5.29 ± .29		109 ± 2	.106 ± .021	.091 ± .028	42.4	.280 ± .012	56.5	3.64 ± .11
4-30	5-17	3.08 ± .16		125 ± 3	.077 ± .015	.066 ± .033	50.5	.165 ± .012	72.7	1.18 ± .03
5-17	5-30	65.3 ± 3.3		121 ± 2	.108 ± .022	.186 ± .038	50.9	.159 ± .015	68.5	45.6 ± 1.4
5-30	6-15	396 ± 20	83.3	151 ± 3	.117 ± .069	.094 ± .033	70.6	.257 ± .020	86.2	122 ± 4
6-15	6-30	322 ± 16	133	80.5 ± 1.7	.106 ± .068	.410 ± .041	48.9	.170 ± .013	48.7	109 ± 3
6-30	7-16	58.6 ± 2.9	74.6	61.8 ± 1.2	.044 ± .043	.168 ± .047	40.3	.198 ± .008	43.4	29.6 ± .9
7-16	7-29	10.8 ± .5		51.9 ± 1.1	.022 ± .026	.127 ± .033	23.8	.156 ± .009	38.5	6.57 ± .19
7-29	8-16	6.46 ± .33		49.8 ± 1.0	.015 ± .032	.016 ± .038	23.2	.158 ± .007	36.0	3.67 ± .40
8-16	8-30	5.23 ± .26		29.4 ± .6	.026 ± .027	.013 ± .027	13.7	.129 ± .007	24.8	.78 ± .24
8-30	9-11	3.44 ± .17		23.7 ± .5	.012 ± .029	.023 ± .037	11.2	.096 ± .007	18.1	.99 ± .28
9-11	9-22	2.51 ± .13		56.2 ± 1.1	.025 ± .047	.050 ± .082	13.2	.115 ± .009	20.7	1.13 ± .04
9-22	9-30	5.79 ± .24		27.1 ± .5	.038 ± .037	.015 ± .027	12.0	.273 ± .016	8.23	1.24 ± .04
10-1	10-15	3.71 ± .19		20.8 ± .4	.038 ± .038	.016 ± .028	18.0	.445 ± .012	22.5	.98 ± .27
10-15	11-1	2.69 ± .14		51.6 ± 1.2	.048 ± .033	.016 ± .038	7.5	.136 ± .007	11.7	16.1 ± .5
11-1	11-12	.98 ± .05		19.0 ± .4	.062 ± .039	.220 ± .031	4.4	.193 ± .010	9.68	4.77 ± .15
11-12	11-28	.94 ± .05		14.7 ± .3	.045 ± .032	.017 ± .029	5.4	.074 ± .006	11.2	1.75 ± .05
11-28	12-10	8.09 ± .41		28.3 ± .6	.056 ± .047	.024 ± .027	5.7	.094 ± .008	9.50	7.27 ± .21
12-10	12-20	2.05 ± .11		15.1 ± .3	.039 ± .031	.010 ± .025	3.8	.066 ± .007	8.72	3.67 ± .11
12-20	12-26	17.8 ± .9		8.0 ± .2	.048 ± .034	.021 ± .031	4.4	.050 ± .007	8.69	3.85 ± .13

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1965 (contd)

Date On	Date Off	^{144}Ce (DPM/10^3M^3)	^{155}Eu	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
12-31	1-15	56.9 ± 2.8		.072 ± .059	.007 ± .014	.252 ± .030	
1-15	2-1	36.7 ± 2.4	6.7 ± .4				
2-1	2-15	104 ± 2		.191 ± .085	.002 ± .003	.489 ± .024	
2-15	3-2	125 ± 3	18 ± 1	.106 ± .071			
3-2	3-18	234 ± 5		.216 ± .089	.007 ± .002	.434 ± .011	
3-18	4-2	168 ± 4	34 ± .4	.087 ± .063			
4-2	4-16	161 ± 4	30 ± .3	.088 ± .063	.008 ± .001	.589 ± .010	.17 ± .03
4-16	4-30	161 ± 4	20 ± .3	.069 ± .055			.11 ± .03
4-30	5-17	177 ± 4	31 ± .3	.120 ± .075	.015 ± .002	.860 ± .012	.18 ± .03
5-17	5-30	188 ± 6		.083 ± .062			
5-30	6-15	237 ± 5	37 ± .3	.120 ± .061	.016 ± .002	.716 ± .013	
6-15	6-30	136 ± 5	19 ± .2	.110 ± .055			
6-30	7-16	98.5 ± 3.3	16 ± .2	.110 ± .057	.009 ± .002	.420 ± .008	
7-16	7-29	80.5 ± 3.1	13 ± .2	.128 ± .063			
7-29	8-16	71.3 ± 2.6	14 ± .2	.105 ± .051	.005 ± .001	.511 ± .008	
8-16	8-30	41.3 ± 2.2	10 ± .2	.084 ± .042			
8-30	9-11	32.0 ± 2.1	5.4 ± .2	.123 ± .067	.002 ± .001	.164 ± .005	
9-11	9-22	34.8 ± 3.1	7.2 ± .2	.164 ± .028	.001 ± .001		
9-22	9-30	29.7 ± 3.1	7.7 ± .2	.165 ± .079			
10-1	10-15	30.9 ± 1.9	3.3 ± .1	.103 ± .051	.0004 ± .0006	.155 ± .005	
10-15	11-1	18.2 ± 1.6	1.9 ± .1	.072 ± .037			
11-1	11-12	15.5 ± 1.9	2.6 ± .1	.029 ± .011	.001 ± .001	.069 ± .004	
11-12	11-28	14.9 ± 1.4	3.2 ± .1	.017 ± .011			
11-28	12-10	15.3 ± 1.8	2.4 ± .1	.020 ± .010		.082 ± .004	
12-10	12-20	14.3 ± 1.8		.027 ± .013			
12-20	12-26	15.4 ± 2.1		.035 ± .017			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1966

Date		DPM/10^3M^3								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{60}Co	^{65}Zn	^{90}Sr	^{88}Y
12-27	1-18	89 ± 1	.025 ± .005	.353 ± .008	.876 ± .007	7.1 ± 1.1	.162 ± .024	.42 ± .01	3.89 ± .11	.001 ± .005
1-18	1-30	161 ± 1	.046 ± .005	.742 ± .019	1.27 ± .02	23.0 ± 2.3	.770 ± .026	2.05 ± .03	9.99 ± .12	.003 ± .005
1-30	2-10	107 ± 1	.032 ± .005	.494 ± .012	1.80 ± .01	4.9 ± .9	.813 ± .024	1.24 ± .02	8.09 ± .13	.002 ± .005
2-10	3-4	119	.039 ± .005	.388 ± .009	1.38	26.6	1.06 ± .02	4.59	9.15 ± .11	.003 ± .005
3-4	3-17	150	.067 ± .007	.388 ± .011	2.19	24.5	1.27 ± .02	3.11	7.91 ± .13	.002 ± .005
3-17	4-1	249	.102 ± .007	.424 ± .009	3.14	32.9	1.02 ± .02	4.52	25.6 ± .2	.006 ± .005
4-1	4-15	217	.092 ± .009	.328 ± .009	4.84	39.6	2.40 ± .05	3.78	17.2 ± .1	.005 ± .005
4-15	4-28	160	.099 ± .009	.060 ± .006	4.31	27.0	.24 ± .03	3.07	16.1 ± .2	.004 ± .005
4-28	5-10	191	.109 ± .010	.311 ± .009	4.27	28.9	2.57 ± .05	12.4	23.9 ± .2	.005 ± .005
5-10	5-13	264	.092 ± .010	.036 ± .039	4.98	37.4	3.25 ± .07	8.02	13.8 ± .3	.003 ± .005
5-13	6-1	234	.088 ± .009	.134 ± .008	4.38	26.0	.27 ± .03	11.6	16.4 ± .1	.034 ± .005
6-1	6-16	183	.078 ± .008	.046 ± .004	3.81	82.6	4.38 ± .09	23.4	12.6 ± .1	.019 ± .005
6-16	7-7	188	.064 ± .006	.120 ± .006	3.00	29.9	1.83 ± .04	7.17	9.9 ± .1	.011 ± .005
7-7	7-14	298	.085 ± .008	.060 ± .01	2.30	7.9 ± 1.1	1.06 ± .02	22.4	13.8 ± .1	.007 ± .005
7-14	7-25	238	.078 ± .008	.057 ± .007	2.75	20.7	.261 ± .025	5.83	11.3 ± .3	.007 ± .005
7-25	8-16	108	.046 ± .005	.060 ± .004	2.72	13.5	.099 ± .024	1.70	5.76 ± .24	.004 ± .005
8-17	8-29	213	.031 ± .005	.067 ± .005	1.52	44.5	.456 ± .029	4.41	4.52 ± .07	.002 ± .005
8-29	9-16	221	.021 ± .005	.106 ± .005	1.02	8.1 ± 1.2	.155 ± .024	19.8	4.40 ± .09	.001 ± .005
9-16	10-3	199	.042 ± .005	.600 ± .019	.742	46.9	7.52 ± .19	27.2	6.81 ± .11	.001 ± .005
10-3	10-19	110	.010 ± .005	.060 ± .009	.494	87.2	.159 ± .025	16.1	3.83 ± .09	.002 ± .005
10-19	10-27	127	.020 ± .005	.078 ± .008	.297	5.7 ± 1.0	.067 ± .023	3.00	4.87 ± .49	.001 ± .005
10-27	11-3	148	.017 ± .005	.424 ± .016	.953	15.9	1.17 ± .02	8.51	3.98 ± .10	.001 ± .005
11-3	11-15	169	ND	.420 ± .007	.883	8.4 ± 1.2	.053 ± .023	7.88	3.50 ± .09	.005 ± .005
11-15	11-30	58	.011 ± .008	.353 ± .008	.812	6.4 ± 1.1	.194 ± .024	2.65	4.41 ± .08	.002 ± .005
11-30	12-14	66	.010 ± .005	.187 ± .005	.307	2.9 ± .8	.067 ± .023	1.17	1.86 ± .04	.001 ± .005
12-15	12-25	159	.019 ± .005	.530 ± .007	.353	6.4 ± 1.0	.088 ± .023	1.09	3.36 ± .07	.001 ± .005

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1966 (contd)

Date On	Date Off	^{95}Zr Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs	^{140}Ba
		DPM/10^3M^3								
12-27	1-18	1.48 ± .08	5.30 ± .07	9.8 ± .2	.049 ± .035	.002 ± .024	4.03 ± .02	.064 ± .002	8.62 ± .01	.042 ± .004
1-18	1-30	2.47 ± .13	24.7 ± .2	63.1 ± .3	.088 ± .037	ND	6.50 ± .05	.222 ± .005	20.6 ± .1	D
1-30	2-10	10.4 ± 5.1	3.88 ± .05	75.5 ± .3	.057 ± .038	ND	5.01 ± .03	.342 ± .005	16.1 ± .1	2.58 ± .08
2-10	3-4	3.43 ± .17	9.75	14.0 ± .3	.053 ± .047	.004 ± .022	7.41 ±	.215 ± .003	17.9	7.42 ± .24
3-4	3-17	1.20 ± .06	18.9	62.7 ± 1.3	.060 ± .049	.138 ± .044	11.2	.081 ± .004	19.6	1.62 ± .05
3-17	4-1	1.38 ± .07	9.61	41.6 ± .8	.071 ± .034	.183 ± .048	39.8	.261 ± .005	50.5	1.27 ± .04
4-1	4-15	6.07 ± .31	12.6	40.0 ± .8	.039 ± .031	.283 ± .098	56.7	.152 ± .005	31.0	1.34 ± .04
4-15	4-28	2.54 ± .13	10.3	29.1 ± .6	.021 ± .049	.012 ± .026	18.8	.081 ± .004	30.6	.565 ± .018
4-28	5-10	5.69 ± .28	34.2	35.5 ± .7	.085 ± .031	.035 ± .029	25.9	.311 ± .006	52.3	1.09 ± .34
5-10	5-13	2.37 ± .12	D	24.5 ± .5	.046 ± .044	.002 ± .032	11.4	.071 ± .007	26.9	7.5 ± 2.4
5-13	6-1	2.43 ± .12	14.4	28.6 ± .6	.032 ± .040	.314 ± .081	44.6	.184 ± .004	32.5	60.7 ± 1.9
6-1	6-16	63.6 ± 3.2	31.6	22.4 ± .5	.060 ± .049	.034 ± .038	10.9	.117 ± .003	23.0	44.7 ± 1.5
6-16	7-7	63.4 ± 3.2	38.1	21.2 ± .4	.021 ± .048	.015 ± .008	11.7	.053 ± .002	20.7	25.9 ± .8
7-7	7-14	49.4 ± 2.5	32.7	26.2 ± .5	.028 ± .038	.012 ± .026	10.1	.092 ± .005	24.7	18.1 ± .5
7-14	7-25	29.9 ± 1.5	20.4	25.5 ± .5	.022 ± .028	.026 ± .027	10.7	.085 ± .004	19.7	10.0 ± .3
7-25	8-16	17.5 ± .9	22.7	15.9 ± .3	.018 ± .025	.001 ± .021	12.7	.046 ± .002	11.8	2.51 ± .08
8-17	8-29	9.46 ± .47	6.43	9.2 ± .2	.012 ± .021	.006 ± .022	4.13	.064 ± .003	11.5	.636 ± .019
8-29	9-16	9.75 ± .49	3.71	10.1 ± .2	.022 ± .025	.064 ± .043	3.85	1.34 ± .003	11.5	1.17 ± .04
9-16	10-3	10.9 ± .5	28.6	51.7 ± 1.1	.102 ± .048	ND	12.1	.173 ± .005	13.2	1.09 ± .03
10-3	10-19	36.7 ± 3.7	31.4	51.0 ± 1.1	.033 ± .031	ND	4.77	.078 ± .004	7.49	.424 ± .014
10-19	10-27	4.07 ± .49	12.8	30.0 ± .6	.046 ± .039	.070 ± .047	11.3	.049 ± .004	5.69	.777 ± .023
10-27	11-3	27.7 ± 2.8	17.8	42.3 ± .8	.106 ± .041	.074 ± .058	15.1	.208 ± .007	7.84	8.76 ± .27
11-3	11-15	95.4 ± 9.5	68.9	27.0 ± .5	.071 ± .061	.201 ± .020	42.5	.117 ± .004	7.91	18.4 ± 6.2
11-15	11-30	54.2 ± 5.4	33.6	6.6 ± .1	.053 ± .041	.049 ± .038	17.2	.113 ± .004	9.64	43.7 ± 1.3
11-30	12-14	20.1 ± 2.0	9.92	5.9 ± .1	.049 ± .031	.007 ± .027	85.8	.064 ± .003	3.53	11.3 ± .3
12-15	12-25	3.64 ± .36	2.97	15.3 ± .3	.064 ± .055	.010 ± .037	2.37	1.38 ± .01	6.90	8.97 ± .33

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1966 (contd)

Date			DPM/10^{3}M^3						
On	Off	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
12-27	1-10		10.2 ± .6	2.7 ± .2	.034 ± .019	.064 ± .036	.001 ± .001	.083 ± .003	
1-18	1-30		14.6 ± 1.2	1.7 ± .2	.057 ± .027	.141 ± .071			
1-30	2-10		32.5 ± .9		.039 ± .021	.215 ± .092	.001 ± .001	.097 ± .005	
2-10	3-4		29.5 ± .9	5.5 ± .2	.092 ± .043	.127 ± .065			
3-4	3-17		23.8 ± 1.1	12.0 ± .2	.113 ± .058	.122 ± .064	.017 ± .002	.160 ± .005	
3-17	4-1		38.7 ± 1.1		.148 ± .074	.162 ± .081			
4-1	4-15		31.6 ± 1.1		.212 ± .094	.152 ± .079	.004 ± .001	.236 ± .007	.07 ± .02
4-15	4-28		31.9 ± 1.4	9.8 ± .2	.134 ± .069	.247 ± .098			.13 ± .02
4-28	5-10		75.2 ± 5.4	24.0 ± .3	.289 ± .098	.187 ± .089	.010 ± .001	.327 ± .006	.034 ± .015
5-10	5-13		117 ± 4		.205 ± .094	.166 ± .082			
5-13	6-1	81.1	48.2 ± 1.1		.113 ± .058	.131 ± .069			
6-1	6-16	61.3	33.5 ± 1.1	5.2 ± .3	.198 ± .084	.102 ± .052	.013 ± .001	.255 ± .006	
6-16	7-7	52.2	24.6 ± .8		.067 ± .033	.053 ± .027			
7-7	7-14	53.7	67.5 ± 2.1		.081 ± .041	.191 ± .058	.016 ± .003	.206 ± .008	
7-14	7-25	37.5	34.6 ± 1.2	5.3 ± .2	.124 ± .061	.109 ± .053			
7-25	8-16	14.2	15.0 ± .6		.127 ± .062	.074 ± .037	.014 ± .001	.146 ± .004	
8-17	8-29		9.61 ± .76	3.2 ± .3	.145 ± .071	.258 ± .097			
8-29	9-16	3.67	6.14 ± .27		.350 ± .094	.102 ± .051	.007 ± .001	.070 ± .002	
9-16	10-3		14.5 ± 1.2	2.2 ± .3		.127 ± .064			
10-3	10-19		3.99 ± .75		.095 ± .048	.106 ± .053	.008 ± .002	.042 ± .003	
10-19	10-27		2.22 ± .78	.98 ± .32	.057 ± .023	.047 ± .027			
10-27	11-3		21.6 ± 1.6		.106 ± .051	.180 ± .084			
11-3	11-15		18.8 ± 1.0		.092 ± .041	.162 ± .075	.013 ± .001	.050 ± .002	
11-15	11-30		9.30 ± .67	1.7 ± .1	.025 ± .019	.064 ± .032			
11-30	12-14		4.91 ± .61		.024 ± .019	.018 ± .014	.004 ± .001	.047 ± .002	
12-15	12-25		5.33 ± .91		.018 ± .014	.120 ± .064			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1967

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn
		DPM/$10^3 M^3$								
12-26	1-15	136 ± 1	.032 ± .009	.388 ± .027	.459 ± .024	10.1	ND*	.388 ± .076	.600 ± .022	2.22 ± .04
1-15	1-31	82 ± 1	.014 ± .004	.812 ± .034	.423 ± .021	22.3	.018 ± .021	.422 ± .084	2.61 ± .04	1.45 ± .04
1-31	2-15	121 ± 1	.032 ± .005	.180 ± .023	.635 ± .023	15.3	.046 ± .021	.162 ± .032	.459 ± .019	7.45 ± .06
2-15	3-1	112	.030 ± .005	1.91 ± .05	1.02	37.1	.005 ± .051	.258 ± .051	5.72 ± .06	1.70
3-1	3-16	154	.037 ± .005	.166 ± .020	.953	7.5 ± 1.2	ND	.039 ± .020	.494 ± .021	1.38
3-16	3-31	125	.032 ± .005	.019 ± .023	.812	10.6	.085 ± .029	ND	.109 ± .023	.311
3-31	4-12	252	.042 ± .005	.191 ± .019	.918	.01 ± .01	.099 ± .023	.060 ± .023	.170 ± .024	.636
4-12	5-2	206	.035 ± .005	ND	.742	12.0	.081 ± .027	ND	.060 ± .023	.423
5-2	5-16	277	.049 ± .005	ND	.918	8.4 ± 1.1	.039 ± .013	.032 ± .027	.067 ± .023	.222
5-16	6-1	246	.046 ± .005	.002 ± .022	.812		.109 ± .034	.081 ± .016	.056 ± .024	.198
6-1	6-15			ND		6.36 ± .97	.060 ± .028	.049 ± .029	.064 ± .023	.328
6-15	6-30	242	.071 ± .007	.424 ± .032	.777	9.22	.095 ± .031	.421 ± .085	.742 ± .025	2.15
6-30	7-16	256	.035 ± .005	.314 ± .050	1.52	6.0 ± 1.0	.095 ± .033	ND	.212 ± .025	ND
8-1	8-18	226	.046 ± .005	.459 ± .019	.530	42.7	.085 ± .031	.085 ± .017	.777 ± .026	52.7
8-18	9-5	234	.039 ± .005	.742 ± .034	.636		.067 ± .021	.300 ± .060	.089 ± .024	22.1
9-5	9-15	177	.028 ± .005	.981 ± .038	.742	21.4	ND	.092 ± .018	.492 ± .020	153
9-15	10-2	200	.021 ± .005	1.34 ± .05	1.48	41.3	ND	.095 ± .019	1.38 ± .03	ND
10-2	10-16	109	.021 ± .005	.233 ± .025	.388	62.2	.002 ± .015	.141 ± .028	.030 ± .020	9.82
11-15	12-1	72	.007 ± .005	1.13 ± .04	.109		.025 ± .013	.145 ± .029	.124 ± .024	1.48

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1967 (contd)

Date On	Date Off	^{88}Y	^{90}Sr	^{95}Zr Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
		DPM/10^{3}M^3								
12-26	1-15	.173 ± .013	3.80 ± .09	84.0 ± .2	48.5 ± .2	1.55 ± .03	.063 ± .064	.388 ± .040	4.77 ± .13	.092 ± .012
1-15	1-31	.057 ± .005	2.15 ± .06	47.9 ± .2	23.5 ± .2	4.70 ± .10	.064 ± .043	.187 ± .060	2.82 ± .09	.085 ± .009
1-31	2-15	.102 ± .005	3.43 ± .07	79.2 ± .2	36.2 ± .2	1.53 ± .13	.046 ± .040	.23 ± .13	2.93 ± .12	.081 ± .009
2-15	3-1	.120 ± .006	4.91 ± .05	85.9	41.0	7.70 ± .15	.053 ± .051	.39 ± .15	6.29	.145 ± .014
3-1	3-16	.124 ± .006		65.7	41.5	9.11 ± .18	.032 ± .041	.34 ± .14	7.45	.074 ± .014
3-16	3-31	.148 ± .007	4.38 ± .12	75.0	31.4	9.67 ± .19	.120 ± .024	.176 ± .088	3.78	.025 ± .007
3-31	4-12	.138 ± .007	8.01 ± .25	63.1	29.2	12.4 ± .3	.027 ± .038	.212 ± .091	5.37	.046 ± .007
4-12	5-2	.102 ± .005	4.38 ± .22	43.2	16.8	9.32 ± .19	.006 ± .041	.124 ± .062	1.91	.007 ± .007
5-2	5-16	.071 ± .005	5.34 ± .21	35.2	14.5	12.4 ± .3	.010 ± .034	.081 ± .048	6.14	.001 ± .005
5-16	6-1	.064 ± .005	5.79 ± .28	14.5	6.85	10.7 ± .2	.010 ± .029	.033 ± .025	3.04	.002 ± .007
6-1	6-15	.028 ± .005		9.85	7.80	11.7 ± .2	.003 ± .019	.019 ± .022	3.43	.005 ± .005
6-15	6-30	.021 ± .005	6.33 ± .26	9.85	2.65	12.1 ± .2	.099 ± .039	.049 ± .031	14.2	.071 ± .007
6-30	7-16	.057 ± .005			41.4	134 ± 3	.31 ± .26	ND	17.0	16.4 ± .2
8-1	8-18	.005 ± .005	5.07 ± .31	32.7	1.77	6.99 ± .14	.064 ± .042	.032 ± .025	8.33	.145 ± .015
8-18	9-5	.005 ± .005		48.2	4.91	6.60 ± .13	.067 ± .053	.004 ± .018	1.13	.032 ± .007
9-5	9-15	.008 ± .005	2.43 ± .27	43.9	4.41	2.83 ± .06	.012 ± .032	.039 ± .025	1.66	.035 ± .007
9-15	10-2	ND	2.08 ± .05	6.71	5.69	6.36 ± .12	.004 ± .022	.159 ± .020	18.7	ND
10-2	10-16	.002 ± .005	1.39 ± .05	6.71	3.74	10.5 ± .1	.001 ± .029	.011 ± .025	.02 ± .02	.021 ± .007
11-15	12-1	ND		11.8	6.28	4.56 ± .09	.049 ± .039	.229 ± .030	16.5	.032 ± .007

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1967 (contd)

Date On	Date Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^{3}M^3									
12-26	1-15	6.18 ± .04	90.8 ± 2.2	124 ± 1*	15.6 ± 3.4	.117 ± .031	.032 ± .021	.060 ± .034	.007 ± .001	.042 ± .003	
1-15	1-31	4.56 ± .03	D	46.4 ± .6	24.3 ± 3.0	.142 ± .035	.018 ± .019	.053 ± .032			
1-31	2-15	6.39 ± .04	64.8 ± 1.9	24.8 ± .5	13.5 ± 2.3	.281 ± .028	.092 ± .048	.078 ± .041	.009 ± .001	.460 ± .003	
2-15	3-1	8.72	D	42.8 ± .5	18.4 ± 2.1	.227 ± .031	.120 ± .062	.258 ± .092			
3-1	3-16	10.6	5.55 ± .17	63.5 ± .5	18.4 ± 4.1		.042 ± .023	.215 ± .090	.033 ± .002	.065 ± .003	
3-16	3-31	8.33	9.15 ± .27	38.8 ± .3	16.0 ± 4.8	.159 ± .033		.074 ± .035			
3-31	4-12	15.0	2.58 ± .08	35.1 ± .3	19.7 ± 3.9	.371	.060 ± .031	.092 ± .047	.026 ± .002	.083 ± .003	
4-12	5-2	10.2	1.34 ± .04	13.2	11.0 ± 5.8	.352	.035 ± .022	.053 ± .031			.041 ± .015
5-2	5-16	11.8	.671 ± .021	6.96	16.5 ± 2.0	.853	.092 ± .047	.049 ± .029	.052 ± .005	.126 ± .007	.033 ± .016
5-16	6-1	12.7	.127 ± .004	3.12	10.2 ± 3.7	1.52	.064 ± .035	.046 ± .028			.061 ± .020
6-1	6-15	14.3	.049 ± .003	2.26	8.5 ± 1.9	1.48	.052 ± .027	.028 ± .019	.091 ± .006	.096 ± .009	
6-15	6-30	13.0	1.98 ± .06	1.09	4.8 ± 1.4	2.19	.148 ± .071	.265 ± .093			
6-30	7-16	68.2	62.6 ± 1.9	3.88	135 ± 15	1.99	1.09 ± .13	.290 ± .097	.083 ± .009	.304 ± .015	
8-1	8-18	8.05	2.19 ± .06	8.30	15.4 ± .7	1.91	.102 ± .55	.297 ± .099	.037 ± .008	.084 ± .009	
8-18	9-5	6.25	1.45 ± .05	6.18	6.9 ± 2.0	1.14	.265 ± .094	.187 ± .087			
9-5	9-15	5.23	.953 ± .029	5.40	5.40 ± .58		.297 ± .099	.34 ± .11	.002 ± .007	.046 ± .007	
9-15	10-2	5.40	.459 ± .014		6.3 ± 1.9		.57 ± .13	.31 ± .10			
10-2	10-16	2.93	.21 ± .16	1.62	1.8 ± 1.0	.214 ± .031	.165 ± .084	.25 ± .10	.001 ± .002	.019 ± .004	
11-15	12-1	4.41	1.45 ± .05	2.19	27.2 ± 4.5	.171 ± .032	.166 ± .079	.39 ± .13	.009 ± .005	.026 ± .005	

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1968

Date		DPM/10^{3}M^3									
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
1-1	1-31	149 ± 3*	.016 ± .005	1.13 ± .06	.388 ± .084*	5.75	.175 ± .034	.208 ± .061	.105 ± .009	1.13 ± .22*	.004 ± .005
1-31	3-1	202 ± 7	.042 ± .005	2.97 ± .05	.74 ± .10	7.31	.173 ± .034	.092 ± .028	2.05 ± .02	2.68 ± .29	.004 ± .005
3-1	3-13	165 ± 4			1.24 ± .15	42.2	.033 ± .031			.92 ± .36	
3-22	4-1	124 ± 3	.042 ± .005	1.41 ± .05	.81 ± .10		.064 ± .033	.30 ± .10	2.22 ± .06	2.22 ± .24	.005 ± .006
4-1	4-12	211 ± [illegible]	.074 ± .004	.706 ± .063	1.73 ± .09	38.0	.152 ± .045	.49 ± .15	10.2 ± .2	1.84 ± .22	.024 ± .009
4-12	5-2	218 ± 3	.049 ± .005	.353 ± .038	1.48 ± .05	6.07	.226 ± .066	.81 ± .16	.194 ± .017	1.87 ± .24	.020 ± .012
5-2	5-17	221 ± 3	.071 ± .004	.459 ± .023	1.91 ± .18	45.9	.180 ± .048	.78 ± .21	2.15 ± .03	5.65 ± .44	.008 ± .005
5-17	5-31	189 ± 3	.141 ± .007	.328 ± .037	1.91 ± .19	9.36	.109 ± .031	.99 ± .30	.166 ± .017	19.5 ± .6	.014 ± .009
5-31	6-17	326 ± 3	.013 ± .002	.456 ± .019	1.94 ± .20	15.0	.226 ± .067	.42 ± .12	.187 ± .009	3.64 ± .14	.007 ± .007
6-17	7-1	273 ± 2	.078 ± .005	.286 ± .023	1.62 ± .07	13.5	.240 ± .072	.42 ± .12	.272 ± .011	4.03 ± .42	.003 ± .005
7-1	7-15	273 ± 2	.064 ± .004	.353 ± .020	1.59 ± .07	14.7	.162 ± .048	.183 ± .054	.226 ± .011	4.34 ± .38	.010 ± .008
7-15	7-31	286 ± 2	.067 ± .004	.317 ± .012	1.58 ± .07	11.4	.226 ± .067	.138 ± .042	.194 ± .005	1.38 ± .24	.005 ± .005
7-31	8-19	291 ± 2	.030 ± .003	.314 ± .011	1.34 ± .06	17.6	ND	.208 ± .063	.159 ± .004	1.13 ± .14	.003 ± .005
8-19	8-30	145 ± 1	.042 ± .004	.600 ± .041	.565 ± .061	2.75	ND	.244 ± .074	.671 ± .019	.99 ± .16	.002 ± .005
8-30	9-16	250 ± 1	.032 ± .003	.848 ± .022	.742 ± .045	8.02	ND	.152 ± .045	.268 ± .010	2.33 ± .13	.003 ± .005
9-16	10-1	210 ± 1	.035 ± .004	.742 ± .016	.635 ± .039	6.46	ND	.152 ± .045	.092 ± .003	1.73 ± .11	.001 ± .005
10-1	10-17	225 ± 1	.025 ± .003	.275 ± .009	.537 ± .042	12.5	ND	.124 ± .037	.272 ± .005	1.55 ± .11	.001 ± .005
10-17	10-31	184 ± 1	.022 ± .002	3.11 ± .04	.399 ± .041	5.58	.130 ± .024	.141 ± .042	.219 ± .010	2.61 ± .12	.002 ± .005
10-31	11-15	135 ± 1	.010 ± .002	1.70 ± .03	.303 ± .032	5.97	.045 ± .031	.117 ± .036	.113 ± .007	1.70 ± .10	ND
11-15	11-27	148 ± 1	.014 ± .002	2.22 ± .02	.247 ± .043	9.25	.148 ± .042	.134 ± .041	.162 ± .005	.85 ± .10	.001 ± .005
11-27	12-12	121 ± 1	.020 ± .002	2.61 ± .02	.261 ± .031	2.52	.011 ± .021	.099 ± .030	.237 ± .005	.49 ± .09	.001 ± .005
12-12	12-30	108 ± 1	.020 ± .002	2.68 ± .02	.283 ± .029	6.07	.032 ± .031	.099 ± .030	.170 ± .004	.53 ± .10	.001 ± .005

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington 1968 (contd)

Date		DPM/10^{3}M^3								
On	Off	^{90}Sr	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
1-1	1-31	1.78 ± .09	45.0 ± 1.0*	49.1 ± .6*	33.3 ± 1.1*	7.70 ± .24	.028 ± .047	.025 ± .031	1.27 ± .14*	.039 ± .031
1-31	3-1	6.57 ± .18	58.8 ± 1.2	56.0 ± .5	61.0 ± 2.0	23.7 ± .2	.28 ± .14	.035 ± .028	2.93 ± .41	.388 ± .071
3-1	3-13	8.76 ± .43	47.8 ± 1.0	107 ± 1	28.1 ± .7				5.23 ± .65	
3-22	4-1	4.91 ± .25	32.7 ± .6	57.8 ± .4	12.7 ± 2.4	33.8 ± .6	.088 ± .053	.019 ± .032	3.18 ± .43	.113 ± .052
4-1	4-12	5.12 ± .31	37.3 ± .5	83.5 ± .5	13.5 ± 2.7	54.3 ± 2.0	.102 ± .071	.032 ± .027	5.47 ± .28	.290 ± .068
4-12	5-2	6.03 ± .30	48.8 ± .8	112 ± 1	15.3 ± 3.0	47.4 ± 1.1	.113 ± .077	.092 ± .068	8.72 ± .33	.042 ± .038
5-2	5-17	7.03 ± .31	44.6 ± .8	104 ± 1	10.8 ± 2.2	53.9 ± .5	.102 ± .069	.184 ± .085	18.9 ± .9	.081 ± .049
5-17	5-31	7.53 ± .32	36.5 ± .7	84.7 ± .7	7.4 ± 1.5	76.8 ± 1.0	.049 ± .049	.046 ± .033	8.62 ± .59	.078 ± .046
5-31	6-17	9.46 ± .47	39.1 ± .6	86.1 ± .5	7.8 ± 1.6	79.4 ± .5	.077 ± .068	.039 ± .031	10.6 ± .6	.353 ± .029
6-17	7-1		29.9 ± .3	72.7 ± .3	5.3 ± 1.1	99.1 ± .6	.085 ± .071	.053 ± .041	13.5 ± .3	.318 ± .071
7-1	7-15	10.2 ± .5	24.8 ± .3	56.9 ± .3	4.8 ± 1.0	78.2 ± .6	.092 ± .081	.022 ± .032	9.78 ± .24	.124 ± .058
7-15	7-31	8.64 ± .27	21.2 ± .3	50.5 ± .2	3.39 ± .68	107 ± 1	.071 ± .065	ND	9.32 ± .22	.049 ± .039
7-31	8-19	6.57 ± .17	14.7 ± .2	34.5 ± .2	2.47 ± .49	80.1 ± .3	.071 ± .061	ND	7.77 ± .19	.081 ± .041
8-19	8-30	3.14 ± .11	9.57 ± .21	18.4 ± .2	22.5 ± 2.3	42.7 ± .4	.046 ± .052	ND	3.71 ± .20	.141 ± .052
8-30	9-16	4.17 ± .09	11.1 ± .2	19.8 ± .1	4.34 ± .43	50.2 ± .4	.060 ± .046	.008 ± .031	4.73 ± .16	.297 ± .070
9-16	10-1	3.14 ± .11	7.66 ± .15	14.2 ± .1	6.66 ± .47	37.9 ± .2	.078 ± .051	.099 ± .059	9.25 ± .17	.177 ± .048
10-1	10-17	3.52 ± .13	5.26 ± .13	11.7 ± .1	1.66 ± .33	37.4 ± .2	.092 ± .083	ND	8.05 ± .16	.035 ± .032
10-17	10-31	5.25 ± .07	3.99 ± .13	7.70 ± .11	1.87 ± .39	22.4 ± .3	.042 ± .052	.020 ± .029	2.58 ± .13	.198 ± .049
10-31	11-15	3.00 ± .05	3.50 ± .11	5.47 ± .08	1.45 ± .29	17.8 ± .2	.071 ± .061	.023 ± .031	6.04 ± .14	.170 ± .048
11-15	11-27	3.32 ± .12	2.86 ± .12	5.58 ± .10	1.62 ± .32	15.3 ± .2	.095 ± .081	.014 ± .028	1.91 ± .13	.117 ± .041
11-27	12-12	2.11 ± .04	2.01 ± .09	3.64 ± .07	1.45 ± .29	13.2 ± .1	.074 ± .064	.005 ± .027	1.18 ± .10	.166 ± .044
12-12	12-30	3.46 ± .07	2.12 ± .08	4.03 ± .06	1.31 ± .26	14.1 ± .1	.042 ± .052	.006 ± .029	1.15 ± .09	.138 ± .082

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington 1968 (contd)

Date		DPM/10³M³									
On	Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
1-1	1-31	6.81 ± .28*	67.8 ± .2	54.2 ± .6	24.6 ± .6*	.44 ± .13	.032 ± .034	.117 ± .033	.008 ± .003	.028 ± .003	
1-31	3-1	14.8 ± .2	33.7 ± .3	55.2 ± 1.3	62.6 ± .7	.51 ± .15	.025 ± .032	.088 ± .025	.026 ± .006	.053 ± .006	
3-1	3-13	14.6 ± .3	9.60 ± .13	24.4 ± .4	90.0 ± .9	1.07 ± .32			.050 ± .005	.083 ± .006	
3-22	4-1	8.65 ± .20	5.6 ± 1.5	11.2 ± .2	65.3 ± .6	1.11 ± .21	.102 ± .052	.134 ± .039			
4-1	4-12	9.99 ± .15	1.84 ± .38	11.0 ± .3	159 ± 1	3.56 ± .14	.424 ± .097	.233 ± .068	.033 ± .004	.124 ± .007	.030 ± .017
4-12	5-2	14.2 ± .3	1.31 ± .26	8.62 ± .29	137 ± 1	2.21 ± .30	.57 ± .14	.286 ± .072			.035 ± .017
5-2	5-17	15.5 ± .3	.71 ± .49	5.69 ± .23	148 ± 1	3.57 ± .34	.64 ± .18	.194 ± .062	.027 ± .003	.157 ± .006	.039 ± .017
5-17	5-31	16.0 ± .3	.388 ± .074	3.78 ± .27	175 ± 1	1.51 ± .40	.53 ± .14	.247 ± .075			
5-31	6-17	20.2 ± .3	.272 ± .075	4.51 ± .26	291 ± 1	4.31 ± .20	.170 ± .078	.071 ± .038	.063 ± .003	.210 ± .006	
6-17	7-1	17.4 ± .1	.124 ± .084	1.52 ± .14	254 ± 1	2.87 ± .37	.194 ± .091	.127 ± .048			
7-1	7-15	18.0 ± .1	1.70 ± .34	2.08 ± .18	243 ± 1	2.64 ± .17	.293 ± .094	1.77 ± .10	.041 ± .003	.227 ± .007	
7-15	7-31	17.3 ± .1	.39 ± .09	1.70 ± .15	238 ± 1	2.63 ± .15	.198 ± .092	1.41 ± .09			
7-31	8-19	14.9 ± .1	.53 ± .11	1.20 ± .11	187 ± 1	2.49 ± .14	.026 ± .034	.102 ± .051	.037 ± .004	.183 ± .007	
8-19	8-30	7.70 ± .11	6.98 ± .15	13.1 ± .1	89.2 ± .5	1.07 ± .13	.120 ± .053	.033 ± .033			
8-30	9-16	11.8 ± .1	1.77 ± .34	6.00 ± .09	99.7 ± .4	1.24 ± .12	.092 ± .048	.113 ± .053	.016 ± .002	.106 ± .004	
9-16	10-1	7.80 ± .08	1.94 ± .38	6.50 ± .10	75.8 ± .4	.94 ± .10	.088 ± .042	.095 ± .047			
10-1	10-17	7.13 ± .08	.31 ± .07	2.01 ± .08	82.0 ± .4	1.17 ± .10	.011 ± .033	.074 ± .042	.019 ± .003	.103 ± .005	
10-17	10-31	11.0 ± .1	1.02 ± .25	2.72 ± .10	47.9 ± .3	.578 ± .093	.039 ± .034	.088 ± .048			
10-31	11-15	6.89 ± .08	1.80 ± .38	1.69 ± .07	35.9 ± .3	.528 ± .081	.039 ± .033	.124 ± .053	.009 ± .001	.046 ± .003	
11-15	11-27	8.05 ± .10	2.05 ± .41	1.66 ± .08	40.5 ± .3	.279 ± .034	.064 ± .039	.074 ± .042			
11-27	12-12	6.85 ± .08	6.5 ± 1.3	1.27 ± .06	26.8 ± .2	.315 ± .033	.008 ± .031	.095 ± .051	.008 ± .002	.047 ± .004	
12-12	12-30	7.03 ± .07	3.07 ± .61	1.09 ± .05	28.5 ± .2	.268 ± .032	.021 ± .032	.078 ± .047			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1969

Date		DPM/10³M³									
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
12-30	1-16	83.8 ± .9	.011 ± .005	1.01 ± .02	.459 ± .036	1.06	.081 ± .033	.074 ± .032	.131 ± .021	.247 ± .049	.002 ± .005
1-16	1-30	178 ± 1	.024 ± .007	2.08 ± .02	.455 ± .037	6.57	.071 ± .025	ND	.148 ± .024	.565 ± .057	.002 ± .005
1-30	2-13	111 ± 1	.009 ± .004	4.10 ± .03	.328 ± .035	1.66	.114 ± .024	ND	.222 ± .041	.208 ± .041	.001 ± .005
2-13	3-3	125 ± 1	ND	1.17 ± .02	.268 ± .031	1.86	.089 ± .026	ND	.078 ± .024	.349 ± .053	.003 ± .005
3-3	3-17	234 ± 1	.042 ± .007	1.34 ± .03	.441 ± .037	3.95	.169 ± .032	ND	.092 ± .026	.343 ± .051	.001 ± .005
3-17	4-2	257 ± 1	.042 ± .007	.530 ± .017	.530 ± .038	12.1	.117 ± .034	.001 ± .021	.102 ± .028	.247 ± .048	.005 ± .005
4-2	4-16	241 ± 2	.046 ± .007	.848 ± .028	.986 ± .044	4.70	.131 ± .038	.102 ± .029	.127 ± .029	.205 ± .042	.006 ± .005
4-16	5-2	253 ± 2	.052 ± .007	1.02 ± .03	.571 ± .041	3.39	.117 ± .038	.099 ± .072	.138 ± .026	.057 ± .032	.008 ± .005
5-2	5-15	349 ± 2	.088 ± .008	.812 ± .038	1.13 ± .06	6.99	.440 ± .062	.297 ± .087	.148 ± .028	.78 ± .14	.019 ± .008
5-15	6-3	289 ± 2	.078 ± .007	.565 ± .028	1.17 ± .05	6.71	.196 ± .056	.258 ± .081	.247 ± .050	1.55 ± .14	.025 ± .005
6-3	6-17	335 ± 2	.007 ± .006	.534 ± .021	1.70 ± .07	8.58	.31 ± .19	.025 ± .031	.237 ± .046	3.07 ± .19	.034 ± .005
6-17	7-1	174 ± 2	.049 ± .005	.318 ± .014	.989 ± .045	4.98	.081 ± .055	.208 ± .071	.177 ± .033	1.84 ± .11	.018 ± .007
7-1	7-17	197 ± 2	.053 ± .005	.226 ± .023	1.34 ± .06	6.74	.155 ± .059	.307 ± .093	.117 ± .027	.85 ± .13	.022 ± .009
7-17	8-1	353 ± 3	.085 ± .008	1.34 ± .04	2.40 ± .08	9.85	.477 ± .080	.307 ± .091	.120 ± .027	2.97 ± .21	.046 ± .008
8-1	8-18	250 ± 2	.040 ± .004	1.94 ± .03	1.55 ± .06	5.01	.265 ± .057	.198 ± .049	.092 ± .024	1.52 ± .14	.031 ± .006
8-18	9-2	219 ± 2	.046 ± .005	1.38 ± .03	1.27 ± .06	9.78	.254 ± .054	.148 ± .041	.155 ± .008	2.08 ± .16	.025 ± .007
9-2	9-15	230 ± 2	.036 ± .004	.530 ± .025	.848 ± .058	4.73	.106 ± .052	.279 ± .087	.636 ± .064	2.86 ± .16	.018 ± .005
9-15	9-30	210 ± 2	ND	.742 ± .022	.706 ± .047	2.46	.126 ± .037	.095 ± .071	.155 ± .028	1.20 ± .13	.007 ± .003
9-30	10-15	132 ± 1	ND		.424 ± .047	2.19	.102 ± .029	.020 ± .031	.350 ± .055	1.87 ± .11	.006 ± .005
10-15	10-31	182 ± 1	.021 ± .003	2.15 ± .05	.530 ± .042	[illegible].48	.053 ± .027	ND	.494 ± .049	2.08 ± .13	.007 ± .005
10-31	11-17	99.1 ± 1.0	.014 ± .003	1.94 ± .04	.212 ± .028	.989	.328 ± .022	.057 ± .042	.300 ± .034	.53 ± .11	.004 ± .005
11-17	11-30	83.0 ± 1.2	ND	2.97 ± .05	.201 ± .030	2.06	.074 ± .025	ND	.123 ± .024	.459 ± .098	.003 ± .005
12-1	12-15	113 ± 1	.001 ± .001	1.24 ± .03	.212 ± .025	.777	.053 ± .023	.017 ± .028	.148 ± .028	.233 ± .046	.005 ± .005
12-15	12-29	72.3 ± 1.1	.012 ± .003	2.22 ± .04	.081 ± .009	.089	.067 ± .019	.017 ± .031	.265 ± .029	.530 ± .053	.002 ± .005

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1969 (contd)

Date On	Date Off	^{90}Sr	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
		DPM/10^3M^3								
12-30	1-16	3.57 ± .08	3.54 ± .11	4.47 ± .08	3.85 ± .07	13.4 ± .4	.054 ± .041	.002 ± .011	2.72 ± .11	.067 ± .033
1-16	1-30	4.64 ± .08	5.86 ± .13	8.05 ± .10	6.71 ± .09	13.9 ± .4	.071 ± .043	.018 ± .023	3.32 ± .14	.074 ± .027
1-30	2-13	4.18 ± .21	6.36 ± .13	7.80 ± .09	7.49 ± .09	9.78 ± .43	.071 ± .041	.024 ± .021	1.87 ± .13	.177 ± .058
2-13	3-3	5.33 ± .23	10.6 ± .2	13.7 ± .1	13.4 ± .1	34.7 ± .5	.046 ± .032	.042 ± .024	15.9 ± .2	.353 ± .071
3-3	3-17	7.92 ± .29	18.2 ± .2	27.0 ± .2	21.1 ± .2	29.5 ± .2	.046 ± .031	.008 ± .031	12.2 ± .2	.208 ± .041
3-17	4-2	5.55 ± .15	30.6 ± .2	47.2 ± .2	34.9 ± .2	32.0 ± .2	.032 ± .021	ND	4.34 ± .19	.039 ± .032
4-2	4-16	5.23 ± .12	36.0 ± .3	60.6 ± .3	37.4 ± .2	35.3 ± .2	.039 ± .029	ND	4.84 ± .21	.060 ± .034
4-16	5-2	4.83 ± .14	43.4 ± .3	76.0 ± .3	41.7 ± .2	36.5 ± .3	.035 ± .014	ND	4.69 ± .21	.049 ± .039
5-2	5-15	8.20 ± .26	119 ± 1	224 ± 1	109 ± 1	83.9 ± .5	.053 ± .041	ND	8.30 ± .35	.113 ± .037
5-15	6-3	9.04 ± .30	141 ± 1	266 ± 1	113 ± 1	99.2 ± .4	.034 ± .028	ND	35.1 ± .4	.268 ± .052
6-3	6-17	9.18 ± .32	200 ± 1	383 ± 1	146 ± 1	136 ± 1	.034 ± .031	ND	13.6 ± .5	.353 ± .071
6-17	7-1	4.56 ± .75	109 ± 1	219 ± 1	73.2 ± .3	68.0 ± .3	ND	.007 ± .011	6.46 ± .22	.025 ± .031
7-1	7-17	8.48 ± .17	130 ± 1	264 ± 1	80.0 ± .3	95.1 ± .5	.015 ± .021	.030 ± .021	8.02 ± .34	.177 ± .038
7-17	8-1	12.10 ± .41	218 ± 1	457 ± 1	115 ± 1	178 ± 1	.049 ± .031	.005 ± .009	15.3 ± .5	.57 ± .12
8-1	8-18	8.40 ± .27	124 ± 1	256 ± 1	60.1 ± .3	120 ± 1	.025 ± .015	.018 ± .017	10.9 ± .3	.219 ± .043
8-18	9-2	7.96 ± .29	94.9 ± .3	204 ± 1	40.7 ± .3	105 ± 1	.026 ± .031	.040 ± .010	9.96 ± .33	.102 ± .037
9-2	9-15	6.71 ± .21	50.5 ± .2	104 ± 1	17.8 ± .2	73.2 ± .5	.071 ± .041	.081 ± .031	7.98 ± .29	.113 ± .039
9-15	9-30	10.10 ± .33	34.9 ± .3	80.2 ± .3	12.3 ± .2	41.4 ± .4	.035 ± .035	.023 ± .015	4.41 ± .22	.148 ± .042
9-30	10-15	3.46 ± .07	19.2 ± .3	43.9 ± .3	6.39 ± .16	24.2 ± .3	.074 ± .042	.088 ± .037	8.62 ± .18	.026 ± .032
10-15	10-31	4.73 ± .09	20.1 ± .2	18.1 ± .3	8.09 ± .14	35.3 ± .3	.035 ± .031	ND	3.46 ± .17	.138 ± .041
10-31	11-17	4.01 ± .11	9.29 ± .16	19.5 ± .2	5.12 ± .11	17.2 ± .2	.042 ± .027	ND	1.45 ± .14	.307 ± .062
11-17	11-30	1.26 ± .07	5.97 ± .16	12.4 ± .1	3.57 ± .13	13.2 ± .3	.028 ± .029	.011 ± .015	.95 ± .15	.265 ± .054
12-1	12-15	6.61 ± .08	6.53 ± .14	12.9 ± .1	3.78 ± .10	12.0 ± .2	.032 ± .031	.003 ± .009	.99 ± .14	.205 ± .043
12-15	12-29	3.13 ± .07	4.13 ± .15	8.93 ± .13	2.22 ± .10	9.18 ± .19	.021 ± .015	.012 ± .008	1.02 ± .12	.212 ± .042

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1969 (contd)

Date On	Date Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^3M^3									
12-30	1-16	6.62 ± .06	5.49 ± .06	5.64 ± .15	32.7 ± .3	.309 ± .084	.022 ± .031	.310 ± .033	.001 ± .001	.053 ± .004	.0089 ± .0011
1-16	1-30	9.96 ± .10	9.68 ± .05	10.2 ± .1	45.3 ± .3	1.31 + .19	.064 ± .032	.067 + .033			
1-30	2-13	10.8 ± .1	5.26 ± .06	10.5 ± .1	28.5 ± .3	1.00 ± .14	.024 ± .029	.081 ± .042	.019 ± .003	.049 ± .004	.0039 ± .0010
2-13	3-3	13.9 ± .1	5.47 + .05	16.8 ± .1	28.3 ± .3	.49 + .11	.033 ± .031	.077 ± .035			
3-3	3-17	16.5 ± .1	5.54 ± .24	26.4 ± .2	63.7 ± .4	1.12 ± .12	ND	.205 ± .089	.034 ± .002	.103 ± .004	.0050 ± .0012
3-17	4-2	10.1 ± .1	3.88 + .08	41.0 ± .2	79.8 ± .4	1.00 ± .14	ND	.212 ± .091			
4-2	4-16	10.5 ± .1	3.30 ± .10	43.5 ± .2	90.3 ± .5	1.41 ± .15	.088 ± .041	.169 ± .075	.042 ± .003	.119 ± .005	.0061 ± .0011
4-16	5-2	10.5 ± .1	1.67 ± .17	44.4 ± .2	93.0 ± .5	1.35 + .15	.078 ± .037	.113 ± .054			
5-2	5-15	18.1 ± .2	D	106 ± 1	200 ± 1	2.51 ± .24	.159 ± .071	.212 ± .091	.058 ± .004	.197 ± .007	.0046 ± .0013
5-15	6-3	20.0 ± .1	D	101 ± 1	225 ± 1	3.70 ± .29	.064 ± .036	.138 ± .071			
6-3	6-17	20.6 ± .2	.48 ± .28	122 ± 1	326 ± 1	5.23 ± .31	.304 ± .094	.353 ± .099	.107 ± .007	.304 ± .011	.0059 ± .0013
6-17	7-1	11.3 ± .1	.19 ± .11	59.9 ± .3	201 ± 1	5.18 ± .51	.233 ± .091	.190 + .081			
7-1	7-17	16.1 ± .1	.35 ± .14	62.5 ± .2	265 ± 1	2.28 ± .23	.162 ± .080	.134 ± .074	.027 ± .002	.123 ± .004	.0036 ± .0011
7-17	8-1	29.2 ± .2	.145 ± .039	86.8 ± .3	442 ± 1	4.87 ± .31	.272 ± .094	.201 ± .095			
8-1	8-18	18.0 ± .1	.006 + .031	41.6 ± .2	315 ± 1	2.43 ± .22	.134 ± .071	.155 ± .075	.035 ± .002	.179 ± .005	.0022 ± .0010
8-18	9-2	17.7 ± .1	.201 + .078	27.9 ± .2	285 ± 1	1.47 + .24	.159 ± .084	.191 ± .078			
9-2	9-15	12.4 ± .1	ND	10.6 ± .2	162 ± 1	1.18 ± .21	.088 ± .044	.233 ± .071	.142 ± .006	.125 + .006	.0028 ± .0010
9-15	9-30	20.9 ± .1	ND	7.84 ± .15	138 ± 1	1.31 ± .14	.088 ± .044	.078 ± .034			
9-30	10-15	8.40 + .09	.293 ± .061	3.92 ± .16	81.6 ± .4	.48 ± .11	.187 ± .091	.198 ± .078	.022 ± .002	.070 ± .003	
10-15	10-31	10.1 ± .1	4.41 ± .10	6.71 ± .12	95.4 ± .4	.91 ± .10	.141 ± .071	.208 ± .092			
10-31	11-17	8.81 ± .04	2.83 ± .05	5.58 ± .10	54.9 ± .3	.72 ± .10	.053 ± .032	.074 ± .035	.008 ± .002	.042 ± .003	.0029 ± .0013
11-17	11-30	15.2 ± .1	1.24 ± .03	3.60 ± .13	30.9 ± .3	.274 ± .088	.057 ± .033	.071 ± .036			
12-1	12-15	13.7 ± .1	1.02 ± .03	3.92 ± .10	35.8 ± .3	.235 ± .038	.035 ± .031	.064 ± .033	.003 ± .002	.027 ± .002	
12-15	12-29	6.60 ± .09	.459 ± .028	2.22 ± .11	26.1 ± .3	.361 ± .074		.124 + .058			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1970

Date		DPM/$10^3 M^3$									
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
12-29	1-15	117 ± 1	.008 ± .005	1.27 ± .03	.158 ± .028	2.08	.076 ± .020	.022 ± .020	.491 ± .042	.24 ± .06	.004 ± .005
1-15	1-30	154 ± 1	.011 ± .005	1.01 ± .03	.297 ± .029	2.15	.092 ± .026	ND	.566 ± .044	.15 ± .05	.005 ± .005
1-30	2-12	95 ± 1	.007 ± .004	.052 ± .019	.178 ± .022	1.64	.070 ± .024	ND	.401 ± .040	.19 ± .06	.015 ± .005
2-12	3-2	86 ± 1	.005 ± .005	.311 ± .027	.188 ± .029	1.53	.049 ± .019	.026 ± .020	.260 ± .038	.12 ± .05	.013 ± .005
3-2	3-15	204 ± 2	.033 ± .010	.353 ± .024	.543 ± .049	10.1	.159 ± .042	.123 ± .052	.385 ± .041	.12 ± .05	.062 ± .008
3-15	3-31	134 ± 1	.014 ± .008	.041 ± .031	.500 ± .038	3.28	ND	.125 ± .020	.232 ± .040	ND	.063 ± .010
3-31	4-15	203 ± 2	.029 ± .005	.054 ± .021	.641 ± .047		.120 ± .024	.079 ± .052	.108 ± .025	.17 ± .11	.102 ± .006
4-15	5-1	153 ± 2	.018 ± .005	.231 ± .022	.574 ± .045		.176 ± .038	.018 ± .044	.078 ± .031*	.09 ± .10	.105 ± .006
5-1	5-15	282 ± 2	.057 ± .008	.362 ± .023	1.47 ± .08		.347 ± .069	.275 ± .069	.090 ± .037	.12 ± .14	.302 ± .011
5-15	6-1	263 ± 2	.019 ± .008	.243 ± .027	1.63 ± .06		.595 ± .066	D	.224 ± .039	.65 ± .13	.325 ± .010
6-1	6-15	320 ± 2	.017 ± .010	.316 ± .020	2.12 ± .09		.485 ± .084	D	.096 ± .039	1.08 ± .16	.432 ± .013
6-15	7-1	370 ± 2	.023 ± .006	.556 ± .022	2.35 ± .09		.632 ± .082	.133 ± .045	.108 ± .036	.62 ± .14	.503 ± .007
7-1	7-16	306 ± 3	.061 ± .005	.724 ± .021	1.89 ± .08		.669 ± .071	D	.087 ± .038	.91 ± .14	.387 ± .006
7-16	8-3	235 ± 2	.053 ± .005	1.34 ± .39	2.00 ± .10		.650 ± .089	D	.083 ± .041	.28 ± .15	.308 ± .005
8-3	8-8	362 ± 4	.081 ± .009	.179 ± .029	2.40 ± .12		.82 ± .13	.562 ± .025	.083 ± .019	ND	.339 ± .011
8-17	8-31	289 ± 4	.017 ± .004	D	1.87 ± .08		.328 ± .071	D	.373 ± .049	.85 ± .12	.247 ± .010
9-1	9-15	155 ± 2	.005 ± .003	.098 ± .021	.779 ± .022		.185 ± .028	D	.307 ± .044	.11 ± .07	.081 ± .005
9-15	10-1	228 ± 2	.007 ± .003	.247 ± .020	.764 ± .047		.248 ± .038	D	.075 ± .031	.52 ± .09	.075 ± .005
10-1	10-15	258 ± 4	.035 ± .004	.755 ± .023	.542 ± .055		.189 ± .031	D	.075 ± .040	.41 ± .09	.065 ± .005
10-15	10-28	263 ± 4	.028 ± .009	.261 ± .026	.704 ± .070		.174 ± .079	.174 ± .069	.023 ± .020	.59 ± .22	.133 ± .010
10-28	11-16	208 ± 3	.006 ± .006	.790 ± .032	.262 ± .071		.135 ± .081	.094 ± .045	.031 ± .020	.01 ± .01	.055 ± .010
11-16	12-2	144 ± 1	.006 ± .003	1.25 ± .07	.284 ± .079		.106 ± .045	.056 ± .021	.026 ± .024	.05 ± .04	.034 ± .014
12-2	12-14	112 ± 1	.014 ± .003	.484 ± .005	.188 ± .081		.048 ± .038	.073 ± .031	.025 ± .024	.06 ± .03	.022 ± .005
12-14	12-30	93 ± 1	.020 ± .004	1.58 ± .08	.221 ± .085		.081 ± .038	.047 ± .021	.138 ± .041	.07 ± .05	.016 ± .005

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1970 (contd)

Date		DPM/$10^3 M^3$								
On	Off	^{90}Sr	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs
12-29	1-15	6.08 ± .11	5.69 ± .13	12.3 ± .1	3.52 ± .09	16.4 ± 1.0	.014 ± .010	D	1.49 ± .11	.41 ± .10
1-15	1-30	8.58 ± .26	8.76 ± .16	18.2 ± .1	5.32 ± .11	19.6 ± 1.1	.020 ± .015	D	1.83 ± .15	.49 ± .10
1-30	2-12	6.61 ± .06	7.71 ± .15	15.0 ± .1	5.72 ± .11	19.2 ± 1.0	.027 ± .015	D	1.15 ± .13	.211 ± .060
2-12	3-2	7.20 ± .11	11.6 ± .2	22.8 ± .2	7.87 ± .13	13.7 ± 1.0	.012 ± .010	D	1.70 ± .14	.316 ± .090
3-2	3-15	7.41 ± .12	38.5 ± .3	71.7 ± .3	24.7 ± .2	38.8 ± 1.0	.096 ± .035	D	20.8 ± .3	.556 ± .085
3-15	3-31	5.68 ± .14	33.3 ± .3	68.4 ± .3	19.4 ± .2	39.3 ± 1.2	.014 ± .010	D	4.35 ± .19	.103 ± .045
3-31	4-15		50.1 ± .4	108 ± 1	29.4 ± .3	48.7 ± 1.3*	.011 ± .010	D	5.12 ± .22	.072 ± .044
4-15	5-1		45.6 ± .4	97.8 ± .4	24.0 ± .2	47.7 ± 1.1	ND	D	4.87 ± .22	.134 ± .045
5-1	5-15		122 ± 1	262 ± 1	58.5 ± .4	122 ± 2	.053 ± .026	D	13.8 ± .4	.295 ± .059
5-15	6-1		134 ± 1	282 ± 1	54.7 ± .3	144 ± 2	.048 ± .012	D	11.3 ± .2	.116 ± .048
6-1	6-15		169 ± 1	365 ± 1	64.6 ± .4	188 ± 2	.062 ± .015	D	14.4 ± .2	.213 ± .062
6-15	7-1		175 ± 1	380 ± 1	62.2 ± .3	230 ± 2	.096 ± .010	D	17.6 ± .2	.235 ± .059
7-1	7-16		122 ± 1	273 ± 1	30.6 ± .3	201 ± 2	.033 ± .006	D	14.1 ± .1	.132 ± .055
7-16	8-3		86.2 ± .5	195 ± 1	33.4 ± .3	1290 ± 10	ND	D	11.4 ± .1	.156 ± .090
8-3	8-8		112 ± 1	256 ± 1	30.4 ± .6	180 ± 2	.048 ± .014	D	14.6 ± .2	ND
8-17	8-31		83.2 ± 1.9	186 ± 2	15.5 ± 1.3	152 ± 2	.033 ± .010	D	12.0 ± .1	.078 ± .050
9-1	9-15		25.1 ± 1.1	57.0 ± .6	4.01 ± .75	51.1 ± 1.1	.010 ± .006	D	4.27 ± .07	.076 ± .041
9-15	10-1		26.7 ± 1.1	57.7 ± .6	5.89 ± .85	69.9 ± 1.3	.007 ± .005	D	4.82 ± .08	.150 ± .042
10-1	10-15		21.6 ± 1.2	48.0 ± .5	4.45 ± .81	56.4 ± 1.2	.009 ± .006	D	4.42 ± .09	.176 ± .054
10-15	10-28		14.9 ± 1.0	32.6 ± .5	3.55 ± .80	42.4 ± 1.2	.037 ± .007	ND	2.98 ± .10	.18 ± .12
10-28	11-16		17.2 ± 1.0	33.3 ± .5	12.1 ± .9	34.1 ± 1.4	.014 ± .009	ND	1.52 ± .05	.019 ± .025
11-16	12-2		9.1 ± .8	16.1 ± .6	4.63 ± .44	23.4 ± 1.0	.007 ± .005	ND	1.74 ± .05	.059 ± .031
12-2	12-14		6.4 ± .5	10.6 ± .4	4.71 ± .10	17.3 ± 1.0	.007 ± .005	ND	1.31 ± .07	.070 ± .036
12-14	12-30		6.5 ± .5	8.1 ± .4	4.18 ± .08	15.2 ± 1.5	.032 ± .009	ND	.99 ± .07	.084 ± .042

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1970 (contd)

Date On	Date Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^3M^3									
12-29	1-15	12.0 ± .1	.795 ± .041	3.50 ± .09	23.0 ± .2		<.033	.047 ± .007	.005 ± .001	.051 ± .003	.0021 ± .0011
1-15	1-30	19.7 ± .2	.607 ± .024	4.99 ± .11	33.8 ± .3		<.036	.029 ± .007			
1-30	2-12	13.2 ± .1	.218 ± .029	5.39 ± .10	39.1 ± .4		.033 ± .030	.056 ± .018	.009 ± .002	.119 ± .006	.0043 ± .0010
2-12	3-2	15.9 ± .1	.134 ± .025	7.18 ± .12	24.4 ± .2		.024 ± .027	.070 ± .017			
3-2	3-15	15.5 ± .1	.307 ± .026	22.7 ± .2	89.1 ± .8		.044 ± .022	.079 ± .010	.029 ± .003	.079 ± .004	.0031 ± .0013
3-15	3-31	12.4 ± .1	.145 ± .019	15.9 ± .1	73.5 ± .7		<.033	.151 ± .011			
3-31	4-15	10.0 ± .1	.18 ± .12	24.1 ± .3	92.0 ± .8	1.12 ± .09	.004 ± .033	.193 ± .024	.013 ± .002	.079 ± .004	.0028 ± .0014
4-15	5-1	12.6 ± .1	.270 ± .068	19.3 ± .2	88.9 ± .8	1.42 ± .09	.001 ± .033	.160 ± .022			
5-1	5-15	47.8 ± .2	.491 ± .057	45.2 ± .3	263 ± 1	2.83 ± .15	<.11	.093 ± .019	.033 ± .004	.186 ± .008	.0066 ± .0011
5-15	6-1	28.3 ± .2	.147 ± .074	40.7 ± .2	298 ± 1	3.15 ± .15	<.093	.185 ± .059			
6-1	6-15	39.5 ± .2	.344 ± .089	44.2 ± .3	389 ± 2	3.82 ± .18	<.11	.212 ± .026	.041 ± .005	.299 ± .012	.0039 ± .0012
6-15	7-1	37.6 ± .2	1.25 ± .04	41.3 ± .2	476 ± 3	4.61 ± .18	<.071	.149 ± .011			
7-1	7-16	29.9 ± .2	.384 ± .093	24.8 ± .3	373 ± 2	3.41 ± .17	<.060	.180 ± .012	.041 ± .003	.261 ± .007	
7-16	8-3	23.5 ± .2	ND	33.4 ± .6	288 ± 1	2.86 ± .20	<.13	.221 ± .012			
8-3	8-8	28.5 ± .2	ND	17.7 ± .5	373 ± 2	3.74 ± .30	.066 ± .060	.120 ± .023	.019 ± .008	.242 ± .018	.0034 ± .0014
8-17	8-31	25.0 ± .2	ND	10.6 ± .2	297 ± 2	2.85 ± .15	.37 ± .21	.25 ± .13			
9-1	9-15	9.2 ± .1	ND	3.01 ± .10	100 ± 1	1.15 ± .10	.31 ± .18	.14 ± .11	.008 ± .002	.091 ± .005	
9-15	10-1	13.8 ± .2	ND	4.42 ± .12	133 ± 1	1.36 ± .10	.34 ± .18				
10-1	10-15	11.9 ± .2	ND	3.52 ± .13	105 ± 1	1.04 ± .11			.022 ± .003	.074 ± .005	
10-15	10-28	8.9 ± .2	.61 ± .10	2.95 ± .15	66.8 ± 1.1	1.04 ± .21					
10-28	11-16	6.4 ± .1	19.9 ± .1	16.1 ± .4	48.2 ± 1.4	.68 ± .10		.09 ± .12	.008 ± .004	.075 ± .008	
11-16	12-2	5.9 ± .1	2.30 ± .21	4.49 ± .06	37.7 ± 1.0			.14 ± .10			
12-2	12-14	7.4 ± .1	1.32 ± .14	3.04 ± .05	25.0 ± 1.0		.18 ± .17	.12 ± .11	<.0004	.018 ± .003	
12-14	12-30	6.2 ± .1	3.64 ± .25	2.45 ± .07	19.2 ± .6		.18 ± .18	.09 ± .10			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1971

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
		DPM/10^3M^3								
12-30	1-15	96 ± 1	.011 ± .011	.163 ± .005	.153 ± .017	.060 ± .012	.043 ± .022*	.022 ± .022	.023 ± .035	.015 ± .002*
1-15	2-1	114 ± 1	.012 ± .010	1.01 ± .01	.315 ± .026	.086 ± .016	.093 ± .021	.189 ± .031	.064 ± .035	.055 ± .003
2-1	2-17	196 ± 1	.033 ± .013	.005 ± .005	.491 ± .032	.173 ± .023	.088 ± .023	.031 ± .025	.120 ± .046	.091 ± .004
2-17	3-2	134 ± 1	.017 ± .011	.014 ± .005	.358 ± .029	.090 ± .020	.043 ± .019	.039 ± .044	.100 ± .048	.077 ± .004
3-2	3-15	205 ± 2	.038 ± .014	.011 ± .006	.724 ± .041	.196 ± .035	.093 ± .026	.013 ± .028	.036 ± .045	.223 ± .007
3-15	4-1	216 ± 1	.034 ± .014	.009 ± .012	.913 ± .039	.235 ± .045	.123 ± .026	.045 ± .026	.117 ± .048	.359 ± .015
4-1	4-15	198 ± 2	.027 ± .013	<.028	1.40 ± .05	.203 ± .037	.148 ± .032	.054 ± .034	.045 ± .056	.535 ± .019
4-15	4-30	245 ± 2	.024 ± .013	<.025	2.19 ± .06	.414 ± .047	.208 ± .032	.202 ± .041	.136 ± .058	.859 ± .016
4-30	5-18	283 ± 2	.087 ± .014	<.028	2.76 ± .06	.426 ± .048	.259 ± .036	.065 ± .036	.252 ± .064	1.26 ± .02
5-18	6-1	192 ± 2	.044 ± .014	.011 ± .020	2.13 ± .06	.295 ± .039	.203 ± .038	.055 ± .036	.221 ± .024	.809 ± .026
6-1	6-15	192 ± 2	.081 ± .014	<.027	2.67 ± .07	.369 ± .046	.182 ± .041	.023 ± .036	.125 ± .026	.992 ± .014
6-15	6-30	280 ± 2	.069 ± .013	<.048	3.58 ± .08	.452 ± .053	.238 ± .041	.070 ± .040	.319 ± .024	1.28 ± .03
6-30	7-15	241 ± 2	.155 ± .012	<.021	2.96 ± .08	.396 ± .048	.176 ± .039	.043 ± .038	.173 ± .077	1.00 ± .02
7-15	7-30	469 ± 2	.037 ± .012	<.030	4.74 ± .27	.627 ± .059	.287 ± .041	.095 ± .045	.268 ± .081	1.49 ± .02
7-30	8-15	306 ± 2	.034 ± .011	<.032	2.39 ± .06	.293 ± .040	.118 ± .029	.032 ± .032	.131 ± .059	.646 ± .020
8-15	9-1	299 ± 2	.055 ± .030*	ND*	1.49 ± .04	.215 ± .031	.074 ± .025	.032 ± .027	.063 ± .047	.353 ± .041
9-1	9-15	245 ± 2	.019 ± .019	ND	.873 ± .044	.138 ± .026	.027 ± .024	.042 ± .029	.082 ± .050	.177 ± .039
9-15	9-30	114 ± 1	.012 ± .024	ND	.352 ± .023	.058 ± .016	.042 ± .015	.112 ± .029	.046 ± .039	.085 ± .024
9-30	10-15	208 ± 3	.032 ± .051	ND	.503 ± .054	.083 ± .033	.017 ± .039	.107 ± .055	.040 ± .075	.096 ± .059
10-15	11-2	134 ± 1	.016 ± .022	ND	.243 ± .023	.054 ± .015	.019 ± .017	.057 ± .023	.017 ± .022	.077 ± .024
11-2	11-15	159 ± 1	.013 ± .026	ND	.349 ± .031	.088 ± .018	.014 ± .019	.028 ± .025	.044 ± .047	.076 ± .030
11-15	12-1	91 ± 1	.010 ± .025	ND	.142 ± .016	.043 ± .012	.012 ± .018	.020 ± .023	.023 ± .031	.029 ± .024
12-1	12-15	90 ± 1	ND	ND	.139 ± .021	.034 ± .014	.020 ± .019	ND	ND	.011 ± .031
12-15	1-4	131 ± 1	.016 ± .020	ND	.200 ± .019	.045 ± .012	ND	.027 ± .020	ND	.024 ± .019

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1971 (contd)

Date		DPM/10³M³								
On	Off	^{75}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
12-30	1-15	4.32 ± .14	7.97 ± .15	2.49 ± .08	9.77 ± .41	.007 ± .003	.027 ± .005	.953 ± .036	.041 ± .014*	4.53 ± .08
1-15	2-1	17.6 ± .3	29.5 ± .5	12.2 ± .1	15.2 ± .5	.008 ± .004	.021 ± .006	1.42 ± .07	.041 ± .018	4.94 ± .08
2-1	2-17	26.2 ± .3	44.5 ± .3	15.8 ± .1	31.7 ± .7	.012 ± .007	.003 ± .007	3.13 ± .10	.099 ± .020	17.5 ± .1
2-17	3-2	22.0 ± .3	37.8 ± .2	13.6 ± .1	19.8 ± .6	.009 ± .005	.001 ± .006	1.98 ± .08	.150 ± .023	21.8 ± .2
3-2	3-15	58.5 ± .5	103 ± 1	34.7 ± .2	41.1 ± 1.1	.013 ± .005	<.014	3.84 ± .10	.083 ± .023	10.6 ± .1
3-15	4-1	89.2 ± .5	164 ± 1	47.8 ± .3	54.8 ± .8	.031 ± .010	<.032	4.56 ± .10	.039 ± .021	14.2 ± .1
4-1	4-15	129 ± 1	243 ± 1	63.4 ± .3	78.0 ± 1.2	.037 ± .011	<.032	6.27 ± .16	.042 ± .023	13.5 ± .2
4-15	4-30	192 ± 1	370 ± 1	82.0 ± .3	124 ± 2	.034 ± .007	<.038	9.65 ± .19	.065 ± .031	19.7 ± .2
4-30	5-18	233 ± 1	421 ± 1	90.3 ± .3	171 ± 2	.050 ± .007	<.028	12.6 ± .2	.105 ± .034	25.5 ± .2
5-18	6-1	155 ± 1	310 ± 1	52.2 ± .3	111 ± 2	.070 ± .015	.033 ± .030	9.52 ± .18	.112 ± .030	20.0 ± .2
6-1	6-15	180 ± 1	365 ± 1	57.3 ± .3	148 ± 2	.039 ± .006	<.026	11.2 ± .2	.022 ± .033	23.3 ± .1
6-15	6-30	219 ± 1	452 ± 1	63.7 ± .3	200 ± 2	.072 ± .013	<.041	15.5 ± .2	.117 ± .037	31.4 ± .2
6-30	7-15	162 ± 1	335 ± 1	42.3 ± .2	169 ± 2	.065 ± .008	<.036	13.1 ± .2	.145 ± .036	34.0 ± .2
7-15	7-30	232 ± 1	471 ± 1	54.1 ± .3	268 ± 2	.024 ± .010	<.029	21.2 ± .2	.064 ± .042	41.8 ± .2
7-30	8-15	99.2 ± .6	207 ± 1	20.8 ± .2	128 ± 1	.063 ± .013	<.037	10.7 ± .2	.087 ± .030	23.2 ± .2
8-15	9-1	53.9 ± .4	106 ± 1	10.3 ± .1	81.1 ± 1.0	ND*	ND*	6.84 ± .14	.124 ± .025	17.0 ± .1
9-1	9-15	26.3 ± .3	57.2 ± .3	4.74 ± .10	47.9 ± .9	ND	ND	3.91 ± .40	.147 ± .024	15.0 ± .2
9-15	9-30	9.29 ± .17	19.9 ± .3	1.56 ± .06	18.2 ± .6	.049 ± .052	ND	1.61 ± .07	.093 ± .018	6.91 ± .09
9-30	10-15	13.0 ± .4	26.8 ± .4	2.22 ± .12	27.1 ± 1.1	ND	ND	2.45 ± .11	.086 ± .040	8.15 ± .15
10-15	11-2	4.89 ± .14	10.7 ± .1	.725 ± .044	12.3 ± .4	.006 ± .046	ND	1.12 ± .06	.042 ± .013	3.74 ± .07
11-2	11-15	6.54 ± .18	14.5 ± .2	.901 ± .057	21.4 ± .7	.010 ± .056	ND	1.81 ± .08	.106 ± .021	11.7 ± .1
11-15	12-1	2.73 ± .11	5.56 ± .09	2.06 ± .06	8.74 ± .41	ND	ND	.720 ± .051	.096 ± .017	9.44 ± .11
12-1	12-15	3.24 ± .12	4.79 ± .09	10.1 ± .1	9.63 ± .48	ND	ND	.234 ± .058	.091 ± .030	6.63 ± .10
12-15	1-4	2.70 ± .09	5.56 ± .09	.646 ± .029	12.2 ± .4	ND	ND	1.04 ± .05	.200 ± .017	6.37 ± .08

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1971 (contd)

Date On	Date Off	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^3M^3								
12-30	1-15	.374 ± .016	1.89 ± .07	18.6 ± .2	.187 ± .047	.022 ± .010	.054 ± .008	.004 ± .002	.019 ± .002	.0240 ± .0033
1-15	2-1	1.10 ± .04	10.2 ± .1	30.5 ± .3	.308 ± .065	.033 ± .015	.104 ± .010			
2-1	2-17	.736 ± .028	12.5 ± .1	65.2 ± .4	.680 ± .084	.027 ± .015	.083 ± .009	.017 ± .003	.075 ± .005	.0047 ± .0008
2-17	3-2	.398 ± .025	10.4 ± .1	41.4 ± .4	.413 ± .083	.028 ± .014	.111 ± .011			
3-2	3-15	.618 ± .022	24.9 ± .2	83.8 ± .5	.57 ± .12	<.038	.053 ± .009	.007 ± .003	.067 ± .005	.0041 ± .0011
3-15	4-1	.639 ± .079	33.2 ± .2	110 ± 1	.82 ± .12	<.065	.139 ± .019			
4-1	4-15	1.85 ± .07	42.0 ± .2	160 ± 1	1.06 ± .15	<.041	.258 ± .016	.012 ± .002	.152 ± .006	.0049 ± .0011
4-15	4-30	2.05 ± .64	50.7 ± .2	248 ± 1	1.80 ± .18	<.045	.161 ± .013			
4-30	5-18	1.55 ± .41	53.5 ± .2	317 ± 1	2.12 ± .20	<.031	.221 ± .012	.010 ± .002	.245 ± .008	.0083 ± .0016
5-18	6-1	1.47 ± .23	33.5 ± .2	256 ± 1	1.37 ± .17	.049 ± .051	.132 ± .022			
6-1	6-15	.578 ± .094	30.9 ± .2	303 ± 1	2.18 ± .18	<.058	.067 ± .008	.006 ± .002	.192 ± .007	.0038 ± .0008
6-15	6-30	.145 ± .080	31.9 ± .2	400 ± 1	2.67 ± .21	<.11	.081 ± .016			
6-30	7-15	2.02 ± .15	20.6 ± .2	338 ± 1	3.55 ± .19	.017 ± .032	.097 ± .010	.007 ± .003	.202 ± .010	.0054 ± .0011
7-15	7-30	.974 ± .086	25.1 ± .2	535 ± 1	3.70 ± .25	<.075	.201 ± .013			
7-30	8-15	.366 ± .049	9.56 ± .11	259 ± 1	1.85 ± .16	<.094	.203 ± .023	.008 ± .002	.183 ± .006	.0033 ± .0004
8-15	9-1	ND*	4.64 ± .09	161 ± 1	1.38 ± .12	.18 ± .16*	.14 ± .11*			
9-1	9-15	ND	2.18 ± .08	94.8 ± .5	.760 ± .094	.16 ± .18	ND	.002 ± .001	.082 ± .004	
9-15	9-30	ND	.66 ± .04	37.7 ± .3	.349 ± .063	.35 ± .17	.26 ± .09			
9-30	10-15	ND	1.35 ± .12	52.3 ± .5	.70 ± .12	.27 ± .21	.44 ± .17	.001 ± .001	.060 ± .008	.0013 ± .0009
10-15	11-2	ND	.42 ± .05	24.4 ± .2	.295 ± .054	.28 ± .14	.25 ± .08			
11-2	11-15	ND	.45 ± .05	39.0 ± .7	.470 ± .072	.21 ± .18	.14 ± .10	.009 ± .003	.103 ± .006	.0029 ± .0006
11-15	12-1	4.95 ± .44	1.96 ± .06	14.3 ± .2	.183 ± .047	.18 ± .14	.14 ± .10			
12-1	12-15	15.9 ± .3	9.13 ± .09	14.3 ± .2	.301 ± .052	.12 ± .17	.10 ± .09	.006 ± .002	.067 ± .004	.0026 ± .0003
12-15	1-4	.30 ± .67	.54 ± .03	21.1 ± .2	.27 ± .21	.14 ± .09	.10 ± .13			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1972

Date		DPM/10³M³								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
1-4	1-17	158 ± 1	ND	ND	.217 ± .026	.030 ± .019	.014 ± .021	.078 ± .046	.014 ± .039	.031 ± .038
1-17	2-2	126 ± 1	.019 ± .014	ND	.182 ± .041	.032 ± .026	.019 + .016	.021 ± .026	.020 ± .098	ND
2-2	2-18	146 + 1	.013 ± .013	ND	.223 + .022	.075 ± .018	.024 ± .016	.003 ± .029	.027 ± .031	.028 ± .025
2-18	3-3	124 ± 1	.016 ± .014	ND	.233 ± .024	.053 ± .015	.021 ± .017	.018 ± .029	.011 ± .033	.024 ± .027
3-3	3-16	212 ± 2	.023 ± .016	ND	.345 ± .030	.062 ± .019	<.016	.052 ± .029	.029 ± .038	.022 ± .027
3-16	4-5	255 ± 1	.075 ± .034	ND	.257 ± .048	.102 ± .030	ND	.093 ± .064	ND	.077 ± .059
4-5	4-20	177 ± 1	.019 ± .028	ND	.228 ± .023	.058 ± .021	.033 ± .017	.126 ± .039	<.032	.009 ± .029
4-20	5-3	244 ± 2	.053 ± .037	ND	.310 ± .029	.057 ± .028	.069 ± .022	.051 ± .034	.061 ± .043	.021 ± .034
5-3	5-15	310 ± 3	.055 ± .043	ND	.433 ± .036	.111 ± .045	.130 ± .035	.010 ± .050	.109 ± .058	.081 ± .048
5-15	6-1	292 ± 3	.059 ± .025	ND	.438 + .051	.193 ± .053	.036 ± .048	.078 ± .045	.094 ± .041	.045 ± .034
6-1	6-16	321 ± 3	.039 ± .029	ND	.453 ± .057	.169 ± .059	.062 ± .052	.154 ± .055	.25 ± .11	.062 ± .051
6-16	6-29	206 ± 2	.049 ± .021	ND	.260 ± .049	.091 ± .050	.070 ± .059	.015 ± .047	.102 ± .033	.045 ± .018
6-29	7-17	325 ± 3	.043 ± .022	ND	.345 ± .046	.138 ± .047	.107 ± .044	.169 ± .046	.174 ± .087	.086 ± .044
7-17	7-31	378 ± 3	.078 ± .038	ND	.296 ± .051	.171 ± .059	.118 ± .050	.098 + .047	.26 ± .11	.048 ± .025
7-31	8-15	425 ± 3	.019 ± .021	ND	.225 ± .045	.069 ± .046	.062 ± .044	.030 ± .022	.26 ± .10	<.058
8-15	8-31	300 ± 2	.038 ± .023	ND	.179 ± .038	.045 ± .036	.042 ± .036	.050 ± .037	.005 ± .041	.008 ± .016
8-31	9-15	239 ± 2	<.051	ND	.088 ± .033	.042 ± .033	<.038	.046 ± .031	.105 ± .083	.014 ± .015
9-15	10-2	210 ± 2	.021 ± .014	ND	.079 ± .029	.024 ± .026	.031 ± .028	.033 ± .031	.125 ± .069	.002 ± .010
10-2	10-16	339 ± 1	<.054	ND	.105 ± .011	.070 ± .016	.023 ± .011	.037 ± .013	.075 ± .025	.011 ± .015
10-16	10-31	180 + 1	<.089	ND	.054 ± .045	.017 ± .021	.003 ± .052	23.6 ± .2	.16 ± .13	.031 ± .056
11-15	11-29	120 ± 1	.009 ± .011	ND	.020 ± .012	.014 ± .015	.003 ± .011	.037 ± .014	.010 ± .015	ND
11-29	12-15	225 ± 1	.033 ± .011	ND	.060 ± .011	.012 ± .015	.007 ± .009	.013 ± .015	.033 ± .031	.008 ± .009
12-15	1-2	142 ± 1	.006 ± .016	ND	.028 ± .010	.005 ± .012	ND	.022 ± .012	.012 ± .019	ND

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1972 (contd)

Date		DPM/10³M³								
On	Off	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
1-4	1-17	10.6 ± .2	8.58 ± .13	8.17 ± .12	11.7 ± .5	ND	.090	.84 ± .07	.078 ± .041	6.05 ± .10
1-17	2-2	5.11 ± .46	9.62 ± .37	8.73 ± .61	10.2 ± .6	.084	.034	1.15 ± .12	.196 ± .039	10.6 ± .2
2-2	2-18	5.00 ± .15	7.19 ± .11	11.3 ± .1	12.5 ± .5	ND	ND	1.23 ± .07	.241 ± .036	13.2 ± .1
2-18	3-3	2.40 ± .12	4.46 ± .09	3.11 + .08	10.6 ± .4	.058	ND	1.19 ± .06	.142 ± .031	8.16 ± .11
3-3	3-16	3.12 ± .12	6.25 ± .11	1.90 ± .06	15.1 ± .6	ND	.060	2.06 ± .08	.235 ± .039	15.4 ± .2
3-16	3-21	2.77 ± .19	5.85 + .17	.50 ± .05	12.6 ± .9	.12	.12	1.69 ± .13	.073 ± .066	8.07 ± .18
4-5	4-20	21.3 ± .3	18.5 ± .2	5.20 ± .08	11.5 ± .5	.082	.064	1.22 ± .03	.053 ± .032	4.92 ± .08
4-20	5-3	49.3 ± .1	46.9 ± .3	11.7 + .1	15.6 ± .6	.091	.17	1.71 ± .10	.235 ± .044	14.5 ± .2
5-3	5-15	126 ± 1	141 ± 1	52.5 ± .3	24.0 ± .9	.14	.099	2.29 ± .16	.618 ± .063	26.5 ± .2
5-15	6-1	85.0 ± .7	106 ± 1	44.2 + .3	23.1 ± 1.0	.11	.11	3.36 ± .26	.107 ± .045	13.9 ± .2
6-1	6-16	95.3 ± .8	133 ± 1	66.2 ± .5	30.1 ± 1.2	.12	.099	3.09 ± .29	.26 ± .15	25.4 ± .3
6-16	6-24	53.2 ± .7	78.5 ± .5	41.2 ± .4	18.9 ± 1.1	.11	.091	1.96 ± .23	.164 ± .046	14.0 ± .2
6-29	7-17	60.8 ± .6	93.7 ± .5	59.4 ± .4	28.5 ± 1.1	.10	.083	3.17 ± .23	.097 ± .038	15.0 ± .2
7-17	7-31	46.1 ± .6	76.4 ± .5	57.6 ± .4	30.3 ± 1.1	.11	.090	3.01 ± .24	.208 ± .051	22.0 ± .3
7-31	8-15	29.0 ± .5	49.8 ± .4	38.9 ± .3	25.2 ± 1.0	.098	.086	2.58 ± .21	.123 ± .042	12.0 ± .2
8-15	8-31	15.2 ± .3	27.5 ± .3	18.4 ± .2	19.2 ± .7	.085	.074	1.59 ± .16	.228 ± .041	14.2 ± .2
8-31	9-15	8.37 ± .27	15.3 ± .2	9.40 ± .17	12.1 ± .7	.073	.066	1.25 ± .15	.233 ± .042	16.2 ± .2
9-15	10-2	3.94 ± .17	7.85 ± .06	4.22 + .11	7.37 ± .50	.023 ± .030	.055	.72 ± .12	.232 ± .037	17.7 ± .2
10-2	10-16	3.87 ± .08	7.99 ± .06	3.86 ± .05	9.67 ± .23	.074	ND	1.14 ± .07	.649 ± .019	29.5 + .5
10-16	10-31	1.59 ± .11	8.49 + .07	1.35 ± .06	6.00 ± .37	.11 ± .16	.096	.46 ± .10	.780 ± .051	23.2 ± .1
11-15	11-29	.72 ± .07	1.20 ± .04	.531 ± .046	3.05 ± .20	ND	ND	.222 ± .065	.525 ± .044	14.6 ± .1
11-29	12-15	.87 ± .04	1.55 ± .04	.571 ± .029	3.41 ± .18	.048	ND	.388 ± .054	.080 ± .013	4.80 ± .06
12-15	1-2	.55 ± .04	.96 ± .03	.283 ± .032	2.11 ± .14	.21	.11	.416 ± .039	.030 ± .011	3.31 ± .04

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1972 (contd)

Date On	Date Off	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{232}Th	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^3M^3								
1-4	1-17	22.7 ± .5	12.9 ± .1	22.6 ± .3	.63 ± .08	.24 ± .20	.20 ± .10	.007 ± .002	.084 ± .005	.0025 ± .0006
1-17	2-2	12.1 ± .3	7.77 ± .88	17.1 ± .4	.37 ± .10	2.55 ± .27	.18 ± .16			
2-2	2-18	8.21 ± .21	9.74 ± .10	23.0 ± .3	.42 ± .08	.20 ± .15	.21 ± .08	.007 ± .002	.080 ± .005	.0014 ± .0004
2-18	3-3	1.25 ± .13	2.58 ± .07	26.3 ± .3	.41 ± .06		.13 ± .08	.002 ± .002		
3-3	3-16	.430 ± .061	1.53 ± .06	32.4 ± .3	.49 ± .08	.14 ± .18	.13 ± .10		.092 ± .006	.0033 ± .0009
3-16	3-21	<.34	.41 ± .06	28.1 ± .4	.70 ± .12	.17 ± .41	.44 ± .23	.002 ± .001		
4-5	4-20	8.93 ± .18	15.8 ± .1	26.3 ± .3	ND	.21 ± .17	.23 ± .09		.032 ± .003	.0022 ± .0008
4-20	5-3	11.6 ± .2	31.6 ± .1	40.3 ± .4	ND		.25 ± .11	.006 ± .003		
5-3	5-15	30.5 ± .4	94.1 ± .3	69.3 ± .5	ND	.31 ± .23	.22 ± .13		.140 ± .009	.0033 ± .0004
5-15	6-1	15.0 ± .3	53.0 ± .2	56.8 ± .6	.76 ± .22			.006 ± .002		
6-1	6-16	12.5 ± .3	67.2 ± .1	64.6 ± .7	.95 ± .23	.25 ± .15	.27 ± .22		.107 ± .005	.0053 ± .0005
6-16	6-24	4.09 ± .10	37.4 ± .3	40.5 ± .5	.89 ± .20	.27 ± .09	.19 ± .22	.024 ± .003		
6-29	7-17	3.69 ± .13	46.1 ± .3	60.4 ± .7	.98 ± .19	.23 ± .09			.119 ± .005	.0016 ± .0005
7-17	7-31	1.84 ± .14	39.0 ± .3	53.8 ± .6	.89 ± .20			.011 ± .002		
7-31	8-15	.655 ± .085	24.4 ± .2	43.3 ± .5	.67 ± .18		.31 ± .20		.106 ± .005	.0026 ± .0007
8-15	8-31	.185 ± .068	10.5 ± .2	28.6 ± .4	.24 ± .14	.25 ± .14		.0005 ± .0005		
8-31	9-15	.134 ± .047	4.89 ± .11	17.4 ± .4	.31 ± .12	.30 ± .15	.16 ± .15		.040 ± .003	.0003 ± .0004
9-15	10-2	<.13	2.24 ± .08	10.1 ± .3	.14 ± .10	.20 ± .13		.002 ± .002		
10-2	10-16	<.18	1.79 ± .05	11.6 ± .1	.31 ± .06	.37 ± .77	.14 ± .06		.033 ± .003	.0025 ± .0010
10-16	10-31	.040 ± .071	.626 ± .059	5.55 ± .17	.14 ± .07	.15 ± .12				
11-15	11-29	ND	.200 ± .059	2.91 ± .12	.09 ± .06		.18 ± .06	.0021 ± .0002	.0054 ± .0005	
11-29	12-15	ND	.223 ± .044	4.82 ± .13	.14 ± .06		.20 ± .06			
12-15	1-2	ND	.075 ± .054	3.36 ± .10	.21 ± .04	.17 ± .07	.15 ± .05			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1973

Date		DPM/10³M³								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
1-2	1-13	140 ± 1	.029 ± .023	<.044	.024 ± .003	.002 ± .016	.057 ± .030	.034 ± .018	<.10	.015 ± .029
1-15	1-31	138 ± 1	.018 ± .015	.035 ± .014	.080 ± .015	<.036	.007 ± .013	1.10 ± .03	.028 ± .027	.023 ± .019
1-31	2-14	218 ± 1	.021 ± .016	<.020	.050 ± .013	.053 ± .015	ND	.031 ± .014	ND	.011 ± .010
2-14	3-2	158 ± 1	.021 ± .014	<.015	.060 ± .012	.020 ± .016	<.030	.058 ± .013	<.074	ND
3-2	3-16	141 ± 1	.008 ± .008	ND	.041 ± .007	.012 ± .005	ND	.022 ± .008	ND	ND
3-16	3-30	286 ± 1	.034 ± .026	ND	.089 ± .003	.024 ± .006	.032 ± .003	ND	.034 ± .005	ND
3-30	4-17	366 ± 1	.049 ± .009	ND	.114 ± .008	.036 ± .006	.017 ± .008	.101 ± .009	.022 ± .016	.013 ± .008
4-17	5-1	297 ± 1	.054 ± .010	ND	.072 ± .008	.033 ± .007	.001 ± .007	.154 ± .013	<.042	<.011
5-1	5-15	403 ± 1	.049 ± .010	<.011	.114 ± .009	.039 ± .008	.014 ± .007	.033 ± .010	.023 ± .012	ND
5-15	5-31	330 ± 1	.049 ± .016	<.020	.086 ± .003	.031 ± .007	<.014	.034 ± .006	.137 ± .016	.009 ± .007
5-31	6-15	397 ± 1	.053 ± .008	ND	.102 ± .008	.038 ± .008	.011 ± .007	.024 ± .006	.093 ± .015	ND
6-15	6-28	270 ± 1	.027 ± .005	.014 ± .005	.063 ± .005	.018 ± .003	ND	.018 ± .004	.033 ± .009	.006 ± .004
6-28	7-7		.033 ± .010	ND	.081 ± .009	.030 ± .006	ND	ND	ND	.005 ± .010
7-7	7-10	360 ± 1	.010 ± .003	<.058	.085 ± .022	.050 ± .018	ND	.046 ± .028	ND	.054 ± .027
7-10	7-13		.065 ± .017	ND	.077 ± .014	.022 ± .007	ND	ND	.030 ± .023	ND
7-13	7-20	419 ± 1	.068 ± .016	ND	.111 ± .011	.085 ± .007	ND	ND	ND	ND
7-20	7-25		.046 ± .012	ND	.031 ± .009	.016 ± .005	.027 ± .009	ND	.055 ± .017	ND
7-25	8-15	166 ± 1	.021 ± .006	ND	.046 ± .004	.017 ± .004	ND	.019 ± .005	ND	ND
8-15	8-31	92 ± 1	.023 ± .003	ND	.037 ± .003	.016 ± .002	.003 ± .002	.005 ± .003	ND	ND
8-31	9-15	300 ± 1	.032 ± .006	ND	.035 ± .005	.002 ± .005	ND	.033 ± .007	ND	ND
9-19	10-1	292 ± 1	.019 ± .006	ND	.038 ± .007	.001 ± .001	ND	.009 ± .006	ND	ND
10-1	10-15	242 ± 1	.020 ± .005	.008 ± .006	.031 ± .004	.021 ± .008	ND	.018 ± .005	ND	ND
10-15	11-2	244 ± 1	.012 ± .004	ND	.035 ± .004	.009 ± .002	.004 ± .003	.029 ± .004	ND	ND
11-2	12-3	120 ± 1	.006 ± .003	ND	.037 ± .004	ND	ND	.016 ± .004	.014 ± .005	ND
12-3	12-14	118 ± 1	.012 ± .008	ND	.143 ± .010	.005 ± .004	.034 ± .008	.215 ± .014	.026 ± .014	ND
12-14	12-31	63 ± 1	.010 ± .005	ND	.047 ± .005	.003 ± .003	ND	.012 ± .005	ND	ND

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1973 (contd)

Date		DPM/10^3M^3								
On	Off	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs
1-2	1-13	.226 ± .060	.616 ± .038	.080 ± .049	2.11 ± .19	<.088	.041 ± .030	.419 ± .058	ND	.151 ± .019
1-15	1-31	.307 ± .044	.491 ± .027	.164 ± .028	2.19 ± .15	<.064	.062 ± .031	.375 ± .042	ND	.074 ± .013
1-31	2-14	.379 ± .065	.695 ± .029	.138 ± .027	2.85 ± .18	ND	<.060	.343 ± .059	ND	.075 ± .014
2-14	3-2	.258 ± .029	.480 ± .021	.002 ± .017	2.83 ± .15	ND	ND	.453 ± .045	ND	.017 ± .008
3-2	3-16	.183 ± .027	.312 ± .015	.062 ± .016	1.98 ± .08	ND	ND	.448 ± .028	ND	.018 ± .007
3-16	3-30	.263 ± .008	.568 ± .061	.105 ± .018	3.82 ± .04	<.059	ND	.892 ± .037	ND	.021 ± .002
3-30	4-17	.224 ± .021	.494 ± .015	.090 ± .012	4.36 ± .11	<.038	<.034	1.14 ± .04	ND	.024 ± .006
4-17	5-1	.182 ± .021	.373 ± .014	.054 ± .013	3.92 ± .11	ND	ND	1.14 ± .04	ND	.006 ± .008
5-1	5-15	.157 ± .021	.357 ± .014	.055 ± .012	5.06 ± .13	.033 ± .017	<.034	1.30 ± .04	ND	.015 ± .006
5-15	5-31	.118 ± .019	.217 ± .014	.038 ± .014	4.56 ± .13	ND	ND	1.07 ± .04	ND	.016 ± .006
5-31	6-15	.194 ± .019	.221 ± .012	.032 ± .012	5.05 ± .13	ND	ND	1.33 ± .05	ND	.009 ± .006
6-15	6-28	.028 ± .013	.105 ± .007	.013 ± .005	.17 ± .04	ND	ND	.616 ± .038	ND	ND
6-28	7-7	.718 ± .039	.673 ± .023	2.29 ± .04	3.02 ± .14	<.066	ND	.862 ± .042	4.08 ± .14	<.020
7-7	7-10	7.35 ± .18	5.70 ± .11	26.5 ± .2	3.33 ± .28	ND	ND	.486 ± .099	22.9 ± 1.4	<.044
7-10	7-13	1.27 ± .08	1.28 ± .05	6.27 ± .11	3.45 ± .24	ND	ND	.813 ± .062	10.7 ± 1.0	ND
7-13	7-20	3.96 ± .08	3.24 ± .05	11.3 ± .1	4.15 ± .17	ND	ND	1.02 ± .05	8.11 ± .27	.009 ± .009
7-20	7-25	1.64 ± .07	1.88 ± .05	3.79 ± .07	2.31 ± .14	ND	ND	.630 ± .042	ND	.012 ± .008
7-25	8-15	4.65 ± .05	4.84 ± .04	8.37 ± .04	2.16 ± .08	ND	ND	.448 ± .023	ND	.011 ± .004
8-15	8-31	2.45 ± .03	2.96 ± .02	4.32 ± .02	1.56 ± .04	ND	ND	.392 ± .015	ND	.012 ± .002
8-31	9-15	3.24 ± .07	5.06 ± .05	5.11 ± .05	1.38 ± .08	ND	ND	.245 ± .027	ND	.012 ± .005
9-19	10-1	3.76 ± .07	5.43 ± .05	4.79 ± .05	1.13 ± .09	ND	ND	.227 ± .030	ND	.014 ± .005
10-1	10-15	3.56 ± .06	5.66 ± .05	3.78 ± .04	1.11 ± .08	ND	ND	.212 ± .022	ND	.011 ± .003
10-15	11-2	4.74 ± .06	7.74 ± .05	4.45 ± .04	1.36 ± .07	ND	ND	.160 ± .022	ND	.006 ± .002
11-2	12-2	4.05 ± .01	6.95 ± .04	2.77 ± .03	1.23 ± .07	ND	ND	.125 ± .013	ND	.010 ± .003
12-3	12-14	5.62 ± .08	9.94 ± .07	3.49 ± .04	1.51 ± .12	ND	ND	.184 ± .021	ND	ND
12-14	12-31	3.82 ± .05	6.90 ± .05	1.76 ± .02	1.22 ± .08	ND	ND	.144 ± .015	ND	.013 ± .004

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1973 (contd)

Date On	Date Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^3M^3									
1-2	1-13	7.99 ± .08	ND	ND	.274 ± .13	.218 ± .053	.37 ± .10	.314 ± .079	.0062 ± .0007	.0241 ± .0016	
1-15	1-31	3.22 ± .03	.19 ± .13	.134 ± .048	2.48 ± .11	.121 ± .046	.261 ± .078	.084 ± .079			
1-31	2-14	6.43 ± .07	.084 ± .073	.071 ± .040	4.77 ± .13	.121 ± .058	.178 ± .092	.141 ± .065	.0026 ± .0003	.0193 ± .0009	
2-14	3-2	3.22 ± .04	.115 ± .031	.060 ± .029	3.79 ± .11	.156 ± .049	.231 ± .084	.196 ± .056			
3-2	3-16	2.40 ± .03	ND	.072 ± .024	3.28 ± .06	.136 ± .018	.110 ± .040	.048 ± .029			
3-16	3-30	3.41 ± .01	ND	.036 ± .028	6.54 ± .08	.216 ± .023	.106 ± .014	.065 ± .011			
3-30	4-17	4.07 ± .03	ND	ND	7.64 ± .07	.272 ± .025	.082 ± .039	.064 ± .032	.0016 ± .0002	.0311 ± .0017	
4-17	5-1	4.37 ± .04	ND	<.037	7.03 ± .08	.257 ± .026	.091 ± .052	.092 ± .039			
5-1	5-15	4.31 ± .04	ND	.040 ± .020	8.55 ± .09	.306 ± .029	.149 ± .049	.075 ± .038	.0038 ± .0008	.0391 ± .0030	
5-15	5-31	4.47 ± .04	ND	.058 ± .026	6.51 ± .08	.212 ± .026	.100 ± .030	.044 ± .025			
5-31	6-15	4.12 ± .04	ND	<.048	7.12 ± .09	.279 ± .031	.135 ± .041	.099 ± .031	.0029 ± .0007	.0441 ± .0038	
6-15	6-28	2.33 ± .02	ND	.006 ± .008	3.95 ± .04	.138 ± .012	.061 ± .026	.067 ± .018			
6-28	7-7	2.90 ± .03	2.63 ± .16	1.21 ± .03	4.92 ± .08	.209 ± .024	ND	ND	.0028 ± .0008	.0288 ± .0032	
7-7	7-10	2.80 ± .06	25.4 ± .8	12.5 ± .1	6.10 ± .17	.099 ± .058	ND	.06 ± .10			
7-10	7-13	3.43 ± .06	5.25 ± .40	2.43 ± .06	5.63 ± .12	.232 ± .032	ND	.099 ± .062			
7-13	7-20	3.96 ± .05	7.33 ± .22	6.16 ± .05	7.00 ± .09	.249 ± .025	.136 ± .050	.141 ± .041			
7-20	7-25	2.40 ± .04	2.20 ± .29	2.38 ± .05	3.79 ± .08	.127 ± .021	.082 ± .046	.106 ± .036			
7-25	8-15	2.23 ± .02	1.93 ± .09	6.00 ± .03	3.98 ± .05	.143 ± .012	.073 ± .017	.068 ± .016	.0031 ± .0004	.0236 ± .0015	
8-15	8-31	1.92 ± .01	.947 ± .030	2.80 ± .01	2.94 ± .03	.101 ± .006	.070 ± .015	.028 ± .010			
8-31	9-15	1.17 ± .02	.842 ± .088	3.15 ± .04	2.45 ± .03	.074 ± .015	.074 ± .036	.099 ± .027	.0029 ± .0008	.0159 ± .0026	.0005 ± .0024
9-19	10-1	1.47 ± .03	.467 ± .051	2.99 ± .03	2.39 ± .05	.063 ± .017	.075 ± .038	.082 ± .025			
10-1	10-15	1.49 ± .02	.372 ± .051	2.32 ± .03	2.36 ± .04	.051 ± .009	.074 ± .019	.069 ± .020	.0021 ± .0005	.0132 ± .0022	.0016 ± .0011
10-15	11-2	1.93 ± .02	.156 ± .022	2.57 ± .02	3.12 ± .04	.053 ± .014	.027 ± .024	.039 ± .012			.0061 ± .0011
11-2	12-3	.84 ± .01	.087 ± .019	1.72 ± .02	2.88 ± .35	.032 ± .007	.016 ± .015	.035 ± .011	<.0011	.0110 ± .0010	
12-3	12-14	1.10 ± .03	.921 ± .025	2.27 ± .02	4.57 ± .06	.055 ± .012	ND	.053 ± .033			.0070 ± .0023
12-14	12-31	.48 ± .01	.234 ± .054	1.39 ± .02	4.18 ± .05	.038 ± .009	.090 ± .028	.048 ± .021	<.0011	.0550 ± .0010	

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington ($46^{\circ}21'N$, $119^{\circ}17'W$) in 1974

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
		DPM/10^{3}M^3								
12-31	1-16	105 ± 1	ND	ND	.152 ± .009	.011 ± .004	.050 ± .008	.270 ± .014	.008 ± .012	ND
1-16	2-1	94 ± 1	.014 ± .005	ND	.097 ± .008	ND	.038 ± .042	.020 ± .005	ND	.007 ± .005
2-1	2-15	153 ± 1	.019 ± .006	ND	.167 ± .011	.015 ± .005	ND	.011 ± .005	ND	ND
2-15	3-1	139 ± 1	ND	ND	.171 ± .012	.003 ± .005	.005 ± .012	.007 ± .006	.040 ± .024	ND
3-1	3-15	203 ± 1	.019 ± .008	ND	.298 ± .015	.017 ± .007	ND	.021 ± .007	.035 ± .029	ND
3-15	4-1	229 ± 1	.031 ± .009	ND	.576 ± .018	ND	.065 ± .013	.018 ± .008	ND	ND
4-1	4-15	164 ± 1	.029 ± .010	ND	.504 ± .018	ND	ND	.031 ± .009	.038 ± .033	ND
4-15	4-30	287 ± 1	.040 ± .013	ND	1.16 ± .03	.057 ± .013	.034 ± .023	.051 ± .012	ND	ND
4-30	5-15	238 ± 1	.029 ± .012	ND	1.04 ± .03	.075 ± .012	ND	ND	ND	ND
5-15	6-2	182 ± 1	.032 ± .014	ND	.746 ± .033	.026 ± .014	<.078	ND	ND	ND
6-3	6-16	341 ± 1	.035 ± .014	ND	1.22 ± .03	.044 ± .015	.069 ± .028	ND	.112 ± .051	ND
6-16	6-30	368 ± 1	.042 ± .018	ND	1.40 ± .03	.088 ± .021	ND	.078 ± .016	.108 ± .038	ND
6-30	7-15	229 ± 1	.052 ± .010	ND	.765 ± .021	.035 ± .010	ND	ND	.071 ± .033	ND
7-16	7-31	327 ± 1	.031 ± .012	ND	.735 ± .021	.042 ± .010	ND	.027 ± .011	.096 ± .033	ND
7-31	8-15	319 ± 1	.041 ± .011	ND	.552 ± .018	.032 ± .010	ND	.021 ± .010	.047 ± .033	.215 ± .014
8-16	9-1	265 ± 1	.034 ± .011	ND	.368 ± .015	.019 ± .009	.021 ± .008	.038 ± .010	ND	.074 ± .016
9-2	9-15	261 ± 1	ND	ND	.282 ± .014	.014 ± .008	.022 ± .010	.008 ± .009	.042 ± .027	.064 ± .010
9-15	9-30	429 ± 1	.039 ± .008	.015 ± .011	.320 ± .014	.012 ± .009	.022 ± .014	.022 ± .009	.036 ± .019	.111 ± .014
9-30	10-15	424 ± 1	.038 ± .007	ND	.252 ± .011	.027 ± .007	.009 ± .009	.014 ± .007	.036 ± .016	.174 ± .012
10-15	10-31	285 ± 1	.019 ± .007	ND	.201 ± .011	.015 ± .007	.032 ± .009	.019 ± .008	.029 ± .013	.105 ± .011
10-31	11-15	123 ± 1	.019 ± .005	ND	.117 ± .007	.006 ± .005	.016 ± .005	.042 ± .006	.018 ± .011	.065 ± .007
11-15	11-30	168 ± 1	.016 ± .006	.009 ± .005	.155 ± .009	.014 ± .006	.006 ± .008	.014 ± .006	.026 ± .015	.156 ± .010
11-30	12-16	126 ± 1	.014 ± .006	.012 ± .005	.205 ± .012	.021 ± .005	.012 ± .009	.005 ± .006	.033 ± .020	.172 ± .010
12-16	12-31	148 ± 1	.009 ± .005	.006 ± .006	.260 ± .011	.004 ± .005	.033 ± .008	.101 ± .009	.065 ± .017	.153 ± .010

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1974 (contd)

Date On	Date Off	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs
		DPM/10^3M^3								
12-31	1-16	5.38 ± .08	11.2 ± .1	2.64 ± .04	1.47 ± .11	ND	ND	.244 ± .021	ND	.017 ± .006
1-16	2-1	8.47 ± .08	16.2 ± .1	3.48 ± .03	3.85 ± .13	ND	ND	.393 ± .024	ND	.013 ± .005
2-1	2-15	15.6 ± .1	31.5 ± .1	6.04 ± .05	7.58 ± .18	ND	ND	.734 ± .034	ND	.002 ± .006
2-15	3-1	15.3 ± .1	31.8 ± .1	5.57 ± .05	9.10 ± .20	ND	ND	.710 ± .036	ND	ND
3-1	3-15	24.2 ± .2	49.1 ± .1	7.74 ± .05	14.9 ± .3	ND	ND	1.35 ± .05	ND	.038 ± .008
3-15	4-1	43.2 ± .2	90.6 ± .2	12.6 ± .1	32.4 ± .3	ND	ND	2.89 ± .06	ND	.011 ± .009
4-1	4-15	31.8 ± .2	66.0 ± .2	8.11 ± .06	26.3 ± .3	ND	ND	2.34 ± .06	ND	.008 ± .009
4-15	4-30	66.6 ± .2	139 ± 1	15.3 ± .1	83.9 ± .7	ND	ND	5.97 ± .07	ND	.030 ± .013
4-30	5-15	53.5 ± .2	113 ± 1	10.8 ± .1	55.6 ± .4	ND	ND	5.53 ± .07	ND	.001 ± .017
5-15	6-2	31.9 ± .3	68.5 ± .3	3.86 ± .10	36.3 ± .5	ND	ND	3.55 ± .08	ND	.009 ± .015
6-3	6-16	46.9 ± .3	102 ± 1	7.55 ± .07	64.0 ± .5	ND	ND	6.92 ± .09	ND	.004 ± .014
6-16	6-30	48.0 ± .3	99.5 ± .3	8.15 ± .08	80.3 ± .7	ND	ND	7.70 ± .11	2.16 ± .25	.007 ± .016
6-30	7-15	22.4 ± .1	48.1 ± .1	3.79 ± .04	39.4 ± .3	ND	ND	2.84 ± .04	.529 ± .083	.013 ± .010
7-16	7-31	22.9 ± .1	44.8 ± .1	7.02 ± .05	40.1 ± .3	ND	ND	4.63 ± .06	1.57 ± .12	.031 ± .010
7-31	8-15	38.6 ± .2	54.5 ± .1	4.28 ± .04	29.0 ± .3	ND	ND	3.47 ± .06	.35 ± .12	ND
8-16	9-1	20.0 ± .1	29.5 ± .1	9.03 ± .06	19.3 ± .3	ND	ND	2.38 ± .05	1.01 ± .09	.019 ± .010
9-2	9-15	14.0 ± .2	22.2 ± .1	4.82 ± .04	13.9 ± .3	ND	ND	1.70 ± .05	.233 ± .088	ND
9-15	9-30	17.9 ± .2	33.3 ± .2	5.62 ± .07	14.7 ± .2	ND	ND	1.97 ± .05	ND	.020 ± .007
9-30	10-15	20.5 ± .2	37.3 ± .1	3.36 ± .05	12.5 ± .2	ND	ND	1.75 ± .04	ND	.014 ± .006
10-15	10-31	14.0 ± .1	26.4 ± .1	4.54 ± .05	9.29 ± .18	ND	.018 ± .017	1.41 ± .04	ND	.001 ± .006
10-31	11-15	7.76 ± .08	13.3 ± .1	2.46 ± .03	3.68 ± .12	ND	ND	.473 ± .024	ND	.011 ± .005
11-15	11-30	16.5 ± .1	28.8 ± .1	5.31 ± .04	5.22 ± .16	ND	<.022	.742 ± .033	ND	.016 ± .006
11-30	12-16	17.1 ± .1	32.5 ± .1	5.26 ± .04	5.54 ± .16	<.033	ND	.762 ± .032	ND	.010 ± .005
12-16	12-31	15.8 ± .1	29.8 ± .1	5.61 ± .04	6.29 ± .16	<.031	ND	.759 ± .031	ND	.013 ± .006

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1974 (contd)

Date On	Date Off	DPM/10³M³ ^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{226}Ra	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
12-31	1-16	.80 ± .02	ND	1.61 ± .02	6.5 ± .1	.077 ± .012	ND	.022 ± .027	<.0012	.0191 ± .0028	<.0025
1-16	2-1	.98 ± .02	ND	1.65 ± .02	9.1 ± .1	.094 ± .014	ND	.023 ± .027			
2-1	2-15	1.78 ± .03	ND	2.92 ± .03	22.0 ± .1	.202 ± .021	ND	ND	<.0012	.0222 ± .0030	<.0025
2-15	3-1	2.26 ± .03	ND	2.42 ± .03	22.1 ± .1	.191 ± .021	ND	.110 ± .052			
3-1	3-15	5.29 ± .05	ND	3.09 ± .03	37.5 ± .2	.345 ± .020	ND	.109 ± .058	.0024 ± .0006	.0284 ± .0022	<.0025
3-15	4-1	6.74 ± .05	ND	4.68 ± .03	74.6 ± .2	.621 ± .025	ND	.048 ± .060			
4-1	4-15	5.53 ± .05	ND	2.94 ± .03	62.8 ± .2	.529 ± .024	ND	ND	.0021 ± .0007	.0399 ± .0038	.0033 ± .0033
4-15	4-30	12.9 ± .1	ND	5.32 ± .04	149 ± 1	1.43 ± .05	ND	.23 ± .10			
4-30	5-15	12.5 ± .1	ND	3.62 ± .04	85.9 ± .2	1.26 ± .05	ND	ND	.0031 ± .0006	.116 ± .005	.0012 ± .0027
5-15	6-2	8.53 ± .08	ND	1.83 ± .04	92.2 ± .3	.84 ± .05	ND	.33 ± .12			
6-3	6-16	15.2 ± .1	ND	2.24 ± .05	158 ± 1	1.57 ± .05	.31 ± .11	ND	.0030 ± .0004	.0698 ± .0020	.0040 ± .0012
6-16	6-30	17.7 ± .1	3.85 ± .14	4.27 ± .05	196 ± 1	2.05 ± .07	.28 ± .07	.158 ± .078			
6-30	7-15	9.61 ± .08	1.05 ± .04	1.63 ± .02	93.1 ± .2	.760 ± .038	.12 ± .08	ND	.0029 ± .0004	.0734 ± .0026	.0015 ± .0021
7-16	7-31	10.5 ± .1	3.16 ± .04	5.33 ± .04	94.1 ± .2	.911 ± .040	ND	ND			
7-31	8-15	8.25 ± .05	2.11 ± .07	4.47 ± .03	70.4 ± .2	.859 ± .032	.27 ± .08	.118 ± .043	.0023 ± .0004	.0645 ± .0024	<.0032
8-16	9-1	5.88 ± .05	4.54 ± .09	10.8 ± .1	47.3 ± .2	.606 ± .030	.13 ± .06	.106 ± .015			
9-2	9-15	4.49 ± .04	1.53 ± .06	5.75 ± .04	34.3 ± .1	.364 ± .029	.01 ± .05	.122 ± .048	.0015 ± .0004	.0187 ± .0013	.0025 ± .0029
9-15	9-30	4.71 ± .04	1.00 ± .08	6.13 ± .07	38.2 ± .2	.413 ± .028	.14 ± .05	.185 ± .043			
9-30	10-15	4.01 ± .04	.410 ± .033	4.42 ± .04	31.1 ± .1	.414 ± .026	.14 ± .04	.120 ± .027	.0018 ± .0004	.0136 ± .0012	.0029 ± .0027
10-15	10-31	3.14 ± .03	.361 ± .090	4.04 ± .04	23.6 ± .1	.259 ± .016	.14 ± .04	.019 ± .032			
10-31	11-15	1.33 ± .02	.291 ± .026	2.42 ± .02	11.3 ± .1	.133 ± .015	.01 ± .01	.037 ± .022	.0018 ± .0004	.104 ± .003	<.0025
11-15	11-30	2.31 ± .03	.224 ± .024	4.75 ± .03	19.3 ± .1	.239 ± .021	.14 ± .02	.025 ± .034			
11-30	12-16	2.01 ± .03	.305 ± .036	5.13 ± .03	22.7 ± .1	.243 ± .021	.020 ± .045	.105 ± .038	.0014 ± .0004	.0709 ± .0021	<.0019
12-16	12-31	2.02 ± .02	.096 ± .022	3.78 ± .03	18.6 ± .1	.173 ± .019	.11 ± .03	.028 ± .033			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1975

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co
		DPM/$10^3 M^3$						
12-31	1-16	166 ± 1	.010 ± .006	<.012	.210 ± .010	.018 ± .005	.011 ± .008	.019 ± .006
1-16	1-31	191 ± 1	.026 ± .007	ND	.433 ± .011	.013 ± .007	.024 ± .011	.035 ± .008
1-31	2-16	247 ± 1	.022 ± .009	<.016	.521 ± .016	.034 ± .008	.021 ± .013	.031 ± .008
2-16	3-3	197 ± 1	.011 ± .009	<.016	.578 ± .017	.018 ± .003	.034 ± .012	.045 ± .009
3-3	3-16	279 ± 1	.042 ± .011	<.021	.773 ± .024	.033 ± .010	.036 ± .016	.090 ± .008
3-16	4-1	196 ± 1	.026 ± .009	<.016	.419 ± .015	.015 ± .007	.023 ± .012	.013 ± .008
4-1	4-15	220 ± 1	.018 ± .009	<.017	.564 ± .017	.034 ± .008	.011 ± .011	.043 ± .008
4-15	5-2	284 ± 1	.034 ± .010	<.017	.706 ± .019	.038 ± .009	.018 ± .012	.024 ± .009
5-2	5-15	271 ± 1	.052 ± .009	<.016	.531 ± .016	.033 ± .003	.022 ± .012	.010 ± .008
5-15	5-31	275 ± 1	.030 ± .009	<.016	.484 ± .016	.030 ± .008	.013 ± .010	.021 ± .003
5-31	6-15	353 ± 1	.042 ± .010	<.012	.434 ± .016	.029 ± .008	.015 ± .012	.026 ± .008
6-15	7-1	147 ± 1	.019 ± .006	ND	.166 ± .009	.010 ± .004	.006 ± .006	.014 ± .006
7-1	7-15	348 ± 1	.045 ± .008	ND	.252 ± .010	.014 ± .006	.008 ± .007	.024 ± .006
7-15	7-31	288 ± 1	.026 ± .007	<.008	.189 ± .007	.022 ± .005	.004 ± .006	.021 ± .005
7-31	8-15	294 ± 1	.020 ± .006	<.007	.153 ± .009	.011 ± .005	.004 ± .005	.039 ± .006
8-15	8-31	179 ± 1	.014 ± .005	ND	.057 ± .006	.005 ± .003	.005 ± .004	.253 ± .010
8-31	9-15	374 ± 1	.024 ± .006	ND	.149 ± .008	<.006	ND	.045 ± .007
9-15	10-1	305 ± 1	.025 ± .006	ND	.061 ± .005	.011 ± .004	.005 ± .003	.043 ± .006
10-1	10-15	249 ± 1	.016 ± .005	.009 ± .004	.057 ± .006	.006 ± .003	.005 ± .004	.058 ± .007
10-15	10-31	252 ± 1	.017 ± .005	<.007	.046 ± .005	.003 ± .002	<.005	.154 ± .010
10-31	11-15	207 ± 1	.005 ± .005	ND	.064 ± .005	.006 ± .003	.009 ± .003	.058 ± .007
11-15	12-1	166 ± 1	.018 ± .005	.006 ± .005	.067 ± .006	.004 ± .002	.014 ± .003	.086 ± .003
12-2	12-15	197 ± 1	.021 ± .006	<.008	.082 ± .006	.003 ± .003	.012 ± .005	.085 ± .008
12-15	1-2	97 ± 1	.004 ± .003	<.004	.035 ± .004	.003 ± .002	.004 ± .003	.050 ± .005

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1975 (contd)

Date On	Date Off	^{65}Zn	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag
		DPM/10^3M^3						
12-31	1-16	.033 ± .016	.165 ± .010	15.8 ± .1	30.7 ± .1	5.49 ± .04	7.12 ± .20	<.028
1-16	1-31	.084 ± .020	.283 ± .014	27.1 ± .1	53.1 ± .1	8.89 ± .05	14.0 ± .2	<.039
1-31	2-16	.079 ± .027	.356 ± .015	31.1 ± .2	61.1 ± .2	9.39 ± .05	20.0 ± .3	.028 ± .019
2-16	3-3	.036 ± .023	.318 ± .015	25.1 ± .2	49.5 ± .1	7.09 ± .05	18.3 ± .3	<.044
3-3	3-16	.112 ± .011	.477 ± .019	34.9 ± .2	70.6 ± .2	9.48 ± .06	30.2 ± .4	<.057
3-16	4-1	.073 ± .022	.267 ± .014	18.5 ± .1	38.2 ± .1	4.83 ± .04	18.3 ± .3	<.041
4-1	4-15	.053 ± .022	.303 ± .015	20.9 ± .1	43.2 ± .1	4.76 ± .04	24.2 ± .3	<.043
4-15	5-2	.040 ± .025	.341 ± .015	21.3 ± .1	45.8 ± .1	4.61 ± .04	30.2 ± .3	<.046
5-2	5-15	.061 ± .020	.264 ± .013	16.2 ± .1	33.6 ± .1	3.02 ± .03	23.5 ± .3	.038 ± .022
5-15	5-31	.025 ± .020	.210 ± .013	12.6 ± .1	26.5 ± .1	2.15 ± .03	21.4 ± .3	<.027
5-31	6-15	.024 ± .022	.201 ± .014	10.4 ± .1	21.9 ± .1	1.38 ± .03	20.1 ± .3	<.032
6-15	7-1	.043 ± .013	.080 ± .008	3.31 ± .06	7.40 ± .05	.465 ± .014	7.17 ± .15	<.019
7-1	7-15	.047 ± .016	.097 ± .009	4.34 ± .06	9.06 ± .06	.537 ± .016	10.5 ± .2	<.020
7-15	7-31	.019 ± .018	.052 ± .008	3.14 ± .05	6.49 ± .05	.362 ± .013	8.36 ± .16	<.018
7-31	8-15	.023 ± .013	.050 ± .007	1.77 ± .04	3.87 ± .04	.189 ± .010	5.83 ± .14	<.018
8-15	8-31	<.013	.024 ± .006	.727 ± .026	1.54 ± .02	.056 ± .006	2.58 ± .09	ND
8-31	9-15	.014 ± .010	.024 ± .006	.959 ± .030	2.04 ± .03	.071 ± .007	3.63 ± .16	.023 ± .014
9-15	10-1	.008 ± .007	.018 ± .005	.502 ± .024	1.13 ± .02	.032 ± .005	2.42 ± .09	ND
10-1	10-15	<.035	.005 ± .005	.399 ± .019	.702 ± .017	.052 ± .006	1.61 ± .07	<.017
10-15	10-31	<.012	.016 ± .005	.231 ± .017	.499 ± .014	.020 ± .005	1.40 ± .07	<.018
10-31	11-15	.004 ± .008	<.006	.132 ± .013	.323 ± .012	.009 ± .004	.934 ± .062	<.016
11-15	12-1	.010 ± .007	.001 ± .004	.004 ± .010	.238 ± .009	.010 ± .004	.722 ± .058	<.017
12-2	12-15	<.014	<.007	.099 ± .040	.212 ± .005	.012 ± .005	.825 ± .067	<.020
12-15	1-2	<.008	.006 ± .003	.044 ± .008	.121 ± .006	.005 ± .003	.526 ± .042	<.011

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1975 (contd)

Date On	Date Off	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce
		DPM/10^3M^3						
12-31	1-16	<.028	.86 ± .03	.220 ± .055	.013 ± .005	2.05 ± .02	.192 ± .023	3.34 ± .03
1-16	1-31	.016 ± .015	1.58 ± .04	.440 ± .068	<.014	4.17 ± .04	.311 ± .030	5.29 ± .03
1-31	2-16	<.034	1.87 ± .05	.125 ± .066	.022 ± .008	4.96 ± .04	.317 ± .034	5.01 ± .05
2-16	3-3	<.037	1.84 ± .05	.353 ± .065	<.014	4.28 ± .04	.679 ± .043	3.67 ± .03
3-3	3-16	.039 ± .024	3.17 ± .06	ND	.015 ± .010	7.87 ± .06	<.060	4.41 ± .04
3-16	4-1	<.035	2.00 ± .05	.186 ± .070	<.014	4.88 ± .04	.042 ± .033	2.11 ± .03
4-1	4-15	.028 ± .016	2.64 ± .05	ND	.002 ± .007	6.23 ± .05	.046 ± .025	2.05 ± .03
4-15	5-2	<.039	3.39 ± .08	ND	.006 ± .009	7.93 ± .05	<.050	1.89 ± .03
5-2	5-15	<.034	2.71 ± .05	ND	<.014	6.59 ± .05	<.045	1.25 ± .02
5-15	5-31	<.031	2.26 ± .05	.174 ± .085	.020 ± .007	6.91 ± .05	<.054	.812 ± .020
5-31	6-15	<.041	2.56 ± .05	ND	.029 ± .008	6.55 ± .05	<.12	.501 ± .027
6-15	7-1	<.017	.99 ± .03	ND	.014 ± .005	3.22 ± .03	ND	.179 ± .011
7-1	7-15	.019 ± .013	1.61 ± .05	ND	.011 ± .006	3.84 ± .04	ND	.201 ± .014
7-15	7-31	<.014	1.26 ± .04	<.058	.007 ± .005	3.59 ± .03	<.025	.126 ± .040
7-31	8-15	<.015	.889 ± .032	<.034	.006 ± .005	2.51 ± .03	<.013	.059 ± .011
8-15	8-31	ND	.425 ± .022	ND	.003 ± .005	1.36 ± .02	ND	.026 ± .007
8-31	9-15	ND	.626 ± .033	ND	.006 ± .005	2.85 ± .03	ND	.041 ± .010
9-15	10-1	<.013	.394 ± .026	ND	.013 ± .004	1.75 ± .02	ND	.034 ± .010
10-1	10-15	<.013	.275 ± .024	ND	.011 ± .004	1.62 ± .02	.021 ± .016	.040 ± .008
10-15	10-31	<.013	.258 ± .021	ND	.026 ± .004	.90 ± .02	.032 ± .016	.020 ± .007
10-31	11-15	<.014	.174 ± .019	ND	.005 ± .004	1.04 ± .02	<.019	<.010
11-15	12-1	<.016	.172 ± .017	ND	.009 ± .004	1.10 ± .02	<.019	.012 ± .006
12-2	12-15	<.013	.176 ± .019	.142 ± .034	.009 ± .004	1.57 ± .02	.272 ± .029	.010 ± .007
12-15	1-2	<.011	.105 ± .013	.059 ± .021	.003 ± .003	.66 ± .01	.157 ± .018	<.007

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1975 (contd)

Date		DPM/10^3M^3							
On	Off	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
12-31	1-16	21.8 ± .1	.223 ± .019	24.0 ± .4	.050 ± .030	<.068	.0011 ± .0004	.0205 ± .0014	<.0029
1-16	1-31	39.8 ± .1	.426 ± .027	25.6 ± .4	.044 ± .049	.041 ± .047			
1-31	2-16	50.2 ± .2	.458 ± .028	38.3 ± .4	<.12	.108 ± .056	.0015 ± .0003	.0288 ± .0012	.0053 ± .0007
2-16	3-3	45.8 ± .2	.424 ± .028	17.4 ± .4	.075 ± .060	.116 ± .048			
3-3	3-16	69.7 ± .2	.719 ± .037	14.8 ± .4	.160 ± .079	.202 ± .068	.0012 ± .0002	.0597 ± .0020	<.0027
3-16	4-1	42.6 ± .3	.402 ± .027	9.22 ± .32	.288 ± .064	.137 ± .050			
4-1	4-15	53.2 ± .2	.507 ± .030	14.7 ± .4	.145 ± .053	.097 ± .049	.0031 ± .0003	.0528 ± .0016	<.0020
4-15	5-2	65.2 ± .2	.677 ± .033		<.08	.082 ± .054			
5-2	5-15	53.1 ± .2	.577 ± .028	9.53 ± .31	.107 ± .059	.090 ± .051	.0021 ± .0003	.0424 ± .0017	.0035 ± .0006
5-15	5-31	47.4 ± .2	.538 ± .028	6.68 ± .30	.111 ± .045	.094 ± .041			
5-31	6-15	43.2 ± .2	.488 ± .029	10.3 ± .3	.113 ± .056	.119 ± .045	.0065 ± .0008	.0815 ± .0027	.0018 ± .0005
6-15	7-1	16.6 ± .1	.205 ± .016	4.81 ± .19	.042 ± .035	.091 ± .027			
7-1	7-15	23.0 ± .1	.325 ± .020	19.2 ± .3	.178 ± .040	.150 ± .033	.0013 ± .0002	.0455 ± .0017	.0020 ± .0007
7-15	7-31	18.3 ± .1	.268 ± .018	9.59 ± .19	<.051	.059 ± .029			
7-31	8-15	13.0 ± .1	.207 ± .017	10.9 ± .2	.045 ± .028	.084 ± .025	.0012 ± .0002	.0367 ± .0020	.0029 ± .0005
8-15	8-31	5.81 ± .05	.099 ± .011	9.46 ± .19	.041 ± .023	.036 ± .019			
8-31	9-15	8.41 ± .07	.147 ± .016	21.8 ± .3	.141 ± .032	.073 ± .022	.0018 ± .0004	.0212 ± .0014	.0041 ± .0007
9-15	10-1	5.26 ± .06	.094 ± .014	19.5 ± .3	.185 ± .028	.099 ± .020			
10-1	10-15	3.69 ± .04	.102 ± .013	19.2 ± .3	<.035	.085 ± .021	.0006 ± .0001	.0073 ± .0004	.0089 ± .0009
10-15	10-31	3.38 ± .04	.064 ± .009	12.0 ± .2	<.026	.029 ± .019			
10-31	11-15	2.28 ± .04	.046 ± .009	17.4 ± .2	<.027	.064 ± .016			.0022 ± .0006
11-15	12-1	1.93 ± .03	.073 ± .008	36.8 ± .3	.120 ± .060	.026 ± .016			
12-2	12-15	2.30 ± .04	.145 ± .011	20.6 ± .3	.053 ± .020	.062 ± .021	.0006 ± .0001	.0059 ± .0003	.0030 ± .0007
12-15	1-2	1.45 ± .03	.046 ± .007	43.5 ± .3	.020 ± .020	.025 ± .012			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1976

Date		DPM/10^3M^3						
On	Off	^7Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co
1-2	1-15	90 ± 1	.006 ± .005	<.007	.113 ± .009	.003 ± .002	.024 ± .005	.104 ± .011
1-15	1-30	111 ± 1	.019 ± .005	<.005	.048 ± .005	.008 ± .002	.007 ± .002	.037 ± .006
1-30	2-15	211 ± 1	.015 ± .010	<.009	.035 ± .005	.007 ± .003	.005 ± .003	.212 ± .014
2-15	3-1	154 ± 1	.028 ± .006	<.006	.050 ± .005	.004 ± .002	.007 ± .004	.034 ± .006
3-1	3-15	355 ± 1	.040 ± .008	<.007	.051 ± .006	.010 ± .004	<.006	.059 ± .008
3-15	4-1	264 ± 1	.034 ± .005	<.005	.056 ± .004	<.003	.006 ± .002	.035 ± .004
4-1	4-15	292 ± 1	.036 ± .005	<.006	.162 ± .007	.007 ± .001	.036 ± .005	.322 ± .011
4-15	4-30	212 ± 1	.024 ± .007	<.012	.030 ± .004	.004 ± .002	<.004	1.29 ± .03
4-30	5-16	307 ± 1	.033 ± .006	<.003	.033 ± .005	.003 ± .003	.001 ± .004	.047 ± .006
5-17	6-1	271 ± 1	.044 ± .007	<.011	.028 ± .004	<.006	<.007	.314 ± .030
6-1	6-15	339 ± 1	.031 ± .006	<.007	.032 ± .007	.007 ± .003	.005 ± .003	.027 ± .005
6-15	6-30	213 ± 1	.031 ± .006	<.006	.034 ± .005	.003 ± .003	<.004	.009 ± .002
6-30	7-15	254 ± 1	.019 ± .005	<.007	.027 ± .004	<.005	<.006	.008 ± .003
7-15	7-30	306 ± 1	.044 ± .007	<.008	.026 ± .004	<.006	.003 ± .003	.011 ± .008
7-30	8-16	240 ± 1	.017 ± .005	<.007	.013 ± .003	.004 ± .003	.004 ± .003	.002 ± .004
8-16	8-31	224 ± 1	.019 ± .006	<.008	.009 ± .003	.003 ± .003	.002 ± .002	.027 ± .005
8-31	9-16	206 ± 1	.017 ± .005	<.006	.008 ± .002	.003 ± .003	.001 ± .002	.025 ± .005
9-16	10-1	341 ± 1	.027 ± .006	ND	.013 ± .003	.005 ± .002	<.005	.045 ± .006
10-1	10-15	246 ± 1	<.016	ND	.189 ± .009	.077 ± .007	1.09 ± .02	.050 ± .038
10-15	10-31	308 ± 1	<.021	ND	.516 ± .014	.220 ± .010	2.93 ± .03	<.009
10-31	11-16	236 ± 1	<.011	ND	.391 ± .023	.167 ± .008	1.84 ± .04	<.004
11-16	12-1	265 ± 1	.027 ± .015	ND	.230 ± .011	.090 ± .006	.863 ± .021	.054 ± .015
12-1	12-16	171 ± 1	.011 ± .011	ND	.066 ± .005	.024 ± .003	.177 ± .009	.018 ± .012
12-16	12-30	91 ± 1	.012 ± .008	ND	.057 ± .005	.006 ± .002	.037 ± .004	.041 ± .007

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1976 (contd)

Date On	Date Off	^{65}Zn	^{88}Y	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag
		DPM/10^3M^3						
1-2	1-15	<.010	.013 ± .006	.201 ± .012	.265 ± .011	.126 ± .008	.520 ± .058	<.024
1-15	1-30	<.009	<.006	.088 ± .001	.132 ± .007	.016 ± .004	.672 ± .052	<.015
1-30	2-15	<.012	<.016	.199 ± .016	.268 ± .011	.645 ± .015	1.39 ± .08	<.025
2-15	3-1	<.010	<.007	.098 ± .040	.168 ± .009	.078 ± .007	.89 ± .06	<.017
3-1	3-15	.018 ± .009	<.008	.140 ± .015	.246 ± .011	.199 ± .009	1.90 ± .09	<.021
3-15	4-1	<.008	.006 ± .004	.056 ± .008	.154 ± .006	.029 ± .004	1.66 ± .05	<.012
4-1	4-15	<.011	<.007	.141 ± .030	.267 ± .009	.081 ± .006	2.15 ± .07	<.007
4-15	4-30	<.009	.017 ± .009	.029 ± .007	.089 ± .006	.008 ± .003	1.26 ± .08	.061 ± .028
4-30	5-16	<.012	<.007	.053 ± .012	.109 ± .008	.007 ± .006	1.87 ± .08	<.038
5-17	6-1	<.018	<.012	.040 ± .009	.073 ± .006	<.008	1.52 ± .07	<.033
6-1	6-15	.011 ± .007	<.009	<.014	.061 ± 006	.007 ± .005	1.30 ± .07	<.020
6-15	6-30	<.011	<.007	.028 ± .008	.052 ± .005	<.006	1.52 ± .08	<.015
6-30	7-15	<.014	.012 ± .004	.009 ± .010	.030 ± .009	<.007	1.12 ± .06	<.020
7-15	7-30	<.010	<.008	<.015	.027 ± .004	.009 ± .003	1.16 ± .06	<.021
7-30	8-16	<.009	<.007	<.013	.011 ± .003	<.006	.485 ± .048	<.020
8-16	8-31	<.010	<.007	<.010	.010 ± .003	<.005	.416 ± .041	<.019
8-31	9-16	<.007	ND	<.007	.007 ± .003	<.006	.274 ± .041	ND
9-16	10-1	<.010	ND	<.010	.011 ± .003	<.008	.469 ± .050	ND
10-1	10-15	<.022	ND	37.2 ± .2	20.4 ± .1	22.0 ± .1	1.43 ± .26	<.011
10-15	10-31	<.031	ND	95.6 ± .2	65.9 ± .1	53.0 ± .1	2.93 ± .33	ND
10-31	11-16	<.050	ND	59.2 ± .2	69.8 ± .3	93.9 ± .3	6.37 ± .31	ND
11-16	12-1	<.025	ND	27.0 ± .2	33.7 ± .1	53.5 ± .1	4.98 ± .19	ND
12-1	12-16	<.015	ND	6.37 ± .060	7.66 ± .05	14.9 ± .1	1.57 ± .11	ND
12-16	12-30	<.011	ND	2.20 ± .04	2.34 ± .03	3.59 ± .03	.60 ± .07	ND

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1976 (contd)

Date		DPM/10^3M^3						
On	Off	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce
1-2	1-15	<.013	.100 ± .015	.098 ± .036	<.007	1.76 ± .02	.397 ± .040	.195 ± .008
1-15	1-30	<.015	.173 ± .010	.123 ± .023	.010 ± .003	1.28 ± .02	.318 ± .027	.015 ± .005
1-30	2-15	<.015	.271 ± .024	.568 ± .040	.005 ± .006	1.40 ± .02	2.83 ± .07	1.27 ± .02
2-15	3-1	<.016	.201 ± .019	<.06	.009 ± .004	1.35 ± .02	.221 ± .030	.117 ± .008
3-1	3-15	.014 ± .010	.414 ± .030	.102 ± .037	.019 ± .005	4.88 ± .04	.262 ± .028	.280 ± .011
3-15	4-1	<.011	.407 ± .017	.038 ± .026	.011 ± .004	2.34 ± .02	.004 ± .011	.014 ± .006
4-1	4-15	<.013	.477 ± .020	<.05	.009 ± .004	3.21 ± .03	.086 ± .012	.066 ± .007
4-15	4-30	.018 ± .011	.362 ± .020	.036 ± .028	.012 ± .007	1.22 ± .02	<.020	.022 ± .007
4-30	5-16	<.018	.515 ± .026	ND	.006 ± .004	2.46 ± .03	<.032	<.016
5-17	6-1	<.019	.424 ± .025		.007 ± .006	1.45 ± .02	<.029	.014 ± .008
6-1	6-15	<.014	.341 ± .020		.008 ± .004	1.35 ± .02	<.030	.013 ± .010
6-15	6-30	<.009	.395 ± .024		.002 ± .005	1.53 ± .03	<.017	<.010
6-30	7-15	<.015	.353 ± .023		<.007	1.18 ± .02	<.018	.007 ± .007
7-15	7-30	<.016	.331 ± .025		.004 ± .004	1.24 ± .02	<.017	.012 ± .009
7-30	8-16	<.015	.183 ± .019		.004 ± .003	.77 ± .02	<.019	.018 ± .006
8-16	8-31	<.016	.134 ± .020	<.07	.009 ± .004	.66 ± .01	<.019	.008 ± .007
8-31	9-16	.023 ± .009	.108 ± .019	<.07	.007 ± .004	1.28 ± .02	<.024	<.011
9-16	10-1	<.014	.147 ± .024	<.14	.014 ± .004	2.77 ± .03	<.032	<.020
10-1	10-15	<.08	.181 ± .030	41.7 ± .2	.022 ± .019	3.53 ± .03	65.4 ± .4	44.4 ± .1
10-15	10-31	<.11	.262 ± .040	45.4 ± .2	<.048	1.53 ± .03	95.0 ± .4	110 ± 1
10-31	11-16	<.11	.237 ± .038	12.8 ± .3	<.030	1.53 ± .03	65.5 ± .7	82.4 ± .2
11-16	12-1	<.040	.279 ± .039	3.21 ± .22	.003 ± .008	1.40 ± .02	18.7 ± .3	23.2 ± .1
12-1	12-16	.028 ± .011	.098 ± .021	.86 ± .04	<.012	.96 ± .01	4.52 ± .09	12.9 ± .1
12-16	12-30	<.020	.053 ± .012	.62 ± .03	.008 ± .005	.95 ± .01	2.31 ± .07	3.95 ± .03

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1976 (contd)

Date On	Date Off	^{144}Ce	^{155}Eu	^{226}Ra	^{214}Bi	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
		DPM/10^3M^3							
1-2	1-15	1.38 ± .03	.069 ± .008	16.6 ± .2	<.018	.033 ± .015	.0005 ± .0001	.0052 ± .0004	<.0011
1-15	1-30	1.94 ± .03	.077 ± .009	25.9 ± .3	.089 ± .020	.024 ± .017			
1-30	2-15	2.71 ± .04	.058 ± .013	22.5 ± .3	.139 ± .029	.118 ± .020			.0019 ± .0007
2-15	3-1	2.18 ± .04	.077 ± .009	6.80 ± .17	.081 ± .023	.075 ± .019			
3-1	3-15	4.05 ± .06	.181 ± .009	24.8 ± .3	.192 ± .020	.057 ± .020			.0170 ± .0007
3-15	4-1	3.47 ± .03	.140 ± .008	8.12 ± .13	.117 ± .020	.075 ± .006			
4-1	4-15	4.28 ± .04	.153 ± .010	9.35 ± .17	.101 ± .025	.085 ± .018	.0009 ± .0008	.0410 ± .0013	.0058 ± .0003
4-15	4-30	2.66 ± .04	.066 ± .010	9.56 ± .19	.145 ± .027	.124 ± .021			
4-30	5-16	3.97 ± .05	.117 ± .012	10.7 ± .2	.093 ± .028	.098 ± .022	.0009 ± .0008	.0260 ± .0009	.0027 ± .0007
5-17	6-1	3.06 ± .05	.103 ± .011	7.72 ± .18	.039 ± .018	.083 ± .020			
6-1	6-15	2.51 ± .04	.086 ± .010	9.33 ± .20	.075 ± .030	.075 ± .026	.0010 ± .0009	.0460 ± .0015	.0040 ± .0006
6-15	6-30	2.88 ± .04	.107 ± .012	8.03 ± .18	.099 ± .023	.068 ± .019			
6-30	7-15	2.22 ± .04	.083 ± .009	8.06 ± .17	.094 ± .025	.064 ± .017	.0008 ± .0008	.0119 ± .0009	.0037 ± .0007
7-15	7-30	2.02 ± .04	.075 ± .011	10.9 ± .2	.058 ± .022	.043 ± .016			
7-30	8-16	1.03 ± .03	.050 ± .008	14.3 ± .2	.063 ± .016	.028 ± .012	.0005 ± .0007	.0104 ± .0010	.0046 ± .0006
8-16	8-31	.76 ± .03	.033 ± .008	9.18 ± .18	.062 ± .020	.048 ± .018			
8-31	9-16	.53 ± .02	.051 ± .009	11.8 ± .2	.109 ± .021	.080 ± .016	.0008 ± .0008	.0082 ± .0005	.0055 ± .0009
9-16	10-1	.77 ± .03	.115 ± .009	39.4 ± .4	.121 ± .026	.098 ± .017			
10-1	10-15	7.08 ± .10	.068 ± .020	15.4 ± .3	.122 ± .030	.114 ± .028	<.0003	.0033 ± .0005	.114 ± .006
10-15	10-31	21.6 ± .2	<.11	31.0 ± .4	<.08	.083 ± .033			
10-31	11-16	16.6 ± .1	.115 ± .024	74.6 ± .6	.131 ± .050	<.10	<.0003	.0110 ± .0016	.0284 ± .0014
11-16	12-1	8.37 ± .09	.101 ± .023	46.3 ± .4	.138 ± .030	.076 ± .012			
12-1	12-16	2.72 ± .05	.036 ± .014	90.6 ± .5	.069 ± .025	.072 ± .014	.0010 ± .0009	.0053 ± .0004	.0031 ± .0009
12-16	12-30	1.09 ± .04	.026 ± .009	61.7 ± .4	.053 ± .029	.020 ± .014			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1977

Date		DPM/10³M³							
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co
12-30	1-16	151 ± 1	.020 ± .007	ND	.033 ± .005		.004 ± .003	.042 ± .005	.066 ± .008
1-16	1-31	206 ± 1	.022 ± .007	ND	.016 ± .003		.003 ± .003	.009 ± .003	.025 ± .006
1-31	2-15	232 ± 1	.027 ± .006	ND	.034 ± .005		<.006	.008 ± .003	.014 ± .006
2-15	3-1	228 ± 1	.028 ± .007	ND	.038 ± .005		.003 ± .003	.011 ± .003	.026 ± .006
3-1	3-15	203 ± 1	.022 ± .006	ND	.043 ± .005	<1.1	.011 ± .004	.014 ± .005	.009 ± .005
3-15	4-1	230 ± 1	.025 ± .008	ND	.074 ± .008		.008 ± .005	<.014	.013 ± .007
4-1	4-15	320 ± 1	.045 ± .011	ND	.280 ± .014	<1.9	.018 ± .007	.055 ± .011	.023 ± .008
4-15	5-1	373 ± 1	.052 ± .010	ND	.613 ± .019		.055 ± .011	.122 ± .016	.023 ± .008
5-1	5-15	234 ± 1	.041 ± .010	ND	.544 ± .019	2.76 ± .51	.045 ± .010	.219 ± .034	.030 ± .009
5-15	6-1	276 ± 1	.030 ± .010	ND	.319 ± .020		.064 ± .008	.072 ± .015	.018 ± .009
6-1	6-15	356 ± 1	.042 ± .014	ND	1.04 ± .03	4.26 ± .48	.061 ± .010	.107 ± .020	.018 ± .013
6-15	6-30	351 ± 1	.068 ± .013	ND	1.03 ± .03		.075 ± .010	.129 ± .019	.023 ± .012
6-30	7-15	177 ± 1	<.021	ND	.48 ± .02	2.96 ± .81	.039 ± .009	.056 ± .016	.014 ± .008
7-15	8-1	339 ± 1	.043 ± .011	ND	1.10 ± .02		.056 ± .012	.130 ± .011	.021 ± .010
8-1	8-15	400 ± 1	.043 ± .016	ND	1.41 ± .03	8.05 ± .78	.125 ± .016	.112 ± .020	.043 ± .014
8-15	9-1	270 ± 1	.018 ± .011	ND	.734 ± .024		.046 ± .010	.048 ± .013	.038 ± .008
9-1	9-15	308 ± 1	.024 ± .014	ND	.792 ± .028	4.26 ± .58	.058 ± .008	.049 ± .022	.013 ± .012
9-15	9-30	191 ± 1	.041 ± .038	ND	.590 ± .021		.300 ± .032	.689 ± .022	.065 ± .038
10-2	10-15	303 ± 1	.050 ± .020	ND	.877 ± .030	5.35 ± .61	.093 ± .009	.650 ± .031	.079 ± .021
10-15	10-31	260 ± 1	.041 ± .019	ND	.694 ± .021		.119 ± .011	.853 ± .023	.065 ± .020
10-31	11-15	176 ± 1	<.026	ND	.414 ± .016	2.48 ± .46	.042 ± .007	.215 ± .015	.010 ± .013
11-15	12-1	154 ± 1	.015 ± .010	ND	.326 ± .010		.036 ± .006	.105 ± .011	.026 ± .009
12-1	12-15	125 ± 1	<.018	ND	.230 ± .014	4.11 ± .78	.022 ± .006	.022 ± .012	.018 ± .008
12-15	12-30	221 ± 1	.025 ± .008	ND	.370 ± .010		.017 ± .004	.014 ± .014	.026 ± .008

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1977 (contd)

Date On	Date Off	^{65}Zn	^{88}Y	^{90}Sr	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag
		DPM/10^{3}M^3							
12-30	1-16	<.014	ND		2.98 ± .05	3.84 ± .04	4.53 ± .04	.82 ± .08	ND
1-16	1-31	<.013	.011 ± .005		3.77 ± .05	4.85 ± .04	4.44 ± .04	.65 ± .08	ND
1-31	2-15	<.014	.020 ± .006		6.01 ± .07	8.64 ± .06	6.44 ± .05	1.30 ± .10	.030 ± .014
2-15	3-1	<.018	.017 ± .005		7.82 ± .08	11.8 ± .1	7.95 ± .05	1.80 ± .09	.016 ± .012
3-1	3-15	<.022	.041 ± .006	<2.0	10.2 ± .1	16.1 ± .1	9.32 ± .06	2.39 ± .13	<.026
3-15	4-1	<.027	.063 ± .009		17.2 ± .1	28.9 ± .1	14.2 ± .1	3.91 ± .20	<.034
4-1	4-15	<.047	.204 ± .013	11.2 ± .4	56.0 ± .2	94.8 ± .2	39.3 ± .1	15.0 ± .3	.017 ± .022
4-15	5-1	<.05	.460 ± .019		106 ± 1	194 ± 1	67.2 ± .2	32.0 ± .4	<.056
5-1	5-15	<.06	.324 ± .016	4.01 ± .24	76.3 ± .2	141 ± 1	44.1 ± .1	27.2 ± .4	<.050
5-15	6-1	<.07	.460 ± .017		97.7 ± .3	188 ± 1	49.2 ± .1	38.1 ± .4	.045 ± .027
6-1	6-15	<.10	.637 ± .023	3.10 ± .31	125 ± 1	197 ± 1	55.7 ± .1	53.4 ± .6	<.072
6-15	6-30	<.08	.589 ± .020		107 ± 1	210 ± 1	42.9 ± .1	54.1 ± .5	.044 ± .031
6-30	7-15	<.07	.263 ± .015	1.38 ± .52	46.3 ± .2	94 ± 1	16.9 ± .1	27.0 ± .4	<.052
7-15	8-1	<.07	.565 ± .019		88.6 ± .3	150 ± 1	29.3 ± .1	59.9 ± .5	.035 ± .030
8-1	8-15	<.11	.639 ± .026	5.37 ± .33	93.7 ± .3	194 ± 1	27.8 ± .1	66.5 ± .6	.056 ± .044
8-15	9-1	<.07	.356 ± .016		43.8 ± .2	91.0 ± .2	12.1 ± .1	39.7 ± .4	ND
9-1	9-15	<.10	.354 ± .020	13.5 ± .1	42.8 ± .2	90.6 ± .2	10.6 ± .1	43.3 ± .5	ND
9-15	9-30	<.06	.176 ± .020		40.6 ± .2	56.2 ± .2	19.9 ± .1	27.9 ± .4	<.11
10-2	10-15	<.06	.318 ± .022	7.51 ± .39	37.6 ± .3	86.9 ± .2	33.8 ± .1	45.1 ± .5	ND
10-15	10-31	<.06	.182 ± .018		39.6 ± .2	60.7 ± .2	38.4 ± .1	30.8 ± .4	ND
10-31	11-15	<.05	.093 ± .009	2.62 ± .19	14.2 ± .1	24.9 ± .1	10.3 ± .1	16.4 ± .3	ND
11-15	12-1	<.05	.086 ± .010		9.48 ± .08	18.6 ± .1	5.19 ± .04	14.9 ± .2	.033 ± .020
12-1	12-15	<.05	.076 ± .011	1.16 ± .19	5.50 ± .02	11.6 ± .1	1.99 ± .03	12.2 ± .2	.024 ± .024
12-15	12-30	<.06	.090 ± .010		6.77 ± .07	14.8 ± .1	1.54 ± .03	17.1 ± .2	<.041

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1977 (contd)

Date On	Date Off	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce
		DPM/10^3M^3						
12-30	1-16	<.019	.124 ± .020	.430 ± .058	<.010	1.33 ± .02	1.60 ± .07	4.64 ± .03
1-16	1-31	<.015	.112 ± .022	.139 ± .039	.017 ± .004	1.63 ± .02	.949 ± .045	3.67 ± .03
1-31	2-15	<.020	.204 ± .025	ND	.010 ± .004	1.62 ± .02	.873 ± .058	5.10 ± .03
2-15	3-1	<.017	.279 ± .027	ND	.002 ± .005	.98 ± .02	.539 ± .035	5.79 ± .03
3-1	3-15	<.023	.288 ± .025	ND	.002 ± .005	.91 ± .02	.392 ± .035	6.02 ± .04
3-15	4-1	<.038	.409 ± .030	ND	ND	1.61 ± .03	.301 ± .045	8.60 ± .05
4-1	4-15	<.035	1.30 ± .06	ND	.005 ± .008	2.80 ± .07	.513 ± .045	23.5 ± .1
4-15	5-1	<.050	2.89 ± .07	ND	.021 ± .009	9.92 ± .06	.518 ± .074	37.9 ± .1
5-1	5-15	<.046	2.16 ± .06	ND	.004 ± .009	4.16 ± .04	.241 ± .013	24.2 ± .1
5-15	6-1	.074 ± .025	3.64 ± .06	ND	.017 ± .010	6.12 ± .05	.097 ± .043	25.9 ± .1
6-1	6-15	<.058	5.25 ± .09	ND	.035 ± .013	8.88 ± .06	.089 ± .038	27.9 ± .1
6-15	6-30	<.055	5.38 ± .08	ND	.020 ± .012	9.59 ± .06	.108 ± .040	20.3 ± .1
6-30	7-15	<.046	2.64 ± .06	ND	.001 ± .009	4.56 ± .05	.095 ± .053	7.61 ± .05
7-15	8-1	<.046	3.59 ± .07	ND	.022 ± .011	10.6 ± .1	<.06	12.0 ± .1
8-1	8-15	<.069	7.19 ± .10	ND	.005 ± .013	12.1 ± .1	<.10	10.8 ± .1
8-15	9-1	<.050	4.08 ± .07	ND	.013 ± .010	6.90 ± .06	<.06	4.40 ± .03
9-1	9-15	<.058	4.47 ± .08	ND	.007 ± .011	8.21 ± .06	<.10	3.73 ± .03
9-15	9-30	<.089	2.86 ± .05	46.4 ± .2	<.036	5.09 ± .04	52.0 ± .3	28.1 ± .1
10-2	10-15	<.080	4.72 ± .08	16.1 ± .6	.026 ± .015	8.87 ± .06	38.6 ± .6	48.4 ± .1
10-15	10-31	.064 ± .033	3.04 ± .06	7.02 ± .18	.014 ± .013	5.85 ± .06	28.0 ± .3	39.5 ± .1
10-31	11-15	<.043	1.77 ± .05	.700 ± .060	.007 ± .009	3.45 ± .04	4.00 ± .09	9.36 ± .04
11-15	12-1	<.033	1.72 ± .04	.179 ± .048	.007 ± .007	3.30 ± .03	1.34 ± .05	4.45 ± .02
12-1	12-15	<.042	1.37 ± .04	<.10	.027 ± .008	3.14 ± .04	.264 ± .053	1.16 ± .02
12-15	12-30	<.035	2.12 ± .04	<.10	<.014	3.85 ± .03	<.062	.68 ± .02

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1977 (contd)

Date On	Date Off	^{144}Ce (DPM $10^3 M^3$)	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
12-30	1-16	1.71 ± .04	.036 ± .010	111 ± 1	.162 ± .029	<.033	<.0003	.0042 ± .0004	<.0023
1-16	1-31	1.70 ± .04	.029 ± .010	72.9 ± .5	.078 ± .020	.093 ± .016			
1-31	2-15	2.91 ± .05	.046 ± .015	70.4 ± .5	.064 ± .027	<.037	<.0003	.0095 ± .0008	<.021
2-15	3-1	4.18 ± .06	.079 ± .016	12.0 ± .2	<.054	.087 ± .020			
3-1	3-15	5.29 ± .06	.082 ± .016	8.23 ± .22	.095 ± .032	<.047	.00011 ± .00017	.0078 ± .0007	.0010 ± .0005
3-15	4-1	9.76 ± .10	.117 ± .016	8.22 ± .22	.123 ± .044	.140 ± .033			
4-1	4-15	33.4 ± .2	.325 ± .037	14.6 ± .3	.137 ± .059	.178 ± .046	.00110 ± .00028	.0299 ± .0010	<.0005
4-15	5-1	71.8 ± .2	.474 ± .046	14.6 ± .4	.162 ± .066	<.11			
5-1	5-15	61.1 ± .2	1.23 ± .03	10.1 ± .4	<.14	<.13	.00077 ± .00020	.0397 ± .0014	.0012 ± .0006
5-15	6-1	87.7 ± .2	.642 ± .040	7.54 ± .28	.159 ± .079	.060 ± .048			
6-1	6-15	126 ± 1	.974 ± .052	9.55 ± .41	<.21	<.19	.0025 ± .0003	.0039 ± .0010	.0039 ± .0010
6-15	6-30	125 ± 1	.977 ± .048	13.0 ± .4	<.18	<.15			
6-30	7-15	59.5 ± .2	.531 ± .030	5.06 ± .25	<.14	.158 ± .060	.0318 ± .0007	.0449 ± .0013	.0025 ± .0009
7-15	8-1	83.7 ± .2	1.16 ± .04	9.07 ± .33	.237 ± .080	<.15			
8-1	8-15	155 ± 1	1.39 ± .06	13.3 ± .4	.33 ± .11	<.20	.0028 ± .0006	.110 ± .004	<.0003
8-15	9-1	83.0 ± .3	.716 ± .041	11.1 ± .3	.249 ± .070	<.12			
9-1	9-15	96.2 ± .3	.821 ± .043	12.3 ± .4	<.22	<.18	.0015 ± .0004	.0707 ± .0023	<.0005
9-15	9-30	58.5 ± .2	.857 ± .044	7.86 ± .30	<.13	<.10			
10-2	10-15	96.1 ± .3	.887 ± .049	15.0 ± .4	.218 ± .082	<.16	.0043 ± .0004	.0861 ± .0019	.0026 ± .0010
10-15	10-31	66.1 ± .2	.631 ± .038	20.2 ± .3	<.15	<.12			
10-31	11-15	35.7 ± .2	.344 ± .029	12.6 ± .3	.140 ± .061	<.11	.0014 ± .0005	.0413 ± .0016	<.0003
11-15	12-1	33.9 ± .1	.334 ± .020	28.6 ± .3	.132 ± .052	<.09			
12-1	12-15	24.2 ± .1	.257 ± .023	4.68 ± .20	.301 ± .060	.151 ± .049	.0009 ± .0002	.0282 ± .0011	<.0004
12-15	12-30	41.5 ± .1	.459 ± .018	38.9 ± .3	<.13	<.11			

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1978

Date On	Date Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co
		DPM/10^{3}M^{3}							
12-31	1-15	126 ± 1	.014 ± .011	ND	.390 ± .016	33.7 ± 1.2	.102 ± .006	<.026	3.55 ± .05
1-15	2-1	114 ± 1	.019 ± .007	ND	.228 ± .012		.015 ± .004	.007 ± .010	.025 ± .007
2-1	2-15	197 ± 1	.013 ± .010	ND	.455 ± .018	5.74 ± .41	.023 ± .008	.016 ± .016	.054 ± .008
2-15	3-1	132 ± 1	.018 ± .008	ND	.344 ± .015		.027 ± .005	.013 ± .009	.022 ± .008
3-1	3-15	182 ± 1	.035 ± .010	ND	.675 ± .020	6.59 ± .40	.051 ± .006	.056 ± .017	.273 ± .015
3-15	3-31	241 ± 1	.028 ± .046	ND	.615 ± .018		.053 ± .009	.145 ± .017	.119 ± .049
3-31	4-15	290 ± 1	.025 ± .032	ND	.684 ± .020	10.3 ± .7	.053 ± .011	.086 ± .017	.057 ± .033
4-16	5-1	214 ± 1	.007 ± .014	ND	.576 ± .022		.037 ± .009	.036 ± .018	.052 ± .013
5-1	5-15	226 ± 1	.033 ± .011	ND	.607 ± .020	6.74 ± .53	.038 ± .009	.062 ± .019	.030 ± .009
5-15	5-31	139 ± 1	.011 ± .011	ND	.415 ± .018		.027 ± .008	<.037	.005 ± .009
5-31	6-16	207 ± 1	.018 ± .011	ND	.473 ± .019	4.24 ± .93	.036 ± .006	<.029	.070 ± .012
6-16	7-2	230 ± 1	.032 ± .008	ND	.556 ± .017		.034 ± .005	.030 ± .014	.005 ± .011
7-2	7-15	236 ± 1	.029 ± .010	ND	.432 ± .020	3.85 ± .48	.021 ± .006	.015 ± .016	<.013
7-15	7-30	383 ± 1	.051 ± .010	ND	.571 ± .019		.018 ± .009	.033 ± .015	.024 ± .008
7-31	8-15	405 ± 1	.066 ± .013	ND	.470 ± .022	2.55 ± .97	.039 ± .008	.018 ± .019	.136 ± .014
8-18	9-1	225 ± 1	.010 ± .008	ND	.151 ± .011		.010 ± .005	.013 ± .010	<.012
9-1	9-15	214 ± 1	.015 ± .009	<.017	.107 ± .012	<1.7	.004 ± .005	.016 ± .011	.008 ± .006
9-15	9-30	191 ± 1	.013 ± .006	<.012	.087 ± .008		.008 ± .004	<.013	.017 ± .006
10-2	10-15	269 ± 1	.012 ± .008	<.013	.106 ± .010	<.9	.010 ± .005	.008 ± .009	.010 ± .007
10-15	10-31	270 ± 1	.016 ± .005	<.006	.091 ± .008		.010 ± .004	.002 ± .006	.030 ± .007
10-31	11-15	145 ± 1	.009 ± .008	<.011	.064 ± .007	.20 ± .11	.006 ± .004	.006 ± .005	.045 ± .007
11-15	12-1	117 ± 1	.005 ± .006	<.005	.101 ± .007		.003 ± .006	.013 ± .005	.096 ± .009
12-1	12-15	120 ± 1	<.01	<.008	.036 ± .006	1.39 ± .51	.005 ± .003	.002 ± .004	.025 ± .007
12-15	12-28	195 ± 1	<.027	<.016	.143 ± .011		<.006	.033 ± .008	.219 ± .031

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington (contd)

Date On	Date Off	^{65}Zn	^{88}Y	^{90}Sr	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag
		DPM/10³M³							
12-31	1-15	.572 ± .038	.066 ± .018	3.36 ± .41	4.79 ± .07	10.4 ± .1	.736 ± .020	12.9 ± .2	<.10
1-15	2-1	<.042	.052 ± .008		3.83 ± .06	8.20 ± .06	.436 ± .017	13.2 ± .2	<.10
2-1	2-15	<.064	.103 ± .012	17.9 ± .4	6.04 ± .08	13.5 ± .1	.567 ± .021	23.6 ± .3	<.05
2-15	3-1	<.058	.056 ± .010		3.75 ± .06	8.63 ± .06	.301 ± .009	16.7 ± .2	<.08
3-1	3-15	<.079	.116 ± .013	8.67 ± .28	5.76 ± .07	12.8 ± .1	.375 ± .020	30.2 ± .3	<.13
3-15	3-31	.172 ± .029	.084 ± .029		17.5 ± .1	20.3 ± .1	96.5 ± .2	40.4 ± .4	<.15
3-31	4-15	.182 ± .033	.138 ± .022	7.82 ± .31	12.7 ± .1	18.7 ± .1	56.9 ± .1	43.3 ± .4	<.11
4-16	5-1	<.081	.107 ± .014		4.36 ± .07	9.63 ± .07	2.41 ± .04	31.7 ± .4	<.060
5-1	5-15	<.075	.105 ± .015	4.56 ± .21	3.02 ± .07	8.84 ± .08	.493 ± .030	33.3 ± .3	<.056
5-15	5-31	<.063	.046 ± .012		2.32 ± .06	5.15 ± .06	.147 ± .018	21.9 ± .3	<.053
5-31	6-15	<.063	.040 ± .010	4.87 ± .23	2.37 ± .05	5.32 ± .05	.122 ± .016	26.8 ± .3	<.052
6-16	7-2	<.057	.062 ± .010		2.36 ± .05	5.25 ± .05	.102 ± .017	30.6 ± .3	<.045
7-2	7-15	<.075	.048 ± .011	3.76 ± .19	1.64 ± .05	3.47 ± .05	.085 ± .017	23.4 ± .3	<.052
7-15	7-30	<.060	.056 ± .011		1.82 ± .05	4.11 ± .05	.047 ± .017	31.1 ± .3	<.048
7-31	8-15	<.079	.044 ± .014	1.65 ± .43	1.44 ± .06	3.11 ± .05	.066 ± .025	26.2 ± .3	<.065
8-18	9-1	<.043	<.014		.396 ± .026	.811 ± .022	.017 ± .010	9.08 ± .23	<.035
9-1	9-15	<.044	.012 ± .009	2.51 ± .17	.285 ± .030	.614 ± .025	.018 ± .014	7.17 ± .19	<.040
9-15	9-30	<.044	.010 ± .006		.157 ± .017	.352 ± .015	.006 ± .008	4.76 ± .13	<.024
10-2	10-15	<.038	<.015	1.41 ± .18	.143 ± .019	.420 ± .018	<.017	6.35 ± .17	<.038
10-15	10-31	<.027	<.014		.144 ± .016	.269 ± .014	.003 ± .008	4.76 ± .14	<.032
10-31	11-15	<.024	.003 ± .00/	1.29 ± .17	.073 ± .012	.164 ± .011	.002 ± .006	2.59 ± .11	<.032
11-15	12-1	<.019	<.011		.071 ± .011	.145 ± .009	.019 ± .006	2.00 ± .08	<.029
12-1	12-15	<.021	<.011	1.68 ± .21	.031 ± .009	.073 ± .007	.003 ± .005	1.88 ± .08	<.026
12-15	12-28	<.015	.023 ± .017		.649 ± .030	.517 ± .018	5.72 ± .06	3.92 ± .20	<.044

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1978 (contd)

Date On	Date Off	^{110m}Ag	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu
		DPM/10^3M^3									
12-31	1-15	.10	<.046	1.85 ± .04	.149 ± .040	<.026	4.18 ± .04	.306 ± .030	.421 ± .016	38.6 ± .2	.405 ± .020
1-15	2-1	.10	<.034	1.58 ± .04	ND	.016 ± .006	4.66 ± .03	.087 ± .041	.136 ± .014	27.2 ± .1	.364 ± .015
2-1	2-15	.05	<.045	3.02 ± .05	ND	.017 ± .008	5.80 ± .04	.162 ± .048	.183 ± .014	51.5 ± .2	.664 ± .028
2-15	3-1	.08	<.033	2.32 ± .05	ND	<.008	4.28 ± .04	.090 ± .022	.090 ± .010	39.8 ± .1	.439 ± .019
3-1	3-15	.13	<.043	4.75 ± .06	ND	<.020	7.98 ± .06	.033 ± .023	.077 ± .017	78.2 ± .2	1.00 ± .04
3-15	3-31	.15	2.75 ± .10	4.54 ± .07	178 ± 1	<.048	9.33 ± .05	176 ± 1	55.4 ± .1	66.1 ± .2	.852 ± .035
3-31	4-15	.11	1.63 ± .07	5.21 ± .08	30.7 ± .2	.056 ± .017	10.9 ± .1	56.7 ± .4	29.8 ± .1	78.3 ± .2	1.04 ± .03
4-16	5-1	.060	.066 ± .020	4.65 ± .07	.484 ± .081	<.022	10.2 ± .1	1.26 ± .06	1.11 ± .03	63.6 ± .2	.882 ± .036
5-1	5-15	.056	<.062	4.96 ± .07	ND	.026 ± .010	9.42 ± .06	<.21	.187 ± .029	67.4 ± .2	1.06 ± .03
5-15	5-31	.053	<.039	3.30 ± .06	ND	<.018	6.46 ± .06	<.10	.061 ± .019	43.1 ± .2	.701 ± .030
5-31	6-16	.052	<.042	4.05 ± .06	ND	<.019	7.92 ± .06	<.050	.053 ± .016	52.4 ± .2	.811 ± .025
6-16	7-2	.045	<.036	4.87 ± .06	ND	.020 ± .008	9.23 ± .05	<.078	.053 ± .018	58.2 ± .2	.949 ± .028
7-2	7-15	.052	<.039	3.82 ± .06	ND	<.018	7.35 ± .06	<.057	<.033	45.6 ± .2	.792 ± .024
7-15	7-30	.048	<.040	5.04 ± .07	ND	<.018	9.94 ± .06	<.058	<.040	58.0 ± .2	1.09 ± .03
7-31	8-15	.065	<.058	4.38 ± .07	ND	<.021	8.77 ± .06	<.18	.019 ± .029	50.3 ± .2	1.04 ± .04
8-18	9-1	.035	<.026	1.51 ± .04	ND	.013 ± .006	2.97 ± .03	<.040	.018 ± .011	16.7 ± .1	.316 ± .019
9-1	9-15	.040	<.036	1.22 ± .04	ND	<.007	2.57 ± .04	<.13	.028 ± .015	12.9 ± .1	.231 ± .020
9-15	9-30	.024	<.021	.810 ± .030	.22 ± .10	<.014	1.92 ± .03	<.048	.018 ± .011	8.22 ± .07	.180 ± .015
10-2	10-15	.038	<.024	1.17 ± .04	<.078	<.019	2.85 ± .04	<.013	.008 ± .011	11.5 ± .1	.259 ± .019
10-15	10-31	.032	<.025	.832 ± .034	ND	<.016	1.95 ± .03	<.051	.026 ± .012	8.03 ± .08	.150 ± .016
10-31	11-15	.032	<.023	.522 ± .027	.202 ± .045	<.015	1.68 ± .03	.148 ± .027	.014 ± .009	4.31 ± .06	.096 ± .014
11-15	12-1	.029	<.022	.423 ± .022	.061 ± .037	.008 ± .006	2.23 ± .03	.424 ± .033	.015 ± .008	5.78 ± .06	.138 ± .013
12-1	12-15	.026	<.015	.359 ± .022	<.065	<.011	1.69 ± .03	.005 ± .010	.009 ± .007	3.39 ± .05	.066 ± .010
12-15	21-28	.044	.149 ± .042	.299 ± .040	11.9 ± .2	<.016	1.93 ± .03	25.3 ± .4	9.99 ± .06	5.46 ± .09	.129 ± .024

ND = Not Detectable
D = Decayed Away Before Analysis

Richland, Washington, 1978 (contd)

Date		DPM/$10^3 M^3$						
On	Off	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
12-31	1-15	.405 ± .020	61.2 ± .4	<.15	<.12	.00089 ± .00021	.0281 ± .0011	<.0003
1-15	2-1	.364 ± .015	24.5 ± .3	.123 ± .048	<.08			
2-1	2-15	.664 ± .028	34.8 ± .4	<.14	<.12	.00344 ± .00028	.0571 ± .0011	.0047 ± .0005
2-15	3-1	.439 ± .019	17.3 ± .3	<.14	<.12			
3-1	3-15	1.00 ± .04	24.4 ± .4	<.17	.116 ± .050	.00190 ± .00024	.0796 ± .0015	.0023 ± .0004
3-15	3-31	.052 ± .035	12.0 ± .3	<.14	<.11			
3-31	4-15	1.04 ± .03	8.99 ± .32	.234 ± .079	<.14	.00237 ± .00029	.108 ± .002	.0035 ± .0006
4-16	5-1	.882 ± .036	9.47 ± .34	<.13	<.16			
5-1	5-15	1.06 ± .03	9.30 ± .27	<.16	.146 ± .067			
5-15	5-31	.701 ± .030	4.92 ± .23	<.14	<.13	.00187 ± .00019	.110 ± .001	.0031 ± .0006
5-31	6-16	.811 ± .025	8.02 ± .27	<.15	.182 ± .067			
6-16	7-2	.949 ± .028	7.49 ± .22	.186 ± .065	<.11	.00250 ± .00022	.0796 ± .0012	.0059 ± .0009
7-2	7-15	.792 ± .024	11.3 ± .3	<.18	<.15			
7-15	7-30	1.09 ± .03	14.3 ± .3	.098 ± .070	<.12	.0016 ± .0002	.0668 ± .0014	.0066 ± .0010
7-31	8-15	1.04 ± .04	15.4 ± .3	<.18	.222 ± .075			
8-18	9-1	.316 ± .019	12.8 ± .2	.166 ± .049	<.09	.0012 ± .0004	.0899 ± .0020	.0055 ± .0010
9-1	9-15	.231 ± .020	8.60 ± .23	<.09	.054 ± .044			
9-15	9-30	.180 ± .015	11.6 ± .2	.045 ± .036	.059 ± .024	.0016 ± .0003	.0275 ± .0010	.0009 ±.0004
10-2	10-15	.259 ± .019	17.2 ± .3	<.10	.114 ± .040			
10-15	10-31	.150 ± .016	27.5 ± .3	<.08	.067 ± .030	.0016 ± .0002	.0230 ± .0009	.0007 ± .0004
10-31	11-15	.096 ± 014	32.8 ± .4	.144 ± .040	.151 ± .028			
11-15	12-1	.138 ± .013	55.8 ± .4	.064 ± .029	.056 ± .023	.0007 ± .0002	.0111 ± .0007	<.0006
12-1	12-15	.066 ± .010	25.7 ± .3	.073 ± .030	.053 ± .022			
12-15	12-28	.129 ± .024	18.7 ± .3	.148 ± .054	.112 ± .037	.0015 ± .0006	.0153 ± .0016	<.0006

ND = Not Detectable
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Richland, Washington (46°21'N, 119°17'W) in 1979

Date		DPM/10^3M^3									
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{55}Fe	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
1-4	1-15	176 ± 1	.025 ± .015	.010 ± .009	.117 ± .010	1.28 ± .48	<.010	.010 ± .007	.062 ± .016	.014 ± .016	.007 ± .010
1-15	1-31	75.2 ± .4	.004 ± .005	.007 ± .005	.126 ± .007		.003 ± .003	.050 ± .006	.232 ± .012	< .017	.003 ± .006
1-31	2-15	157 ± 1	.018 ± .007	< .010	.097 ± .008	1.11 ± .50	.004 ± .003	.001 ± .005	.054 ± .008	.001 ± .010	< .012
2-15	3-1	161 ± 1	.016 ± .006	< .009	.072 ± .006		.003 ± .003	< .010	.035 ± .006	< .020	< .010
3-2	3-16	235 ± 1	.014 ± .007	.001 ± .007	.179 ± .011	6.05 ± .54	.011 ± .004	.049 ± .008	.306 ± .015	.014 ± .016	< .016
3-16	4-1	305 ± 1	.034 ± .008	< .013	.105 ± .009		.005 ± .005	.008 ± .009	.010 ± .005	.018 ± .016	.002 ± .006
4-1	4-16	191 ± 1	.019 ± .006	.005 ± .005	.078 ± .008	1.16 ± .30	.008 ± .004	< .012	.014 ± .004	< .027	.007 ± .005
4-16	5-1	259 ± 1	.014 ± .007	< .010	.276 ± .012		.005 ± .004	.008 ± .007	.007 ± .005	.011 ± .022	.005 ± .006
5-1	5-15	224 ± 1	.022 ± .007	< .011	.068 ± .008	1.27 ± .38	.002 ± .009	< .013	.009 ± .005	.012 ± .015	< .012
5-15	5-30	309 ± 1	.024 ± .007	.002 ± .010	.101 ± .008		.008 ± .004	< .010	.008 ± .005	< .028	.018 ± .005
6-3	6-15	182 ± 1	.039 ± .009	< .014	.279 ± .013	3.33 ± .49	.011 ± .004	.949 ± .024	.331 ± .018	.037 ± .008	.006 ± .010
6-15	6-28	245 ± 1	.031 ± .011	.010 ± .008	.078 ± .011		.010 ± .006	.010 ± .008	.003 ± .029	.015 ± .027	.003 ± .017
6-30	7-15	231 ± 1	.012 ± .007	.004 ± .009	.077 ± .007	1.74 ± .30	.005 ± .004	.003 ± .011	< .009	.014 ± .013	.004 ± .007
7-15	7-30	361 ± 1	.027 ± .007	< .006	.078 ± .007		< .008	.006 ± .007	.010 ± .005	< .024	.004 ± .008
8-1	8-15	292 ± 1	.021 ± .008	.002 ± .015	.060 ± .007	.96 ± .34	< .008	.003 ± .007	.005 ± .005	< .025	.002 ± .018
8-15	8-31	261 ± 1	.008 ± .005	< .008	.032 ± .005		< .006	.009 ± .004	.007 ± .003	< .015	.001 ± .004
9-1	9-15	178 ± 1	.016 ± .006	< .010	.027 ± .004	<.44	< .005	.004 ± .004	.007 ± .004	< .015	.006 ± .005
9-15	10-1	247 ± 1	.023 ± .004	< .010	.030 ± .003		.001 ± .002	< .004	< .005	.003 ± .007	< .005
10-1	10-15	398 ± 2	.017 ± .016	.011 ± .011	.063 ± .013	.38 ± .22	.015	.007 ± .009	.065 ± .015	< .035	< .022
10-15	10-31	139 ± 1	< .010	.002 ± .005	.021 ± .004		.002 ± .003	.003 ± .003	.025 ± .005	.003 ± .012	< .007
10-31	11-15	88.8 ± .5	.006 ± .005	.003 ± .004	.013 ± .003	1.26 ± .51	.003 ± .002	< .005	.010 ± .004	< .009	.003 ± .005
11-15	12-3	68.9 ± .4	.004 ± .004	.002 ± .006	.020 ± .003		< .003	.009 ± .003	.022 ± .004	.004 ± .006	.001 ± .002
12-3	12-16	68.1 ± .6	< .015	< .012	.007 ± .004	<.33	< .004	< .007	.013 ± .007	< .018	< .014
12-16	12-31	146 ± 1	.010 ± .005	.002 ± .005	.012 ± .003		.003 ± .002	.002 ± .003	.015 ± .004	< .011	< .007

ND = Not Detectable
D = Detectable

Richland, Washington, 1979 (contd)

Date On	Date Off	^{90}Sr	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{131}I	^{134}Cs
		DPM/10^{3}M^3									
1-4	1-15	88.8 ± 2.4	.279 ± .022	.307 ± .015	1.82 ± .30	3.12 ± .14	< .050	.062 ± .026	.551 ± .034	1.61 ± .07	< .020
1-15	1-31		.025 ± .008	.068 ± .006	.032 ± .005	1.14 ± .07	< .030	003 ± .009	.278 ± .017	.165 ± .028	< .011
1-31	2-15	2.71 ± .35	.044 ± .011	.079 ± .008	.008 ± .006	2.86 ± .11	.001 ± .014	< .021	.540 ± .077	.155 ± .040	< .013
2-15	3-1		.038 ± .010	.054 ± .007	.006 ± .005	2.96 ± .10	.002 ± .013	< .015	.611 ± .026	.064 ± .031	.005 ± .006
3-2	3-16	.97 ± .15	.073 ± .014	.110 ± .009	.014 ± .007	5.04 ± .14	< .042	.019 ± .014	1.01 ± .04	.060 ± .037	.005 ± .016
3-16	4-1		.063 ± .016	.117 ± .011	.013 ± .010	6.93 ± .16	< .032	.015 ± .015	1.52 ± .04	.048 ± .045	.004 ± .016
4-1	4-16	.62 ± .18	.026 ± .012	.063 ± .007	.004 ± .013	4.82 ± .13	.004 ± .049	.014 ± .110	1.07 ± .03	.117 ± .054	< .013
4-16	5-1		.029 ± .013	.072 ± .009	.013 ± .007	5.53 ± .13	.002 ± .087	< .002	1.24 ± .03	< .091	< .015
5-1	5-15	.81 ± .19	.032 ± .013	.033 ± .008	.005 ± .011	4.27 ± .13	.003 ± .082	.008 ± .021	1.06 ± .03	.02 ± .37	< .009
5-15	5-30		.019 ± .011	.059 ± .007	< .014	6.31 ± .14	< .027	< .026	1.37 ± .03	< .090	< .010
6-3	6-15	2.27 ± .21	.020 ± .013	.038 ± .008	.018 ± .007	5.33 ± .16	.004 ± .119	.045 ± .013	1.38 ± .04	< .025	.038 ± .010
6-15	6-28		.010 ± .022	.042 ± .010	.004 ± .023	4.00 ± .17	.027 ± .019	< .026	.974 ± .050	< .13	< .014
6-30	7-15	.77 ± .18	< .012	.027 ± .007	< .008	4.57 ± .12	.003 ± .070	< .012	1.13 ± .03	.02 ± 1.07	.005 ± .004
7-15	7-30		< .020	.021 ± .006	.002 ± .026	5.02 ± .12	< .024	.014 ± .012	1.23 ± .04	< .24	< .009
8-1	8-15	.78 ± .17	.001 ± .085	.017 ± .006	.002 ± .018	3.54 ± .12	.003 ± .077	.011 ± .011	.891 ± .036	< .087	< .009
8-15	8-31		< .012	.009 ± .004	.001 ± .004	2.24 ± .08	< .020	.005 ± .007	.531 ± .026	< .085	< .006
9-1	9-15	.63 ± .16	< .013	.008 ± .004	< .009	1.47 ± .08	< .024	.036 ± .012	.374 ± .023	< .15	.004 ± .004
9-15	10-1		.004 ± .004	.010 ± .002	< .006	1.78 ± .05	.006 ± .007	< .012	.483 ± .016	< .10	< .005
10-1	10-15	.62 ± .19	.018 ± .016	.023 ± .009	.003 ± .011	1.82 ± .17	.051 ± .030	.024 ± .014	.599 ± .064	.220 ± .099	< .021
10-15	10-31		< .005	< .006	.008 ± .003	.612 ± .049	< .020	< .019	.131 ± .017	.049 ± .035	.006 ± .003
10-31	11-15	20.4 ± 1.4	.001 ± .004	.004 ± .003	.012 ± .003	.278 ± .042	.014 ± .010	< .015	.096 ± .014	.222 ± .015	.006 ± .004
11-15	12-3		.084 ± .009	.098 ± .006	.044 ± .004	.204 ± .036	.020 ± .009	.002 ± .014	.071 ± .012	.112 ± .030	< .006
12-3	12-16	1.56 ± .19	< .012	.006 ± .004	.007 ± .004	.160 ± .069	< .034	< .030	.050 ± .017	< .032	.003 ± .010
12-16	12-31		.005 ± .004	.005 ± .003	.008 ± .003	.400 ± .043	< .018	< .009	.147 ± .016	< .043	.005 ± .003

ND = Not Detectable
D = Detectable

Richland, Washington, 1979 (contd)

Date		DPM/$10^3 M^3$										
On	Off	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{155}Eu	^{210}Pb	^{226}Ra	^{228}Ac	^{238}Pu	^{239}Pu	^{241}Am
1-4	1-15	1.61 ± .03	5.98 ± .14	3.80 ± .03	6.90 ± .08	.155 ± .021	145 ± 1	.114 ± .046	.109 ± .032	.0003 ± .0002	.0150 ± .0008	.0015 ± .0006
1-15	1-31	1.56 ± .02	.287 ± .027	.017 ± .006	3.22 ± .04	.071 ± .022	63.9 ± .4	.047 ± .022	.043 ± .019			
1-31	2-15	1.49 ± .02	.248 ± .030	.022 ± .008	4.29 ± .06	.093 ± .013	35.8 ± .4	.018 ± .033	.022 ± .026	.0001 ± .0008	.0090 ± .0007	< .0002
2-15	3-1	1.56 ± .02	.080 ± .016	.016 ± .007	4.69 ± .05	.125 ± .011	9.23 ± .18	.056 ± .035	.048 ± .023			
3-2	3-16	2.61 ± .03	.052 ± .016	.002 ± .009	8.10 ± .08	.212 ± .016	13.8 ± .2	.105 ± .042	.032 ± .031	.0017 ± .0010	.0267 ± .0021	< .0003
3-16	4-1	4.24 ± .04	< .067	.019 ± .013	11.3 ± .1	.289 ± .018	15.3 ± .2	.129 ± .051	.064 ± .034			
4-1	4-16	2.42 ± .03	.036 ± .016	.003 ± .026	7.43 ± .07	.206 ± .014	5.23 ± .15	.026 ± .029	.061 ± .027	.0004 ± .0004	.0302 ± .0014	< .0003
4-16	5-1	3.05 ± .03	< .027	< .018	9.16 ± .07	.263 ± .015	12.3 ± .2	.086 ± .040	.026 ± .042			
5-1	5-15	2.65 ± .03	< .036	< .020	7.31 ± .07	.251 ± .015	8.10 ± .19	.098 ± .037	.069 ± .032	.0022 ± .0006	.0301 ± .0012	.0045 ± .0011
5-15	5-30	3.53 ± .04	< .036	.019 ± .038	9.46 ± .08	.299 ± .018	9.14 ± .20	.061 ± .035	.101 ± .029			
6-3	6-15	3.33 ± .04	< .015	.006 ± .014	8.19 ± .08	.302 ± .018	8.77 ± .22	.032 ± .063	.074 ± .037	.0006 ± .0004	.0438 ± .0017	.0049 ± .0005
6-15	6-28	2.36 ± .04	.026 ± .022	.007 ± .028	6.24 ± .10	.272 ± .023	9.70 ± .30	.148 ± .050	.109 ± .039			
6-30	7-15	2.72 ± .03	.01 ± .19	< .012	6.74 ± .07	.253 ± .014	7.25 ± .17	.032 ± .030	.002 ± .353	.0009 ± .0004	.0317 ± .0014	.0013 ± .0005
7-15	7-30	3.16 ± .03	.012 ± .047	.016 ± .012	7.62 ± .07	.300 ± .016	13.4 ± .2	.057 ± .034	.050 ± .027			
8-1	8-15	2.34 ± .03	.003 ± .078	< .019	5.02 ± .06	.191 ± .015	11.4 ± .2	.078 ± .032	.145 ± .029	.0012 ± .0005	.0231 ± .0013	.0009 ± .0006
8-15	8-31	1.44 ± .02	< .022	.012 ± .008	3.16 ± .04	.127 ± .011	13.8 ± .2	.035 ± .023	.073 ± .019			
9-1	9-15	1.05 ± .02	.008 ± .018	.006 ± .013	2.15 ± .04	.094 ± .010	10.9 ± .2	.109 ± .026	.078 ± .020	.0001 ± .0001	.0046 ± .0003	< .0002
9-15	10-1	1.49 ± .01	.009 ± .011	.007 ± .006	2.46 ± .02	.110 ± .007	21.1 ± .1	.082 ± .015	.098 ± .012			
10-1	10-15	1.73 ± .05	.133 ± .044	< .041	2.85 ± .10	.184 ± .028	39.5 ± .7	.137 ± .063	.219 ± .053	.0007 ± .0002	.0310 ± .0014	.0020 ± .0003
10-15	10-31	.559 ± .014	.046 ± .017	.023 ± .006	.807 ± .025	.037 ± .008	10.9 ± .2	.031 ± .018	.027 ± .016			
10-31	11-15	1.07 ± .02	.017 ± .009	.010 ± .005	.561 ± .024	.078 ± .009	57.9 ± .4	.030 ± .016	.033 ± .013		.0123 ± .0006	.0063 ± .0007
11-15	12-3	.434 ± .011	.241 ± .027	.109 ± .007	.456 ± .020	.021 ± .007	39.5 ± .3	.034 ± .016	.014 ± .012			
12-3	12-16	.290 ± .014	.048 ± .016	.010 ± .006	.401 ± .026	.008 ± .011	18.8 ± .3	.024 ± .032	.105 ± .026		.0073 ± .0007	.0191 ± .0018
12-16	12-31	.748 ± .015	.005 ± .013	.011 ± .005	.699 ± .024	.042 ± .008	28.1 ± .3	.019 ± .018	.056 ± .013			

ND = Not Detectable
D = Detectable

Radionuclide Concentrations in Surface Air at Barbados, British West Indies (13° 06'N, 59° 37'W) in 1968 and 1969.

Date		DPM/$10^3 M^3$					
ON	OFF	^{7}Be	^{54}Mn	^{57}Co	^{95}Zr	^{95}Nb	^{103}Ru
08-21-68	08-22-68	401 ± 13	<1.3		11.6 ± 2.0	24.4 ± 1.3	6.8 ± 1.1
08-22	08-29	296 ± 5	.85 ± .21		45.4 ± 1.0	48.3 ± .7	36.4 ± .6
08-29	09-05	298 ± 5	.30 ± .22	ND	54.6 ± 1.0	59.5 ± .7	42.4 ± .6
09-05	09-12	205 ± 4	.49 ± .22	ND	65.0 ± 1.1	68.9 ± .7	52.3 ± .7
05-22-69	05-25-69	311 ± 18	1.57 ± .51		142 ± 4	304 ± 4	109 ± 4
05-29	06-05	205 ± 8	.79 ± .25		92.6 ± 2.1	189 ± 2	69.9 ± 1.7
06-20	06-28	175 ± 10	.35 ± .25		77.0 ± 2.1	165 ± 2	49.8 ± 2.0
06-28	07-04	155 ± 10	.98 ± .28		72.1 ± 2.2	147 ± 2	40.7 ± 1.9
07-31	08-15	135 ± 4	.66 ± .15		48.8 ± 1.0	102 ± 1	23.0 ± .7
08-15	09-02	125 ± 7	.37 ± .10	.024 ± .052	19.8 ± 1.1	46.8 ± .9	9.3 ± 1.3
09-08	09-16	115 ± 3			12.7 ± .6	25.9 ± .6	3.64 ± .32
09-16	9-22	117 ± 4			6.25 ± .54	14.1 ± .4	1.78 ± .30
09-22	9-29	138 ± 4			7.70 ± .62	15.5 ± .5	1.95 ± .32
09-29	10-15	38.3 ± 2.3		.023 ± .28	2.44 ± .32	4.41 ± .24	.06 ± .23
10-15	11-04	25.4 ± 2.6	.06 ± .10	.036 ± .061	1.91 ± .40	2.36 ± .26	.64 ± .29
11-19	12-02	25.3 ± 2.0		.047 ± .027	1.81 ± .32	3.48 ± .23	.16 ± .23
12-02	12-16	32.2 ± 1.8		.013 ± .025	1.55 ± .23	2.45 ± .18	.75 ± .21
12-16	01-06						

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Barbados, British West Indies (13° 06'N, 59° 37'W) in 1968 and 1969.

Date		DPM/10^3M^3							
ON	OFF	^{106}Ru	^{125}Sb	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{131}I	^{247}Nd
08-21-68	08-22-68	39.2 ± 6.6		8.90 ± .99	9.9 ± 4.5	18.8 ± .7	124 ± 4	<2.7	<3.6
08-22	08-29	29.6 ± 1.4		6.82 ± .33	40.0 ± 1.2	95.2 ± .6	105 ± 2	5.12 ± .48	16.3 ± .8
08-29	09-05	32.5 ± 2.4	ND	7.80 ± .34	25.9 ± 1.5	107 ± 1	121 ± 2	5.65 ± .53	12.9 ± .9
09-05	09-12	23.0 ± 2.3	ND	6.15 ± .32	40.1 ± 1.7	144 ± 1	100 ± 2	7.77 ± .59	26.6 ± 1.0
05-22-69	05-25-69	46.9 ± 6.1	9.0 ± 1.7	11.5 ± .7		113 ± 3	223 ± 4		
05-29	06-05	29.0 ± 3.1	5.09 ± .89	7.52 ± .36		65.3 ± 1.5	147 ± 1		
06-20	06-28	33.5 ± 2.9	4.63 ± .77	6.57 ± .33		22.2 ± 1.1	148 ± 2		
06-28	07-04	26.8 ± 3.2	2.98 ± .86	6.43 ± .35		33.4 ± 2.0	144 ± 2		
07-31	08-15	28.5 ± 1.8	3.96 ± .49	5.19 ± .21		15.5 ± .6	126 ± 1		
08-15	09-02	16.1 ± 1.0	2.35 ± .26	3.28 ± .13		15.2 ± 2.2	64.4 ± .8		
09-08	09-16	8.5 ± 1.6	1.17 ± .47	2.52 ± .22		3.17 ± .30	50.0 ± 1.1		
09-16	09-22	5.8 ± 1.5	.88 ± .44	2.00 ± .21		1.63 ± .30	37.6 ± 1.1		
09-22	09-29	4.2 ± 1.7	1.24 ± .50	1.94 ± .23		1.66 ± .34	41.4 ± 1.2		
09-29	10-15	2.15 ± .46	.52 ± .12	.519 ± .057		.24 ± .43	10.0 ± .4		
10-15	11-04	.53 ± .68	.86 ± .25	.420 ± .098		1.30 ± .54	8.31 ± .63		
11-19	12-02	.60 ± .46	.13 ± .11	.227 ± .045		3.11 ± .50	11.1 ± .4		
12-02	12-16	.35 ± .38	.25 ± .10	.170 ± .043		1.99 ± .40	7.82 ± .31		

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Barbados, British West Indies (13° 06'N, 59° 37'W) in 1970.

Date		DPM/$10^3 M^3$					
ON	OFF	^{7}Be	^{54}Mn	^{57}Co	^{95}Zr	^{95}Nb	^{103}Ru
01-06	01-14	23.1 ± 2.0	.090 ± .069	.034 ± .039	1.49 ± .30	2.38 ± .22	1.67 ± .27
01-14	01-20	39.2 ± 2.1	<.18	.047 ± .054	1.61 ± .30	2.20 ± .21	1.42 ± .21
02-25	03-03	35.9 ± 2.2	.19 ± .11	.035 ± .062	9.38 ± .52	17.8 ± .5	6.39 ± .34
03-03	03-10	125 ± 3	.44 ± .15	.197 ± .094	28.0 ± .7	55.6 ± .6	20.6 ± .4
04-06	04-20	68.8 ± 1.9	.302 ± .090		23.7 ± .5	49.6 ± .4	12.8 ± .3
04-20	04-28	19.7 ± 1.5	.143 ± .080	.049 ± .049	5.78 ± .35	11.7 ± .3	3.23 ± .20
04-28	05-04	98.5 ± 3.3	.49 ± .16	.22 ± .11	35.1 ± .8	67.8 ± .8	14.1 ± .4
05-04	05-19	27.4 ± 1.1	.055 ± .061	.138 ± .037	10.1 ± .3	20.7 ± .3	3.61 ± .14
05-19	05-26	193 ± 4	1.03 ± .22	.19 ± .13	62.1 ± 1.0	135 ± 1	26.4 ± .6
06-16	06-22	90.2 ± 3.5	.61 ± .20	.12 ± .12	37.0 ± .9	74.4 ± .8	12.1 ± .5
06-22	07-06	134 ± 4	.20 ± .18	.27 ± .14	60.3 ± 1.1	119 ± 1	15.8 ± .5
07-06	07-13	2.08 ± .68	ND	.087 ± .046	.83 ± .18	1.60 ± .12	.446 ± .094
07-13	07-21	76.2 ± 3.1	.57 ± .15	.287 ± .093	29.2 ± .8	55.1 ± .7	9.39 ± .43
07-21	07-29	21.2 ± 1.6	.127 ± .083	.198 ± .057	7.20 ± .38	13.1 ± .3	2.81 ± .23
07-29	08-06	15.3 ± 1.4	.198 ± .098	.107 ± .051	5.02 ± .34	13.0 ± .3	1.88 ± .18
08-06	08-11	86.6 ± 3.1	<.35	.165 ± .096	15.7 ± .7	35.5 ± .6	5.30 ± .36
08-17	08-25	39.9 ± 1.6	.128 ± .094	.106 ± .051	6.20 ± .32	12.2 ± .3	1.55 ± .17
08-25	09-02	51.3 ± 1.9	.61 ± .11	.037 ± .060	9.27 ± .41	18.4 ± .4	4.23 ± .23
09-02	09-16	35.6 ± 1.8	.23 ± .12	.038 ± .047	4.50 ± .37	8.96 ± .30	1.41 ± .20
09-16	09-21	187 ± 4	.28 ± .16	.100 ± .086	14.6 ± .6	27.9 ± .5	6.75 ± .35

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Barbados, British West Indies (13° 06'N, 59° 37'W) in 1970.

Date		DPM/$10^3 M^3$					
ON	OFF	^{106}Ru	^{125}Sb	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce
01-06	01-14	1.05 ± .58	.68 ± .16	.463 ± .071		1.67 ± .44	4.64 ± .41
01-14	01-20	1.08 ± .67	.32 ± .21	.38 ± .10		1.80 ± .27	5.67 ± .53
02-25	03-03	2.0 ± 1.1	.92 ± .34	1.22 ± .14		8.18 ± .35	24.6 ± .8
03-03	03-10	18.4 ± 1.7	2.65 ± .55	4.41 ± .24		20.7 ± .3	81.4 ± 1.2
04-06	04-20	18.7 ± 1.1	2.16 ± .34	2.98 ± .14		12.0 ± .2	63.9 ± .7
04-20	04-28	3.94 ± .79	.92 ± .25	1.03 ± .11		2.57 ± .19	15.0 ± .5
04-28	05-04	18.6 ± 2.0	3.40 ± .64	5.96 ± .27		15.3 ± .4	112 ± 1
05-04	05-19	5.81 ± .68	1.26 ± .22	1.49 ± .09		4.16 ± .12	34.4 ± .5
05-19	05-26	44.6 ± 2.7	5.59 ± .82	9.87 ± .35		20.5 ± 4	214 ± 2
06-16	06-22	28.2 ± 2.2	5.56 ± .68	6.50 ± .30	2.8 ± 1.4	18.0 ± .4	150 ± 2
06-22	07-06	27.0 ± 2.5	7.82 ± .76	9.03 ± .33		29.6 ± .5	240 ± 1
07-06	07-13		.28 ± .17	.383 ± .091		.56 ± .11	5.47 ± .44
07-13	07-21	17.6 ± 1.6	3.51 ± .49	4.66 ± .22	16.7 ± 5.3	22.4 ± .5	119 ± 1
07-21	07-29	4.78 ± .92	1.15 ± .28	1.53 ± .13	3.1 ± 2.3	6.02 ± .25	30.8 ± .8
07-29	08-06	7.47 ± .95	.93 ± .29	1.54 ± .13		2.02 ± .19	29.6 ± .7
08-06	08-11	19.9 ± 1.9	4.04 ± .58	4.74 ± .27		5.10 ± .32	88.1 ± 1.4
08-17	08-25	6.97 ± .98	1.85 ± .30	2.03 ± .14		1.97 ± .17	35.7 ± .7
08-25	09-02	11.6 ± 1.2	1.79 ± 35	2.36 ± .16		6.37 ± .22	48.4 ± .8
09-02	09-16	6.7 ± 1.1	1.25 ± .32	1.49 ± .14		1.41 ± .20	27.0 ± .7
09-16	09-21	20.9 ± 1.9	3.84 ± .55	4.04 ± .26		11.2 ± .3	73.7 ± 1.4

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Rio de Janeiro, Brazil (22° 53'S, 43° 17'W) in 1966.

DATE ON / OFF	8-3 / 8-22	8-22 / 8-29	8-29 / 9-5	10-24 / 10-29	11-4 / 11-7	12-5 / 12-15	12-15 / 1-2
Radionuclide	DPM/10^3M^3						
^{7}Be	38	213 ± 14[a]	271 ± 28	145 ± 41	62 ± 12	234 ± 10	91.5 ± 3.2
^{22}Na	.017 ± .013	<.010	.024 ± .011	.048 ± .008	.010 ± .012	.014 ± .012	
^{46}Sc	.053 ± .017	.152 ± .080	.019 ± .012	<.083	.070 ± .021	.042 ± .017	
^{54}Mn	3.95 ± .25	1.34 ± .08	.671 ± .020	2.30 ± .08	5.84 ± .03	3.81 ± .03	
^{57}Co		<.052[a]	.090 ± .091	4.57 ± .21	4.12 ± .08	2.73 ± .08	.500 ± .029
^{58}Co		1.80 ± .24	1.12 ± .52	31.0 ± 1.5	16.8 ± .4	8.02 ± .30	1.79 ± .10
^{60}Co	.057 ± .007	.074 ± .035	.024 ± .007	.254 ± .04	.201 ± .011	.149 ± .011	
^{65}Zn	.27 ± .02	.11 ± .10	.077 ± .028	.96 ± .43	.40 ± .12	.41 ± .14	.043 ± .050
^{88}Y	<.004	.018 ± .022	.004 ± .004	.005 ± .006	.006 ± .004	.002 ± .004	
^{95}Zr	---	36.1 ± 2.1[a]	20.9 ± 2.1	229 ± 5	171 ± 2	88.0 ± 1.4	19.0 ± .4
^{95}Nb	.	26.2 ± .4[a]	21.1 ± .9	101 ± 1	111 ± 1	96.6 ± .7	24.9 ± .2
^{103}Ru	149 ± 1	115 ± 1	119 ± 12[a]	847 ± 20	539 ± 5	240 ± 3	47.4 ± 1.0
^{106}Ru	17.7 ± .2	16.4 ± .9	9.68 ± .22	73.8 ± .7	59.9 ± .4	44.4 ± .4	
^{110}Ag	.021 ± .017	.07 ± .34	.020 ± .034	.060 ± .033	.006 ± .018	ND	
^{124}Sb	.053 ± .032	<.014	.010 ± .023	1.98 ± .23	1.41 ± .08	.728 ± .054	
^{125}Sb	.998 ± .084	.61 ± .35	<.16	.63 ± .24	<.57	1.84 ± .12	
^{134}Cs	.049 ± .009	.014 ± .039	.018 ± .008	<.036	.113 ± .012	.067 ± .008	
^{137}Cs	4.59 ± .03	6.22 ± .12	2.93 ± .03	8.72 ± .06	5.47 ± .04	7.31 ± .04	
^{140}Ba	143 ± 1	62.5 ± 2.8	18.5 ± .6	2980 ± 10	233 ± 3	34.1 ± .6	
^{141}Ce	ND	99 ± 12[a]	70 ± 15	456 ± 14	288 ± 4	113 ± 2	22.7 ± .6
^{144}Ce	31.4 ± 4.3	24.9 ± .4	10.7 ± 3.3	75.8 ± 6.1	53.2 ± 4.7	36.7 ± 4.4	18.0 ± .3
^{232}Th	.085 ± .020		.049 ± .013	.148 ± .048	.085 ± .023	.141 ± .030	

(a) = First Analysis By Ge (Li) Diode

ND = Not Detectable

Radionuclide Concentrations in Surface Air at Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1967

Date		DPM/10^{3}M^3								
On	Off	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
01-02	01-16	119 ± 3	.009 ± .005	ND	.706	.508 ± .029	1.13 ± .08	.035 ± .005	.039	.001 ± .001
01-16	01-28	99.7 ± 2.6	.011 ± .002	ND	.219	.246 ± .032	.883 ± .040	.021 ± .002	.152	.001 ± .001
02-01	02-12	76.3 ± 4.2	.007 ± .001	ND	.067	.137 ± .026	.297 ± .033	.007 ± .002	.095	.001 ± .001
02-15	02-28	113 ± 2	.007 ± .001	ND	.081	.127 ± .025	.290 ± .025	.011 ± .001	.021	.001 ± .001
03-01	03-15	59.9 ± 3.0	.004 ± .001	ND	.064	.075 ± .017	.095 ± .012	.005 ± .001	ND	ND
03-16	04-01	55.9 ± .9				.122 ± .015	.099 ± .020			
04-01	04-26	140 ± 1	.012 ± .001	ND	.085	.051 ± .013	.092 ± .012	.012 ± .001	.025	ND
05-03	05-31	162 ± 1	.017 ± .003	.001 ± .003	.139 ± .005	.031 ± .009	.077 ± .020	.014 ± .002	.027 ± .084	.002 ± .001
06-01	06-30	106 ± 1	.008 ± .008	.087 ± .012	.104 ± .011	.057 ± .014	1.26 ± .07	.041 ± .004	.176 ± .013	<.004
07-01	08-01	38.2 ± 1.5	.014 ± .002	.041 ± .006	.048 ± .008	.047 ± .040	2.36 ± .05	.031 ± .002	.297 ± .010	.015 ± .001
08-02	08-31	72.4 ± 2.1	.007 ± .003	.004 ± .007	.254	.005 ± .054	2.06 ± .06	.033 ± .003	.255	.013 ± .002
09-01	09-21	111 ± 2	.014 ± .002	<.010	.300	.020 ± .029	1.54 ± .05	.036 ± .002	.066	.012 ± .002
10-02	10-16	56.8 ± 1.3	.009 ± .001	2.02 ± .02	.071	.031 ± .023	.445 ± .024	.014 ± .002	.162	.003 ± .001
10-16	10-31	49.3 ± .9	.007 ± .001	.914 ± .012	.052	.026 ± .011	.287 ± .020	.013 ± .001	.029	.003 ± .001
10-31	11-30	50.9 ± .9	.008 ± .001	.036 ± .003	.045	.016 ± .004	.141 ± .012	.009 ± .001	.039	.001 ± .001
12-01	01-09	154 ± 2	.029 ± .002	.133 ± .006	.180	.020 ± .013	.253 ± .024	.021 ± .002	.212	.002 ± .001

ND = Not Detectable

Rio de Janeiro, Brazil, 1967 (contd)

Date ON	Date OFF	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
		DPM/10³M³								
01-02	01-16	18.8 ± .4	15.6 ± .2	32.0 ± .7	10.0 ± .1	.018 ± .017	.120 ± .017	<.093	.010 ± .004	1.62
01-16	01-28	8.54 ± .30	9.84 ± .16	17.0 ± .5	6.78 ± .09	.007 ± .005	.071 ± .008	<.083	<.005	1.73
02-01	02-12			4.79 ± .66	2.83 ± .06	.002 ± .005	.018 ± .005	<.085	<.003	.883
02-15	02-28	3.71 ± .18	5.88 ± .13	7.49 ± .30	3.43 ± .05	<.005	.018 ± .006	.353	<.002	1.09
03-01	03-15			1.81 ± .38	1.52 ± .08	.001 ± .002	.006 ± .003	.099	<.001	.530
03-16	04-01	.897 ± .065	1.72 ± .05	1.42 ± .08						
04-01	04-26	1.12 ± .06	1.97 ± .05	1.55 ± .09	2.86 ± .04	<.03	.006 ± .003	.706	<.002	1.48
05-03	05-31	.536 ± .049	1.12 ± .04	.588 ± .069	3.17 ± .06	.002 ± .010	.004 ± .007	.709 ± .055*	.025 ± .003	2.10 ± .01
06-01	06-30	27.7 ± .3	25.8 ± .2	161 ± 1	9.00 ± .11	.014 ± .011	.157 ± .025	.368 ± .040	.039 ± .006	2.50 ± .01
07-01	08-01	65.7 ± .4	24.6 ± .1	199 ± 1	10.9 ± .1	.011 ± .003	.057 ± .012	.34 ± .20	.001 ± .004	2.96 ± .01
08-02	08-31	75.0 ± .5	63.0 ± .2	184 ± 1	16.0 ± .1	.004 ± .005	.046 ± .013	.96 ± .19	<.008	3.11
09-01	09-21	51.0 ± .5	56.2 ± .3	105 ± 1	17.9 ± .1	.007 ± .004	.037 ± .008	.78 ± .008	<.006	2.91
10-02	10-16	13.6 ± .3	19.6 ± .2	23.3 ± .3	6.40 ± .08	.007 ± .004	.017 ± .004	.38 ± .13	<.006	.816
10-16	10-31	9.96 ± .18	15.5 ± .1	12.1 ± .2	5.18 ± .05	.001 ± .003	.004 ± .004	.528 ± .060	.008 ± .002	1.26
10-31	11-30	4.47 ± .14	7.68 ± .10	4.48 ± .17	3.25 ± .04	<.003	.002 ± .002	.403 ± .046	.004 ± .001	1.03 ± .03*
12-01	01-09	7.31 ± .20	12.6 ± .2	4.67 ± .16	6.92 ± .08	.006 ± .004	.91 ± .11	.004 ± .002	2.87 ± .06	

* = First Analysis by Ge(Li) Diode

Rio de Janeiro, Brazil, 1967 (contd)

Date		DPM/10^3M^3				
On	Off	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{232}Th
01-02	01-16	1.59 ± .07	13.3 ± .4	13.8 ± .3*		.032 ± .017
01-16	01-28	.600 ± .090	7.98 ± .37	10.4 ± .3	.011 ± .002	.032 ± .009
02-01	02-12	.088 ± .030		2.49 ± .12	.018 ± .004	.037 ± .010
02-15	02-28	D	2.60 ± .20	6.32 ± .28	<.006	.046 ± .006
03-01	03-15	D		1.32 ± .13	<.005	.028 ± .005
03-16	04-01		.534 ± .049	2.33 ± .17		
04-01	04-26	D	.385 ± .049	3.54 ± .15	.014 ± .004	.042 ± .006
05-03	05-31	.43 ± .28	.285 ± .075	1.59 ± .09	.026 ± .009	.106 ± .014
06-01	06-30	149 ± 1	54.8 ± .2	9.19 ± .12	.066 ± .023	.100 ± .014
07-01	08-01	184 ± 1	124 ± 1	18.7 ± .3	.050 ± .010	.051 ± .006
08-02	08-31	70.1 ± .8	99.1 ± .4	24.7 ± .3	.035 ± .013	.064 ± .010
09-01	09-21	12.4 ± .2	53.4 ± .3	10.2 ± .2	.032 ± .011	.072 ± .009
10-02	10-16	1.01 ± .04	11.0 ± .1	8.28 ± .23	<.034	.088 ± .011
10-16	10-31	<.010	8.03 ± .13	5.70 ± .09	.013 ± .007	.080 ± .007
10-31	11-30	.056 ± .045	2.44 ± .12	3.41 ± .07	.023 ± .005	.045 ± .005
12-01	01-09	.004 ± .094	3.94 ± .17	7.27 ± .15	.048 ± .009	.049 ± .008

* = First Analysis by Ge(Li) Diode
D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Rio de Janeiro, Brazil (22°53'S, 43°17'W) in 1968

Date ON	Date OFF	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
		DPM/10^3M^3								
01-18	02-01	83.8 ± 1.1	.008 ± .001	.035 ± .003	.035 ± .007	.014 ± .008	.033 ± .011	.002 ± .001	.069 ± .011	<.002
02-06	02-15	185 ± 3	.020 ± .002	.011 ± .003	.078 ± .011	.011 ± .028	.036 ± .018	.008 ± .002	.092 ± .018	.002 ± .001
02-15	02-29	102 ± 2	.018 ± .002	<.005	.106 ± .009	.001 ± .007	.042 ± .019	.012 ± .002	.141 ± .014	.002 ± .001
03-01	03-16	45.8 ± .8	.032 ± .004	.004 ± .002	.024	.022 ± .007	<.017	.003 ± .001	.027	<.001
03-19	04-01	104 ± 2	.014 ± .002	.003 ± .003	.076	.019 ± .011	.013 ± .019	.005 ± .001	.085	.002 ± .002
04-02	04-10	37.3 ± 1.5	.007 ± .002	.006 ± .004	.021	.005 ± .011	.027 ± .022	.008 ± .002	.003	.002 ± .002
04-15	04-26	94.1 ± 1.2	.010 ± .001	<.003	.047	.010 ± .009	.011 ± .011	.008 ± .002	.064	.001 ± .001
05-02	05-15	91.8 ± .9	.012 ± .002	.001 ± .001	.053	.014 ± .010	<.016	.004 ± .001	.086	<.002
05-15	05-28	83.8 ± 1.0	.011 ± .001	<.003	.056	.012 ± .009	.001 ± .009	.004 ± .001	.064	.001 ± .001
06-01	06-18	54.6 ± .7	.007 ± .001	.003 ± .001	.025	.004 ± .006	.004 ± .006	.004 ± .001	.037	<.001
07-01	07-13	80.0 ± 1.0	.009 ± .001	<.003	.022 ± .015*	.009 ± .012	.005 ± .008	.004 ± .001	.046 ± .036*	.001 ± .001
07-15	07-30	83.7 ± 1.5	.010 ± .001	.024 ± .007	.085 ± .055	ND	2.51 ± .10	.015 ± .002	.24 ± .17	<.001
08-03	08-10	44.2 ± 1.8	.009 ± .002	<.008	.058 ± .059	.069 ± .057	1.69 ± .11	.013 ± .003	.122 ± .089	.002 ± .003
08-12	08-19	153 ± 3	.025 ± .004	.019 ± .010	<.21	ND	3.14 ± .16	.040 ± .004	.32 ± .30	.002 ± .003
08-19	08-26	158 ± 3	.027 ± .003	.015 ± .008	.036 ± .057	ND	1.54 ± .10	.019 ± .003	.23 ± .16	.002 ± .003
08-26	09-02	176 ± 4	.033 ± .004	.021 ± .016	.28 ± .13	ND	4.30 ± .16	.072 ± .005	.82 ± .36	.003 ± .003
09-02	09-06	167 ± 4	.029 ± .005	.044 ± .015	.21 ± .12	ND	2.03 ± .17	.036 ± .005	.51 ± .33	.002 ± .005
09-10	09-14	112 ± 5	.027 ± .005	.037 ± .021	.16 ± .14	ND	3.03 ± .19	.065 ± .006	.72 ± .39	.005 ± .005
09-16	09-23	104 ± 3	.009 ± .003	.015 ± .009	.304 ± .074	ND	1.19 ± .09	.049 ± .004	<.35	.002 ± .003
09-23	09-28	270 ± 4	.039 ± .005	.035 ± .013	.35 ± .11	ND	2.05 ± .14	.051 ± .005	.26 ± .29	.002 ± .004
10-01	10-06	120 ± 4	.025 ± .005	.029 ± .013	.47 ± .11	ND	1.91 ± .13	.039 ± .005	.34 ± .28	.007 ± .005
10-07	10-11	64.3 ± 2.8	.015 ± .004	.019 ± .011	.32 ± .10	.325 ± .092	.95 ± .10	.019 ± .004	.26 ± .25	.004 ± .005
10-14	10-21	139 ± 2	.019 ± .003	<.018	.432 ± .069	ND	.971 ± .070	.021 ± .003	.10 ± .18	.002 ± .002
10-21	10-26	176 ± 4	.027 ± .004	.017 ± .009	.340 ± .063	.054 ± .078	.954 ± .086	.021 ± .004	.34 ± .19	.003 ± .003
10-28	11-01	20.1 ± 2.1	.002 ± .003	.009 ± .009	.052 ± .055	.112 ± .068	.309 ± .055	.010 ± .004	.36 ± .22	.001 ± .003
11-04	11-10	89.7 ± 2.9	.019 ± .004	.031 ± .009	.071 ± .052	.441 ± .098	.982 ± .077	.018 ± .003	.35 ± .19	.005 ± .003
11-11	11-18	205 ± 3	.041 ± .004	.002 ± .009	.363 ± .069	.187 ± .076	1.11 ± .07	.034 ± .004	.11 ± .19	.002 ± .002
11-18	11-25	273 ± 4	.042 ± .005	.028 ± .009	.114 ± .055	.55 ± .11	1.38 ± .08	.047 ± .004	.10 ± .12	.003 ± .003
11-26	12-02	178 ± 3	.034 ± .004	<.018	.316 ± .065	.241 ± .081	1.01 ± .07	.037 ± .004	.63 ± .19	.001 ± .002
12-02	12-09	130 ± 3	.017 ± .003	<.011	.088 ± .046	.256 ± .064	.615 ± .049	.022 ± .003	.082 ± .086	.002 ± .002
12-09	12-16	221 ± 3	.040 ± .004	.018 ± .007	.308 ± .067	.339 ± .070	.880 ± .061	.036 ± .004	.16 ± .15	.002 ± .002
12-16	12-23	119 ± 2	.004 ± .003	.006 ± .004	.252 ± .049	.186 ± .059	.478 ± .035	.019 ± .003	.17 ± .13	.001 ± .001
12-23	12-30	77.2 ± 1.4	.007 ± .002	.003 ± .004	.121 ± .039	.185 ± .043	.321 ± .027	.014 ± .003	<.17	.001 ± .001

* = First Analysis by Ge(Li) Diode
ND = Not Detectable

Rio de Janeiro, Brazil, 1968 (contd)

Date ON	Date OFF	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{131}I
		DPM/10^3M^3							
01-18	02-01	.735 ± .077	1.15 ± .06	.411 ± .066	.786 ± .031	.006 ± .005	<.006	.376 ± .055	
02-06	02-15	.94 ± .20	2.45 ± .15	.83 ± .23	1.87 ± .06	.001 ± .007	<.009	.84 ± .11	
02-15	02-29	.55 ± .12	1.25 ± .07	.71 ± .13	1.32 ± .04	.004 ± .006	.001 ± .006	.647 ± .067	
03-01	03-16	.110 ± .046	.207 ± .025	.093 ± .045	.336 ± .020	.002 ± .003	.001 ± .003	.121 ± .039	
03-19	04-01	.16 ± .10	.635 ± .066	.15 ± .11	.768 ± .031	.004 ± .007	.002 ± .008	.392 ± .046	
04-02	04-10	.052 ± .087	.184 ± .062	.37 ± .14	.402 ± .035	.002 ± .006	.007 ± .009	.075 ± .056	
04-15	04-26	.157 ± .053	.414 ± .034	.019 ± .039	.606 ± .032	.004 ± .005	.004 ± .004	.207 ± .048	
05-02	05-15	.149 ± .028	.272 ± .025	.058 ± .026	.454 ± .025	.007 ± .006	<.006	.191 ± .042	
05-15	05-28	.111 ± .044	.196 ± .027	<.070	.427 ± .023	.003 ± .005	.002 ±.004	.235 ± .040	
06-01	06-18	.055 ± .028	.178 ± .019	.007 ± .019	.298 ± .018	.003 ± .003	<.004	.150 ± .028	
07-01	07-13	.149 ± .049	.236 ± .028	.164 ± .021	.507 ± .028	<.008	.002 ± .003	.169 ± .045	
07-15	07-30	116 ± 1	124 ± 1	100 ± 1	3.93 ± .07	.002 ± .005	.040 ± .015	<.53	95.8 ± 1.4
08-03	08-10	71.8 ± .6	71.1 ± .4	82.6 ± .5	3.35 ± .10	.006 ± .009	.027 ± .020	.23 ± .29	26.8 ± 1.2
08-12	08-19	180 ± 1	174 ± 1	210 ± 1	7.51 ± .13	.017 ± .013	.114 ± .030	.56 ± .55	56.0 ± 1.3
08-19	08-26	101 ± 1	126 ± 1	84.3 ± .5	4.83 ± .11	.007 ± .012	.017 ± .020	.72 ± .33	26.2 ± 3.1
08-26	09-02	502 ± 2	508 ± 1	422 ± 1	21.0 ± .2	.011 ± .012	.166 ± .034	<1.5	126 ± 4
09-02	09-06	209 ± 1	258 ± 1	182 ± 1	7.92 ± .18	.005 ± .021	.092 ± .040	.34 ± .66	50.5 ± 2.9
09-10	09-14	348 ± 2	461 ± 1	265 ± 1	16.6 ± .3	.037 ± .020	<.091	<1.6	41.5 ± 5.8
09-16	09-23	163 ± 1	214 ± 1	125 ± 1	6.83 ± .13	.007 ± .013	.076 ± .025	<.87	26.7 ± 1.9
09-23	09-28	278 ± 1		217 ± 1	12.7 ± .2	.032 ± .018	.081 ± .031	.18 ± .67	23.6 ± 4.1
10-01	10-06	222 ± 1		198 ± 1	13.9 ± .2	.037 ± .018	.132 ± .031	<1.7	19.1 ± 2.7
10-07	10-11	105 ± 1	145 ± 1	96.1 ± .7	6.81 ± .16	.016 ± .019	.083 ± .030	1.18 ± .50	
10-14	10-21	114 ± 1	155 ± 1	93.8 ± .5	11.2 ± .2	.008 ± .009	.062 ± .018	<.78	
10-21	10-26	128 ± 1	198 ± 1	80.6 ± .7	6.92 ± .14	.013 ± .015	.043 ± .021	.61 ± .63	
10-28	11-01	39.6 ± .7	57.9 ± .6	36.2 ± .5	4.44 ± .14	.024 ± .015	.028 ± .018	1.33 ± .43	
11-04	11-10	126 ± 1	186 ± 1	116 ± 1	11.8 ± .2	.028 ± .014	.117 ± .022	9.8 ± 5.9	
11-11	11-18	130 ± 1	229 ± 1	85.1 ± .5	15.1 ± .2	.007 ± .009	.044 ± .014	2.01 ± .44	
11-18	11-25	214 ± 1	368 ± 1	125 ± 1	16.6 ± .2	.030 ± .012	.079 ± .017	1.43 ± .70	
11-26	12-02	124 ± 1	211 ± 1	86.4 ± .4	15.5 ± .2	.017 ± .011	.049 ± .015	1.38 ± .48	
12-02	12-09	72.5 ± .7	135 ± 1	42.0 ± .5	9.20 ± .14	.007 ± .007	.021 ± .010	1.14 ± .41	
12-09	12-16	104 ± 1	191 ± 1	54.7 ± .4	11.7 ± .2	.029 ± .011	.074 ± .014	1.10 ± .41	
12-16	12-23	73.8 ± .6	133 ± 1	41.3 ± .3	9.23 ± .13	.016 ± .010	.033 ± .008	1.54 ± .34	
12-23	12-30	36.5 ± .4	67.6 ± .4	11.9 ± .1	6.76 ± .12	.004 ± .007	.013 ± .006	.42 ± .25	

Rio de Janeiro, Brazil, 1968 (contd)

Date		DPM/10^3M^3								
ON	OFF	^{134}Cs	^{137}Cs	^{140}Ba	^{141}Ce	^{144}Ce	^{147}Nb	^{226}Ra	^{232}Th	^{237}U
01-18	02-01	.002 ± .001	.567 ± .02	D	.234 ± .063	.73 ± .20		.031 ± .006	.072 ± .010	
02-06	02-15	<.005	1.53 ± .06	.010 ± .084	.91 ± .42	1.98 ± .18		.060 ± .010	.162 ± .018	
02-15	02-18	<.004	1.56 ± .04	1.79 ± .77	.33 ± .12	1.68 ± .10		.026 ± .008	.043 ± .009	
03-01	03-16	.002 ± .001	.351 ± .020	D	.064 ± .050	.288 ± .046		.021 ± .005	.034 ± .007	
03-19	04-01	<.004	1.06 ± .03	.6 ± 1.4	.28 ± .31	1.70 ± .11		.049 ± .009	.087 ± .012	
04-02	04-10	<.004	.404 ± .031	.3 ± 1.0	.30 ± .31	.25 ± .13		.039 ± .009	.007 ± .007	
04-15	04-26	.001 ± .002	.849 ± .032	D	.142 ± .071	1.03 ± .10		.039 ± .008	.038 ± .011	
05-02	05-15	<.004	.580 ± .026	.003 ± .015	.123 ± .047	.531 ± .091		.053 ± .011	.082 ± .012	
05-15	05-28	<.003	.615 ± .026	.081 ± .062	.078 ± .067	.728 ± .087		.045 ± .009	.043 ± .009	
06-01	06-18	.001 ± .001	.363 ± .018	<.030	.028 ± .027	.667 ± .064		.027 ± .005	.027 ± .007	
07-01	07-13	<.003	.474 ± .027	.011 ± .018	.050 ± .051	1.22 ± .10		.026 ± .006	.082 ± .012	
07-15	07-30	<.004	1.13 ± .08	333 ± 24	323 ± 1	48.4 ± 5.5	182 ± 1	.052 ± .008	.067 ± .010	46.8 ± .3
08-03	08-10	<.006	1.20 ± .10	140 ± 19	212 ± 1	42.4 ± .6	57.4 ± .5	.044 ± .012	.038 ± .017	<12
08-12	08-19	.008 ± .006	3.42 ± .17	291 ± 20	576 ± 1	127 ± 1	106 ± 2	.104 ± .022	.089 ± .019	<23
08-19	08-26	<.009	3.49 ± .11	123 ± 10	239 ± 1	58.1 ± .7	29.2 ± 2.0	.114 ± .021	.130 ± .021	<1.2
08-26	09-02	<.016	7.31 ± .22	623 ± 16	1160 ± 1	274 ± 2	154 ± 3	.115 ± .022	.156 ± .022	<149
09-02	09-06	<.015	3.74 ± .21	217 ± 22	467 ±1	122 ± 1	87.8 ± 2.7	.180 ± .034	.128 ± .032	<22
09-10	09-14	<.016	5.93 ± .25	293 ± 22	752 ± 1	211 ± 2	101 ± 5	.134 ± .028	.133 ± .033	<2.8
09-16	09-23	<.011	2.76 ± .14	126 ± 8	314 ± 1	101 ± 1	46.1 ± 1.7	.224 ± .026	.197 ± .024	129 ± 8
09-23	09-28	.015 ± .008	6.04 ± .20	145 ± 9	517 ± 1	185 ± 1	52.4 ± 3.3	.118 ± .031	.056 ± .022	99 ± 20
10-01	10-06	.035 ± .009	3.76 ± 19	165 ± 8	420 ± 1	144 ± 1	67.2 ± 2.5	.197 ± .034	.084 ± .024	136 ± 12
10-07	10-11	.012 ± .008	2.32 ± .16	65.1 ± 5.1	199 ± 1	75.6 ± 1.0		.172 ± .034	.065 ± .027	
10-14	10-21	<.009	2.89 ± .12	44.3 ± 2.4	188 ± 1	81.3 ± .7	15.7 ± .9	.090 ± .017	.073 ± .018	
10-21	10-26	.006 ± .007	3.51 ± .19	24.9 ± 2.0	133 ± 1	75.9 ± 1.0		.168 ± .029	.103 ± .025	
10-28	11-01	<.010	.89 ± .13	10.1 ± 1.2	48.7 ± .4	24.1 ± .7		.084 ± .021	.074 ± .028	
11-04	11-10	.028 ± .007	3.06 ± .18	26.9 ± 1.2	148 ± 1	77.2 ± 1.0		.210 ± .030	.104 ± .021	
11-11	11-18	<.011	4.57 ± .14	13.9 ± .7	158 ± 1	128 ± 1		.119 ± .019	.073 ± .018	
11-18	11-25	.074 ± .008	7.08 ± .22	14.0 ± .6	174 ± 1	149 ± 1		.207 ± .030	.083 ± .018	
11-26	12-02	<.011	4.85 ± .16	6.06 ± .57	124 ± 1	135 ± 1		.090 ± .020	.128 ± .023	
12-02	12-09	<.007	2.81 ± .14	2.63 ± .27	54.4 ± .4	61.4 ± .7		.091 ± .016	.012 ± .014	
12-09	12-16	.015 ± .006	4.82 ± .14	3.04 ± .28	92.2 ± .4	125 ± 1		.165 ± .026	.073 ± .017	
12-16	12-23	.009 ± .005	3.17 ± .11	.978 ± .029	65.4 ± .3	89.6 ± .7		.052 ± .022	.076 ± .017	
12-23	12-30	<.009	1.65 ± .08	.720 ± .026	30.8 ± .2	48.7 ± .5		.018 ± .014	.052 ± .016	

D = Decayed Away Before Analysis

Radionuclide Concentrations in Surface Air at Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1969

Date ON	Date OFF	^{7}Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
		DPM/10³M³								
12-30	01-06	124 ± 2	.006 ± .006	.008 ± .008	.335 ± .050	.294 ± .054	.247 ± .052	.017 ± .006	.21 ± .10	.002 ± .003
01-06	01-13	157 ± 2	.014 ± .003	.006 ± .004	.291 ± .049	.165 ± .050	.417 ± .034	.023 ± .003	.03 ± .10	.004 ± .002
01-13	01-25	70.0 ± 1.0	.007 ± .002	.005 ± .002	.082 ± .026	.131 ± .026	.194 ± .018	.010 ± .002	.035 ± .051	ND
01-27	02-10	112 ± 1	.010 ± .002	.007 ± .003	.072 ± .025	.209 ± .029	.287 ± .021	.017 ± .002	ND	.002 ± .001
02-19	03-01	49.1 ± .9	.006 ± .002	.005 ± .002	.097 ± .032	.102 ± .023	.131 ± .016	.010 ± .002	ND	.001 ± .001
03-03	03-17	123 ± 1	.020 ± .002	<.005	.156 ± .034	.329 ± .028	.337 ± .021	.025 ± .002	ND	.001 ± .001
03-17	03-31	141 ± 1	.015 ± .002	<.005	.287 ± .027	.328 ± .027	.273 ± .019	.018 ± .002	ND	.001 ± [illegible]
04-01	04-14	145 ± 1	.020 ± .002	.010 ± .003	.343 ± .035	.400 ± .030	.364 ± .023	.027 ± .002	ND	.001 ± .001
04-15	04-29	187 ± 1	.018 ± .002	<.004	.290 ± .071	.478 ± .027	.355 ± .042	.024 ± .002	ND	.001 ± .001
05-02	05-15	169 ± 1	.021 ± .002	<.005	.468 ± .037	.657 ± .030	.405 ± .043	.035 ± .002	ND	.001 ± .001
05-15	06-02	96.8 ± .8	.006 ± .001	.001 ± .003	.204 ± .021	.363 ± .017	.175 ± .022	.014 ± .001	.069 ± .038	.001 ± .001
06-02	06-14	125 ± 1	.017 ± .002	<.006	.510 ± .036	.614 ± .027	.351 ± .036	.032 ± .002	ND	.002 ± .001
06-16	06-23	33.0 ± 1.1	.004 ± .002	<.004	.145 ± .030	.179 ± .021	.081 ± .023	.007 ± .002	.069 ± .063	.002 ± .002
09-01	09-10	93.1 ± 1.5	.005 ± .002	.002 ± .004	.404 ± .041	.530 ± .027	.165 ± .027	.027 ± .003	ND	.001 ± .001
09-15	09-27	93.8 ± 1.4	.007 ± .002	.001 ± .004	.578 ± .041	.742 ± .026	.177 ± .025	.034 ± .003	ND	.001 ± .001
10-01	10-06	97.3 ± 2.0	.007 ± .004	<.009	.489 ± .070	.759 ± .042	.227 ± .042	.039 ± .004	ND	.001 ± .001
10-15	10-28	113 ± 1	.006 ± .002	.002 ± .004	.642 ± .041	.884 ± .026	.158 ± .025	.044 ± .002	.072 ± .060	.002 ± .001
11-01	11-07	68.7 ± 1.5	.004 ± .003	.003 ± .004	.177 ± .044	.283 ± .028	.068 ± .023	.018 ± .003	ND	.002 ± .002
11-17	11-27	79.9 ± 1.4	.010 ± .002	<.005	.452 ± .037	.453 ± .024	.095 ± .021	.028 ± .003	ND	.001 ± .001
12-01	12-14	104 ± 5	.014 ± .002	<.005	.446 ± .043	.613 ± .029	.005 ± .008	<.005	ND	.001 ± .001
12-15	12-23	335 ± 10	.035 ± .004	.002 ± .003	1.45 ± .09	1.72 ± .06	.073 ± .018	.010 ± .001	ND	.001 ± .001

ND - Not detectable

Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1969 (contd)

Date		DPM/10^3M^3								
On	Off	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110M}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
12-30	01-06	60.6 ± .5	118 ± 1	29.4 ± .3	8.04 ± .22	.013 ± .017	.027 ± .014	.45 ± .32	.012 ± .010	3.05 ± .11
01-06	01-13	52.0 ± .5	99.0 ± .5	26.2 ± .3	7.60 ± .12	.015 ± .010	.034 ± .008	1.02 ± .29	.006 ± .005	2.64 ± .10
01-13	01-25	25.5 ± .3	44.7 ± .2	10.6 ± .1	4.07 ± .06	.008 ± .006	.014 ± .004	.25 ± .14	.003 ± .003	1.25 ± .05
01-27	02-10	32.3 ± .3	65.1 ± .3	13.0 ± .2	6.28 ± .07	.003 ± .005	.018 ± .004	.93 ± .16	.005 ± .003	2.30 ± .06
02-19	03-01	12.8 ± .2	26.6 ± .1	4.33 ± .11	2.26 ± .05	.005 ± .006	.008 ± .004	.32 ± .14	.001 ± .003	1.13 ± .05
03-03	03-17	29.9 ± .3	63.0 ± .3	10.2 ± .1	11.2 ± .1	.001 ± .004	.011 ± .004	1.08 ± .17	<.006	2.86 ± .07
03-17	03-31	21.4 ± .2	45.6 ± .2	6.74 ± .12	8.73 ± .09	.004 ± .004	.005 ± .003	.70 ± .14	<.005	2.44 ± .06
04-01	04-14	24.5 ± .2	54.2 ± .1	6.91 ± .13	7.03 ± .08	.007 ± .005	.015 ± .004	1.02 ± .17	.008 ± .003	3.26 ± .07
04-15	04-29	19.3 ± .2	40.1 ± .1	5.26 ± .12	10.5 ± .1	<.007	.010 ± .009	1.17 ± .14	<.004	3.09 ± .06
05-02	05-15	20.4 ± .2	43.9 ± .2	5.51 ± .12	14.1 ± .1	.003 ± .005	.007 ± .009	1.22 ± .15	<.005	3.62 ± .07
05-15	06-02	7.46 ± .13	17.3 ± .1	1.90 ± .07	4.67 ± .06	.004 ± .005	.002 ± .005	.538 ± .083	<.004	1.40 ± .04
06-02	06-14	13.0 ± .2	29.3 ± .2	3.04 ± .13	12.5 ± .1	.011 ± .006	.005 ± .007	1.01 ± .13	<.005	2.55 ± .06
06-16	06-23	2.82 ± .18	6.35 ± .16	.58 ± .12	2.87 ± .08	.004 ± .007	.003 ± .006	.206 ± .090	<.004	.738 ± .044
09-01	09-10	5.81 ± .21	12.9 ± .2	1.23 ± .14	8.92 ± .11	.017 ± .008	.010 ± .007	.86 ± .12	<.004	2.47 ± .07
09-15	09-27	6.27 ± .19	14.3 ± .2	.97 ± .13	11.8 ± .1	.008 ± .006	.011 ± .006	1.23 ± .11	<.006	3.27 ± .07
10-01	10-06	5.64 ± .28	12.5 ± .2	.85 ± .17	10.7 ± .2	.009 ± .012	.011 ± .010	.78 ± .19	<.011	3.48 ± .11
10-15	10-28	5.58 ± .17	12.6 ± .2	.95 ± .11	13.1 ± .1	.007 ± .006	.008 ± .006	1.28 ± .10	<.007	4.07 ± .07
11-01	11-07	1.98 ± .17	4.14 ± .15	.45 ± .11	5.17 ± .10	.011 ± .011	<.008	.53 ± .11	<.009	1.50 ± .07
11-17	11-27	2.35 ± .15	5.43 ± .13	.25 ± .10	7.73 ± .10	.007 ± .006	.004 ± .005	.97 ± .10	<.007	2.56 ± .06
12-01	12-14	2.78 ± .47	5.45 ± .32	1.6 ± 1.1	12.8 ± .1	.005 ± .007	<.005	1.07 ± .09	.016 ± .003	3.02 ± .06
12-15	12-23	7.89 ± .95	16.6 ± .7	2.9 ± 2.1	30.0 ± .2	.014 ± .014	.058 ± .053	3.35 ± .19	<.012	9.37 ± .13

Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1969 (contd)

Date		DPM/10^3M^3				
ON	OFF	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{232}Th
12-30	01-06	.750 ± .056	44.4 ± .3	81.1 ± .6	.085 ± .041	.096 ± .032
01-06	01-13	.577 ± .034	38.0 ± .3	77.0 ± .6	.069 ± .021	.141 ± .020
01-13	01-25	.157 ± .014	14.7 ± .1	35.7 ± .3	.035 ± .012	.035 ± .009
01-27	02-10	.139 ± .016	17.1 ± .1	56.3 ± .6	.050 ± .012	.060 ± .010
02-19	03-01	.037 ± .008	5.97 ± .09	27.7 ± .3	.025 ± .012	.016 ± .009
03-03	03-17	.032 ± .010	11.7 ± .1	69.5 ± .4	.036 ± .010	.037 ± .008
03-17	03-31	.012 ± .009	7.42 ± .10	55.1 ± .4	.028 ± .009	.067 ± .010
04-01	04-14	.041 ± .013	7.73 ± .10	72.3 ± .4	.067 ± .014	.041 ± .009
04-15	04-29	D	5.73 ± .11	62.8 ± .4	.012 ± .008	.060 ± .010
05-02	05-15	D	4.88 ± .11	72.2 ± .4	.022 ± .010	.080 ± .012
05-15	06-02	D	1.67 ± .06	29.1 ± .2	.031 ± .009	.058 ± .008
06-02	06-14	D	2.72 ± .12	55.4 ± .4	.006 ± .010	.071 ± .012
06-16	06-23	D	.27 ± .12	13.1 ± .3	<.014	.052 ± .016
09-01	09-10	.069 ± .061	.65 ± .15	43.0 ± .4	.051 ± .017	.069 ± .014
09-15	09-27	.141 ± .062	.51 ± .14	59.1 ± .4	.053 ± .015	.062 ± .011
10-01	10-06	.27 ± .11	.61 ± .20	57.1 ± .6	.040 ± .026	.046 ± .020
10-15	10-28	.166 ± .068	.38 ± .12	65.3 ± .4	.029 ± .015	.039 ± .009
11-01	11-07	.120 ± .050	.52 ± .15	24.3 ± .4	.038 ± .019	.038 ± .017
11-17	11-27	.056 ± .033	.29 ± .13	37.2 ± .3	.052 ± .015	.028 ± .010
12-01	12-14	D	1.8 ± 2.5	46.7 ± .4	.019 ± .009	.057 ± .010
12-15	12-23	D	5.2 ± 5.5	139 ± 1	.111 ± .026	.105 ± .019

D = Decayed away before analysis

Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1970

Date		DPM/10^3M^3								
ON	OFF	^7Be	^{22}Na	^{46}Sc	^{54}Mn	^{57}Co	^{58}Co	^{60}Co	^{65}Zn	^{88}Y
03-16	03-27	141 ± 3	.017 ± .002	<.005	.324 ± .037	.448 ± .025	.053 ± .023	.032 ± .003	ND	<.001
04-01	04-15	86.6 ± .8	.007 ± .001	<.003	.139 ± .018	.089 ± .013	.016 ± .010	.010 ± .001	ND	.001 ± .001
04-15	05-28	104 ± 1	.010 ± .002	<.003	.124 ± .020	.168 ± .014	.022 ± .010	.011 ± .002	ND	.001 ± .001
05-04	05-13	122 ± 1	.013 ± .003	<.003	.078 ± .022	.119 ± .017	.014 ± .010	.009 ± .002	ND	.002 ± .001
05-15	05-19	123 ± 2	.013 ± .006	.006 ± .006	.171 ± .051	.243 ± .037	.056 ± .032	.016 ± .004	ND	.006 ± .004
06-01	06-05	119 ± 6	.012 ± .009	.052 ± .055	1.50 ± .14	2.73 ± .24	39.4 ± .9	.251 ± .012	ND	.036 ± .012
08-01	08-13	102 ± 3	.007 ± .004	.110 ± 010	1.08 ± .05	1.84 ± .06	4.23 ± .11	.050 ± .003	ND	.321 ± .012
08-14	08-20	143 ± 3	.018 ± .004	.105 ± .016	1.13 ± .09	2.05 ± .09	4.37 ± .18	.060 ± .005	.13 ± .16	.316 ± .017
09-01	09-13	174 ± 2	.016 ± .003	.076 ± .017	1.34 ± .07	1.98 ± .08	3.64 ± .16	.073 ± .004	ND	.282 ± .013
09-16	09-23	119 ± 3	.009 ± .004	.067 ± .013	1.12 ± .07	1.57 ± .08	3.11 ± .13	.047 ± .004	ND	.213 ± .013
10-01	10-06	151 ± 3	.020 ± .011	.094 ± .028	1.71 ± .11	2.41 ± .10	3.86 ± .27	.084 ± .012	ND	.321 ± .030
10-17	10-22	210 ± 4	.028 ± .014	.087 ± .028	1.79 ± .11	2.83 ± .10	3.78 ± .26	.113 ± .016	<.43	.303 ± .029
11-03	11-14	132 ± 1	.008 ± .006	.074 ± .019	1.70 ± .05	1.59 ± .04	2.98 ± .15	.076 ± .008	.044 ± .029	.277 ± .018
11-17	11-26	139 ± 1	.008 ± .006	.046 ± .014	1.46 ± 05	1.33 ± .04	2.02 ± .13	.067 ± .008	.133 ± .034	.167 ± .015

ND = Not Detectable

Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1970 (contd)

Date ON	Date OFF	^{95}Zr	^{95}Nb	^{103}Ru	^{106}Ru	^{110m}Ag	^{124}Sb	^{125}Sb	^{134}Cs	^{137}Cs
		DPM/10^3M^3								
03-16	03-27	1.27 ± .19	2.31 ± .13	D	9.55 ± .12	.006 ± .006	<.004	1.16 ± .09	.008 ± .003	2.96 ± .06
04-01	04-15	.504 ± .046	.991 ± .036	.109 ± .025	2.82 ± .05	.004 ± .005	.001 ± .003	.430 ± .055	<.004	1.10 ± .03
04-15	04-28	.363 ± .055	.908 ± .042	.170 ± .038	2.72 ± .05	.003 ± .005	<.004	.377 ± .059	<.004	1.14 ± .04
05-04	05-13	.480 ± .057	.933 ± .045	.149 ± .034	2.17 ± .05	.007 ± .007	<.005	.353 ± .070	<.005	.869 ± .040
05-15	05-19	1.23 ± .19	1.63 ± .12	1.37 ± .16	3.46 ± .11	.025 ± .018	.009 ± .013	.84 ± .13	<.011	1.63 ± .08
06-01	06-05	419 ± 2	421 ± 1	1051 ± 2	100 ± 1	.088 ± .029	1.11 ± .17	16.2 ± 1.0	.103 ± .019	6.64 ± .31
08-01	08-13	127 ± 1	168 ± 1	129 ± 1	16.5 ± .1	.014 ± .008	.091 ± .021	1.17 ± .31	.023 ± .006	2.65 ± .09
08-14	08-20	120 ± 1	164 ± 1	123 ± 1	19.4 ± .2	.013 ± .013	.076 ± .032	1.13 ± .45	.038 ± .008	3.34 ± .14
09-01	09-13	142 ± 1	177 ± 1	174 ± 1	31.4 ± .2	.010 ± .009	.100 ± .038	1.21 ± .38	.032 ± .006	3.03 ± .11
09-16	09-23	119 ± 1	183 ± 1	140 ± 1	24.4 ± .2	<.019	.140 ± .030	.76 ± .35	.042 ± .008	3.36 ± .13
10-01	10-06	132 ± 1	212 ± 1	122 ± 1	32.5 ± .6	.025 ± .027	.093 ± .051	3.85 ± .52	.047 ± .019	5.92 ± .17
10-17	10-22	123 ± 1	225 ± 1	97.7 ± .8	35.5 ± .6	.035 ± .046	.176 ± .086	3.58 ± .49	.061 ± .047	6.18 ± .17
11-03	11-14	108 ± 1	197 ± 1	55.0 ± .3	27.9 ± .4	<.010	.055 ± .034	1.69 ± .10	.066 ± .018	4.85 ± .08
11-17	11-26	76.1 ± .6	141 ± 1	36.1 ± .3	23.2 ± .4	.012 ± .017	.006 ± .025	1.65 ± .10	.023 ± .014	4.52 ± .08

D - Decayed Away Before Analysis

Rio de Janeiro, Brazil (22°53'N, 43°17'W) in 1970 (contd)

Date		DPM/10^3M^3				
ON	OFF	^{140}Ba	^{141}Ce	^{144}Ce	^{226}Ra	^{232}Th
03-16	03-27	D	1.06 ± .46	35.3 ± .3	.035 ± .011	.058 ± .009
04-01	04-15	.026 ± .018	.100 ± .035	12.0 ± .2	.020 ± .009	.045 ± .009
04-15	04-28	.029 ± .018	.016 ± .049	11.9 ± .2	.022 ± .009	.042 ± .009
05-04	05-13	.004 ± .009	.015 ± .053	10.1 ± .2	.038 ± .013	.057 ± .013
05-15	05-19	3.10 ± .27	2.74 ± .25	16.8 ± .4	.065 ± .027	.116 ± .029
06-01	06-05	2920 ± 400	1652 ± 2	208 ± 2	.059 ± .047	.001 ± .028
08-01	08-13	118 ± 4	296 ± 1	87.9 ± .6	.053 ± .017	.086 ± .013
08-14	08-20	122 ± 8	260 ± 1	98.0 ± .9	.036 ± .021	.072 ± .018
09-01	09-13	188 ± 50	295 ± 1	120 ± 1	.014 ± .015	.080 ± .012
09-16	09-23	70.8 ± 3.6	231 ± 1	95.0 ± .8	.031 ± .021	.074 ± .016
10-01	10-06	29.5 ± 1.9	195 ± 1	129 ± 1	.019 ± .051	.036 ± .033
10-17	10-22	13.6 ± .9	150 ± 1	142 ± 1	8.78 ± .22	.067 ± .036
11-03	11-14	5.11 ± .48	62.6 ± .3	76.6 ± .4	1.87 ± .07	.054 ± .019
11-17	11-26	5.45 ± .34	37.4 ± .3	63.7 ± .4	.664 ± .053	.054 ± .022

D = Decayed away before analysis

MARCH 16, 1967 - FLIGHT 1

SAMPLE NO.	2	3	4	5	6	7	8
ALTITUDE (Km)	18.9	19.1	18.3	15.2	12.2	9.1	6.1
LATITUDE (°N)	39-47	46	46	46	46	46	46
LONGITUDE (°W)	109-118	117	117	117	117	117	117
	DPM/10^3 SCM						
^{7}Be	32,000	27,000	24,000	19,000	3900	810	210
^{22}Na	17	18	14	10	0.35	0.28	0.08
^{24}Na	93 ± 19			57 ± 25	20.8 ± 1.1	3.43 ± 0.35	
^{54}Mn	250	290	230	170			
^{60}Co	16	17	17	9.2	0.21	0.35	
$^{95}ZrNb$	67	57	140	490	110	53	12
^{103}Ru	710					28	6
^{106}Ru	3500	3200	2800	1600	71	33	16
^{125}Sb	1100	1500	1700	570		15	
^{137}Cs	3500	4200	3500	2100	57	95	23
^{140}Ba					0.7	8.5	
^{144}Ce	1900	2000	1700	1200			

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

MAY 8, 1967 - FLIGHT 2

SAMPLE NO.	1	2	3	R	L
ALTITUDE (Km)	18.9	18.9	19.1	10.7	6.1
LATITUDE (°N)	41-44	44-47	46	36-46	46
LONGITUDE (°W)	112-116	117	117	108-118	118
	DPM/10^3 SCM				
^{7}Be	42,000	39,000	49,000	2300	670
^{22}Na	15	16	15	0.49	0.18
^{24}Na	78 ± 11		113 ± 7	13.81 ± 0.42	
^{54}Mn	180	110	120	7.1	
^{60}Co	10	7.1	8.8	0.46	0.20
$^{95}Zr/Nb$	290	17	26	39	12
^{106}Ru	3200	2900	3100	81	23
^{125}Sb	490	240	220	39	6.4
^{137}Cs	2700	1800	1900	110	42
^{140}Ba				0.22	
^{144}Ce	1400	920	780	60	53

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JUNE 5, 1967 - FLIGHT 3

SAMPLE NO.	1	2	3	4	5	R	L
ALTITUDE (Km)	13.9	19.2	18.3	15.2	12.2	10.7	7.3
LATITUDE (°N)	38-47	46	46	46	46	37-46	46
LONGITUDE (°W)	108-117	117	117	117	117	108-118	118
	DPM/10³ SCM						
^{7}Be	42,000	49,000	39,000	19,000	16,000	7100	2300
^{22}Na	15	16	13	6.4	4.6	2.0	0.95
^{24}Na	86.2 ± 3.9	88.3 ± 7.1	73.5 ± 3.2	58.6 ± 1.8	21.5 ± 3.9	20.8 ± 1.4	10.6 ± 1.4
^{54}Mn	140	140	99	64	57	26	11
^{60}Co	11	11	9.2	4.9	3.9	2.3	1.2
$^{95}ZrNb$	67	28	39	110	110	81	53
^{106}Ru	2900	2800	2200	810	640	330	150
^{125}Sb	780	1100	490	1100	260	140	71
^{137}Cs	2700	2600	1800	1100	920	490	330
^{144}Ce	1100	1300	1200	420	420	240	170

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

AUGUST 1967 - FLIGHTS 4 AND 5

DATE	8-14-67	8-21-67	8-21-67
FLIGHT NO.	4	5	5
SAMPLE NO.	R	1	4
ALTITUDE (Km)	10.7	18.6	3.0
LATITUDE (°N)	37-46	38-46	46
LONGITUDE (°W)	108-118	109-117	117
	DPM/10^3 SCM		
^{7}Be	2400	46,000	49
^{22}Na	0.24	39	0.33
^{24}Na	22.14 ± 0.28	63.6 ± 3.2	0.39 ± 0.11
^{54}Mn	1.8	4600	
^{60}Co	0.18	140	0.11
$^{95}ZrNb$	570	2,400,000	23
^{103}Ru	88	990,000	29
^{106}Ru	32	200,000	11
^{125}Sb	13	13,000	4.9
^{137}Cs	39	18,000	26
^{140}Ba	39	280,000	3.3
^{144}Ce	53	140,000	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

SEPTEMBER 1967 - FLIGHTS 6 AND 7

DATE	9-5-67	9-5-67	9-5-67	9-5-67	9-5-67	9-6-67	9-6-67
FLIGHT NO.	6	6	6	6	6	7	7
SAMPLE NO.	1	3	4	5	6	L	R
ALTITUDE (Km)	13.6	9.1	6.1	4.6	3.0	10.7	7.6
LATITUDE (°N)	38-45	46	46	46	46	37-46	46
LONGITUDE (°W)	108-117	117	117	117	117	108-119	117
	DPM/10^3 SCM						
^{7}Be	42,000	420	330	320		1200	950
^{22}Na	39	0.07		0.20	0.27	0.04	0.08
^{24}Na	85.1 ± 6.7	4.94 ± 0.71	1.20 ± 0.53	1.41 ± 0.39	0.57 ± 0.21	14.83 ± 0.71	4.91 ± 0.35
^{60}Co	140	0.32	0.07		0.16		0.18
^{95}ZrNb	2,400,000	100	22	39		35	250
^{103}Ru	1,700,000	42	22	28	29		
^{106}Ru	200,000	6.7	9.5	4.9	3.9	8.5	8.8
^{125}Sb	13,000						
^{137}Cs	18,000	8.5	7.8	4.6	6.4	8.1	15
^{140}Ba	420,000	8.5	1.9	3.5	0.92	4.2	5.7
^{144}Ce	330,000	280					
^{208}Tl			4.6 ± 1.4	120.1 ± 4.9	283.2 ± 3.9		

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 23, 1967 - FLIGHT 8

SAMPLE NO.	1	2	3	4	5	6	7	8	9	L	R
ALTITUDE (Km)	18.6	19.1	15.2	13.7	12.2	9.1	6.1	4.6	3.0	9.4	9.4
LATITUDE (°N)	38-45	46	46	46	46	46	46	46	46	35	35-47
LONGITUDE (°W)	108-117	117	117	117	117	117	117	117	117	107	107-118
	DPM/10^3 SCM										
^{7}Be			31,000	17,000	3500	170	420	1200	210	1900	600
^{22}Na	29	23	11	4.6	0.39		0.08	0.20	0.16	0.22	0.05
^{24}Na	91.8 ± 7.1	84.4 ± 3.2	54.4 ± 4.2	50.1 ± 4.9	9.5 ± 1.8	5.6 ± 1.1	1.45 ± 0.42	1.02 ± 0.11	0.28 ± 0.10	22.6 ± 1.1	10.66 ± 0.32
^{54}Mn	1200	670	420	67						3.9	
^{60}Co	49	42	18	6.7	0.18	0.07		0.35	0.04	0.39	0.02
^{65}Zn	2200	1400	390	78	3.9						
$^{95}ZrNb$	420,000	390,000	170,000	46,000	2700	39	780	990	130	990	140
^{103}Ru	170,000	100,000	39,000	7100	95	8.1			13	110	11
^{106}Ru	53,000	39,000	9900	2300	57	3.9	6.4	23	6.0	46	6.0
^{137}Cs	7400	5300	2200	990	64		17	39	5.7	49	5.3
^{140}Ba	4200	3300	880	190	8.1	0.23	0.78	0.99	0.30	2.6	0.42
^{144}Ce	95,000	81,000	30,000	7400	570			110		220	15
^{208}Tl					5.1 ± 2.3				31.5 ± 1.9	19.9 ± 1.9	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

DECEMBER 1967 · FLIGHTS 10 AND 11

DATE (DEC.)	18	18	18	18	18	18	18	18	18	18	19	19
FLIGHT NO.	10	10	10	10	10	10	10	10	10	10	11	11
SAMPLE NO.	1	2	3	4	5	6	7	8	L	R	R	L
ALTITUDE (Km)	18.6	18.9	15.2	13.7	12.2	9.1	6.1	5.0	10.7	7.6	10.7	7.6
LATITUDE (°N)	38 45	46	46	46	46	46	46	46	42-47	37-41	46	46
LONGITUDE (°W)	108-117	117	117	117	117	117	117	117	114-118	108-112	118	118
	DPM/10^3 SCM											
^{7}Be	34,000	25,000	29,000	25,000	23,000	10,000	710	390	23,000	950	20,000	1400
^{22}Na	13	23	21	23	10	0.74	0.18	0.07	6.7	0.12	5.7	0.16
^{24}Na	109.5 ± 7.4	77.7 ± 7.4	64.6 ± 4.9	33.9 ± 3.2	25.8 ± 2.1	9.5 ± 1.1	3.06 ± 0.39	0.92 ± 0.21	29.3 ± 1.4	3.88 ± 0.28	29.24 ± 0.49	4.10 ± 0.25
^{54}Mn	1100	2100	1100	990	490	26	7.1		140	1.6		
^{60}Co	53	78	60	49	24	2.8	1.0	1.1	8.1	0.35	7.8	0.25
^{65}Zn	1000	2500	2200	1900	710		25	9.2	95		85	
$^{95}ZrNb$	320,000	390,000	350,000	300,000	160,000	8800	2500	1800	46,000	460	39,000	1000
^{103}Ru	60,000	99,000	67,000	35,000	23,000	600	240	220	4900		3400	
^{106}Ru	46,000	85,000	53,000	42,000	18,000	490	240	200	3500	32	2100	46
^{125}Sb	4600	6000	4200	3400	1800	140	31		570			
^{137}Cs	6700	9900	7400	7100	3500	390	95	71	1300	67	1100	46
^{140}Ba		310	260		67		1.1	0.53	19		13	
^{144}Ce	92,000	130,000	120,000	88,000	46,000	1900	600	420	12,000	92	9500	220
^{208}Tl				12.8 ± 3.1				7.2 ± 1.2	24.3 ± 3.1		1.91 ± 0.35	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JANUARY 29, 1968 · FLIGHT 12

SAMPLE NO. ALTITUDE (Km) LATITUDE (°N) LONGITUDE (°W)	1 18.9 38-45 109-117	2 19.1 46 117	3 15.2 46 117	4 13.7 46 117	5 12.2 46 117	6 9.1 46 117	7 6.1 46 117	8 4.6 46 117	9 3.0 46 117	R 10.7 41-45 112-116	L 7.6 36-40 107-111
	DPM/10³ SCM										
^{7}Be				10,000	24,000	6400	1500	190	150	6000	600
^{22}Na	24	22	25	9.2	15	2.8	1.3	0.25			0.17
^{24}Na	63.2 ± 5.7	77.7 ± 7.1	67.8 ± 3.5	51.9 ± 3.2	35.0 ± 4.2		4.6 ± 1.1	2.5 ± 1.1		13.1 ± 1.4	7.77 ± 0.49
^{38}Cl										95 ± 28	
^{39}Cl										124 ± 46	
^{54}Mn	1200	570	1100	280	950	95	8.8			46	4.2
^{60}Co	53	35	53	6.7	29	6.0	1.1	0.85		4.2	0.26
^{65}Zn	1400	2400	1400	320	1200	64	13			85	4.2
$^{95}Zr/Nb$	180,000	100,000	190,000	28,000	110,000	19,000	1700	230	220	12,000	810
^{103}Ru	34,000	23,000	31,000	3200	13,000	3900	210	67	60	2100	140
^{106}Ru	57,000	39,000	49,000	4200	21,000	1400	290	16	16	1100	78
^{125}Sb	4900	2400	4600	490	2100	180	31				
^{137}Cs	7100	4600	6700	1100	3500	600	102	5.7	9.9	670	46
^{140}Ba				4.2	200	3500	64	170	110	2000	140
^{144}Ce	61,000	49,000	81,000	9200	42,000	5700	740	200		4200	290
^{208}Tl											1.26 ± 0.42
^{214}Bi										31,900 ± 670	23,100 ± 530

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JANUARY 30, 1968 - FLIGHT 13

SAMPLE NO.	Lα	Rα	Rβ	Lβ
ALTITUDE (Km)	12.5	9.1	7.6	6.1
LATITUDE (°N)	46	46	46	46
LONGITUDE (°W)	117	117	117	117
	DPM/10^3 SCM			
^{7}Be		12,000	4900	
^{22}Na	35	2.9	1.6	
^{24}Na		17.3 ± 1.8	10.2 ± 1.1	3.00 ± 0.32
^{38}Cl	184 ± 35	350 ± 88	78 ± 48	13 ± 13
^{39}Cl		28 ± 21		17 ± 11
^{54}Mn		57		
^{60}Co	53	4.2	1.1	
^{65}Zn	850		22	
$^{95}ZrNb$	170,000	18,000	5700	
^{103}Ru	15,000	4200	1200	
^{106}Ru	39,000	1600	350	
^{137}Cs	5700	600	200	
^{140}Ba	150	3900	1600	
^{144}Ce	81,000	5300	1400	
^{208}Tl		3.0 ± 1.2	1.4 ± 1.0	1.86 ± 0.49
^{214}Bi	2600 ± 270	31,000 ± 2,200	56,000 ± 2,000	14,090 ± 170

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

FEBRUARY 21, 1968 - FLIGHT 14

SAMPLE NO.	1	2	3	4	5	6	7	8	9	R	L
ALTITUDE (Km)	18.[illegible]	1[illegible].5	15.2	13.7	12.2	8.8	6.1	4.6	3.0	10.7	7.6
LATITUDE (°N)	38-45	46	46	45	46	46	46	46	46	37-41	41-47
LONGITUDE (°W)	108-117	117	117	117	117	117	117	117	117	108-112	112-117
	DPM/10^3 SCM										
^{7}Be			[illegible]	19,[illegible]	24,000	570		200	88	11,000	2800
^{22}Na	19	22	1.4	[illegible]	7.8	2.1	0.35			2.6	0.71
^{24}Na	82.3 ± 5.2	105.9 ± 7.4	64 ± 11	106 ± 11	29.3 ± 3.5		2.90 ± 0.71	1.38 ± 0.25	0.35 ± 0.14	12.7 ± 1.4	5.05 ± 0.71
^{54}Mn	1100	[illegible]	140	390	530	6.4	15	12		120	21
^{60}Co	39	49	6.0	13	18	0.35	1.1	0.22	0.08	4.6	1.5
^{65}Zn	1700	[illegible]	140		390	7.8	13	18		150	9.5
$^{95}ZrNb$	120,000	150,000	20,000	57,000	57,000	1300	920	670	130	16,000	4200
^{103}Ru	6500	3500	1500	5700	4900	120	160	120	20	2500	420
^{106}Ru	32,000	39,000	4900	15,000	12,000	220	140	81	19	3400	740
^{125}Sb	3100	3900	310	1200	1200	24	22	22		350	88
^{137}Cs	6700	7400	990	2400	2300	60	42	31	5.7	640	[illegible]
^{140}Ba	6.4	39			35	53	39	39	9.2	460	150
^{144}Ce	57,000	78,000	8800	26,000	27,000	1100	340		71	6400	2000
^{208}Tl				3.5 ± 1.9				1.44 ± 0.81	2.1 ± 1.2		

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

FEBRUARY 23, 1968 - FLIGHT 15

SAMPLE NO.	5	L	R
ALTITUDE (Km)	11.3	10.1	10.1
LATITUDE (°N)	46-35	46-41	41-35
LONGITUDE (°W)	118-108	117-112	112-108
	DPM/10^3 SCM		
^{7}Be	9200	1000	780
^{22}Na	2.5	0.57	0.20
^{24}Na	8.1 ± 2.1	5.7 ± 1.1	7.4 ± 1.1
^{54}Mn	95	15	3.9
^{60}Co	5.3	1.2	0.24
$^{95}ZrNb$	17,000	3200	640
^{103}Ru	2400	530	88
^{106}Ru	3400	600	100
^{125}Sb	350	67	18
^{137}Cs	740	160	34
^{140}Ba	530	130	18
^{144}Ce	7400	1400	270
^{208}Tl		57 ± 15	32 ± 14

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

APRIL 15, 1968 - FLIGHT 16

SAMPLE NO.	1	2	3	4	5	6	7	L	R
ALTITUDE (Km)	3.0	6.1	9.1	12.2	15.2	18.9	15.2	7.6	10.7
LATITUDE (°N)	35	35	35	35	35	38-46	46	35-41	41-46
LONGITUDE (°W)	107	107	107	107	107	108-117	117	108-112	112-117
	DPM/10^3 SCM								
^{7}Be	600	530	1090	7400	31,000		16,000	1800	8800
^{22}Na			0.31	7.4	20	14	13	0.85	4.6
^{24}Na		1.13 ± 0.42	4.6 ± 1.1	15.2 ± 2.1	24.0 ± 2.8	64 ± 18	62.9 ± 2.8	4.56 ± 0.46	19.8 ± 1.1
^{38}Cl						1200 ± 530	420 ± 57	138 ± 71	180 ± 25
^{39}Cl						740 ± 180	740 ± 71		177 ± 23
^{54}Mn	6.7		17	110	640	490	490	18	140
^{60}Co	0.46		0.95	3.9	26	29	22	1.4	8.8
^{65}Zn	8		27	130	790	780	600		95
$^{95}ZrNb$	460	160	1100	7800	39,000	39,000	31,000	2400	14,000
^{103}Ru	32	17	88	350	2300		2400	110	850
^{106}Ru	160	60	420	3000	19,000	19,000	15,000	310	5300
^{125}Sb	23		34	290	1900	2900	1400		
^{137}Cs	39	14	31	640	3400	3900	1900	190	990
^{144}Ce	240	31	990	5300	33,000	22,000	24,000	1700	10,000
^{208}Tl	875 ± 9	1.7 ± 1.5						9.20 ± 0.89	5.56 ± 0.87
^{214}Bi								81,500 ± 3,000	43,440 ± 600

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

APRIL 17, 1968 - FLIGHT 17

SAMPLE NO.	5	L	R
ALTITUDE (Km)	15.2	10.1	10.1
LATITUDE (°N)	46-35	46-41	41-37
LONGITUDE (°W)	119-107	119-112	112-108
		—— DPM/10^3 SCM ——	
^{7}Be	26,000	7100	19,000
^{22}Na	19	3.9	7.1
^{24}Na	35.3 ± 3.5	13.8 ± 1.8	27.2 ± 2.5
^{54}Mn	710	88	130
^{60}Co	23	5.3	9.2
^{65}Zn	530	81	
$^{95}ZrNb$	33,000	10,000	16,000
^{103}Ru	1900	460	710
^{106}Ru	16,000	3500	6400
^{125}Sb	1300	460	460
^{137}Cs	2800	810	1200
^{144}Ce	23,000	8500	9200

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

MAY 7, 1968 - FLIGHT 18

SAMPLE NO	1	2	3	4	5	6	7	Rα	Iα	Rβ	Lβ
ALTITUDE (Km)	3.0	6.1	9.1	12.2	15.2	17.7	15.2	12.2	9.1	7.6	10.7
LATITUDE (°N)	35	35	35	35	35	38-46	46	41-45	36-40	36-40	41-45
LONGITUDE (°W)	108	108	108	108	108	108-117	117	112-117	107-111	107-111	111-118
	DPM/10^3 SCM										
^{7}Be	460	330	640	10,000	29,000		46,000	9200	1300	1100	1600
^{22}Na	0.18	0.04	0.67	5.3	17	30	39	16	0.42	0.31	0.46
^{24}Na	1.13 ± 0.14	4.6 ± 1.1	6.7 ± 1.1	16.2 ± 2.1	26.7 ± 5.3	74.2 ± 2.5	65.3 ± 4.2	33.5 ± 0.7	12.25 ± 0.39	13.1 ± 1.4	24.0 ± 1.1
^{38}Cl						530 ± 180	530 ± 110	353 ± 71	60 ± 32	71 ± 71	53 ± 14
^{39}Cl						1090 ± 140	770 ± 71	629 ± 35	67 ± 18	46 ± 28	
^{54}Mn		26	11	130	330		670	350		2.6	16
^{60}Co	0.34	0.74	1.8	6.7	19	39	39	20	0.20	0.35	0.57
^{65}Zn		14		160	530	2000	1100				6.0
$^{95}ZrNb$	600	290	340	9900	26,000	42,000	39,000	27,000	240	250	670
^{103}Ru	42	53						2200			
^{106}Ru	190	120	160	4600	15,000	28,000	24,000	14,000	160	120	310
^{125}Sb			16	640	1700	4900		990	5.7	9.2	30
^{137}Cs	49	26	32	920	2700	4900	4600	2700	33	29	64
^{144}Ce		310	390	9200	25,000	42,000	39,000	25,000	260	280	530
^{208}Tl	688.2 ± 7.9	< 2.2		8.5 ± 2.6				14.2 ± 3.1	1.10 ± 0.77	7.4 ± 1.4	
^{214}Bi								2900 ± 310	43,100 ± 1100	48,700 ± 2000	46,610 ± 460

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

MAY 8 AND 9, 1968 - FLIGHTS 19 AND 20

DATE (MAY)	8	8	9	9	9	9	9
FLIGHT NO.	19	19	20	20	20	20	20
SAMPLE NO.	γ	Δ	1	Rα	Lα	Lβ	Rβ
ALTITUDE (Km)	7.6	6.1	14.9	10.1	10.1	11.3	12.5
LATITUDE (°N)	48	48	46-38	47-36	47-36	47-42	41-36
LONGITUDE (°W)	117	117	117-108	118-108	118-108	117-112	111-107
	DPM/10³ SCM						
^{7}Be	930	600	26,000	2400	2300	4900	26,000
^{22}Na	0.22	0.24	12	1.1	0.88	3.9	19
^{24}Na	10.42 ± 0.35	2.207 ± 0.057					
^{38}Cl	35 ± 14	12.7 ± 3.9					
^{39}Cl	77.7 ± 3.9	16.6 ± 1.1					
^{54}Mn				21	25	85	420
^{60}Co	0.35	0.30	14	1.5	1.7	3.5	24
^{65}Zn		4.6		23	35		
^{95}ZrNb	340	350	19,000	1900	1900	4900	27,000
^{106}Ru	150	130	11,000	920	920	2300	15,000
^{125}Sb			950	120	78		1200
^{137}Cs	5.7	25	2000	180	190	490	2800
^{144}Ce		280	17,000	1800	1500	4600	26,000
^{208}Tl	1.04 ± 0.17						

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JUNE 11, 1968 - FLIGHT 21

SAMPLE NO.	Lα	Rα	Lβ	Rβ	Lγ	Rγ
ALTITUDE (Km)	6.1	6.1	9.4	9.4	12.2	12.2
LATITUDE (°N)	35-41	41-46	36	36-48	36	36-46
LONGITUDE (°W)	107-112	112-117	108	108-118	107	107-117
	DPM/10³ SCM					
^{7}Be	640	570	530	880	2200	11,000
^{22}Na	0.22	0.18	4.9	0.24	0.39	
^{24}Na	3.39 ± 0.28		10.45 ± 0.49	10.10 ± 0.39	17.0 ± 1.4	28.61 ± 0.70
^{54}Mn	4.6	11	4.9	7.1	3.9	170
^{60}Co	0.31	0.32	0.20	0.42	0.60	11
^{65}Zn		6.7				150
$^{95}ZrNb$	240	260	130	460	390	8500
^{106}Ru	170	180	95	320	300	6400
^{125}Sb	15		3.1	35	25	1100
^{137}Cs	39	46	31	67	67	1200
^{144}Ce	230	260	180	570	490	11,000
^{208}Tl	2.63 ± 0.35		5.2 ± 1.9	1.79 ± 0.41	11.2 ± 1.9	2.78 ± 0.61

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JUNE 12, 1968 - FLIGHT 22

SAMPLE NO.	1	2L	2R	3L	3R	4L	4R
ALTITUDE (Km)	1.5	3.0	4.6	6.1	7.6	9.1	10.7
LATITUDE (°N)	48	48	48	48	48	48	48
LONGITUDE (°W)	118	118	118	118	118	118	118
	DPM/10^3 SCM						
^{7}Be	140	780	1200	810	920	4600	13,000
^{22}Na			0.33	0.21	0.14	2.0	4.6
^{24}Na	0.127 ± 0.039	0.95 ± 0.11	2.58 ± 0.28	4.77 ± 0.35	10.49 ± 0.32	12.01 ± 0.71	23.7 ± 1.1
^{54}Mn	1.1	8.5	14	7.1	5.3	39	200
^{60}Co	0.11	0.49	0.60	0.57	0.42	2.9	13
^{65}Zn		8.8	16			26	120
$^{95}ZrNb$	67	420	570	390	270	2800	13,000
^{106}Ru	39	240	350	280	190	1900	9200
^{125}Sb	5.7	53	34	35	35	200	950
^{137}Cs	9.9	60	78	57	35	390	1800
^{144}Ce	67	420	570	490	350	3500	16,000
^{208}Tl	230 ± 1	3.31 ± 0.37	3.10 ± 0.48		3.89 ± 0.93	1.89 ± 0.46	2.63 ± 0.75

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JUNE 13, 1968 - FLIGHT 23

SAMPLE NO.	Rα	Lα	Rγ	Lγ	Lβ	Rβ
ALTITUDE (Km)	8.8	8.8	10.1	10.1	11.3	11.3
LATITUDE (°N)	45-40	40-36	45-40	40-35	45-40	40-36
LONGITUDE (°W)	113-110	110-108	116-111	111-107	113-110	110-108
	DPM/10^3 SCM					
^{7}Be	850	1200	950	780	1500	2100
^{22}Na	0.19	0.42	0.67	0.22	0.42	0.46
^{24}Na	7.52 ± 0.39	10.45 ± 0.53	12.36 ± 0.71	11.44 ± 0.57	13.1 ± 1.4	12.0 ± 1.4
^{54}Mn	8.1	15	19	8.5	11	13
^{60}Co	0.39	0.92	0.35	0.25	0.78	1.6
^{65}Zn	7.1	18	12	8.1	10	
$^{95}ZrNb$	330	1000	350	260	710	1000
^{106}Ru	250	780	250	200	530	740
^{125}Sb	42	81		20	49	
^{137}Cs	53	150	71	57	100	150
^{144}Ce	390	1300	350	280	810	1300
^{208}Tl	4.82 ± 0.82	4.0 ± 1.1		4.6 ± 3.0	7.8 ± 1.9	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JULY 23, 1968 - FLIGHT 24

SAMPLE NO.	Rα	Lα	Lβ	Rβ	Lγ	Rγ
ALTITUDE (Km)	6.1	6.1	9.1	9.1	12.2	12.2
LATITUDE (°N)	36-40	40-47	35	35-48	35	35-47
LONGITUDE (°W)	107-111	111-117	107	107-118	107	107-118
	DPM/10^3 SCM					
^{7}Be	390	670	570	670	1100	2200
^{22}Na	0.05	0.14	0.23	0.07		0.46
^{24}Na	2.96 ± 0.18	3.71 ± 0.35	10.49 ± 0.60	7.66 ± 0.18	22.3 ± 1.9	13.00 ± 0.49
^{38}Cl	32 ± 21	19.4 ± 7.8		42 ± 10	260 ± 220	34 ± 15
^{39}Cl		15.2 ± 3.2		58.4 ± 4.5		49 ± 25
^{54}Mn		3.9		2.4		23
^{60}Co	0.09	0.30	0.81	0.49	0.4	0.49
^{65}Zn				15		39
$^{95}ZrNb$	39	110	95	95	85	390
^{106}Ru	39	120	110	60	85	390
^{125}Sb		19	28	13		46
^{137}Cs	25	31	99	64	46	95
^{144}Ce	71	180	160	130	180	390
^{208}Tl	38.8 ± 2.4		25.8 ± 1.5	3.7 ± 4.9	29.3 ± 3.7	3.4 ± 1.5
^{214}Bi	176,600 ± 2900		373,000 ± 14,000		418,500 ± 3500	28,430 ± 530

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JULY 24, 1968 - FLIGHT 25

SAMPLE NO.	α	β	Δ	γ
ALTITUDE (Km)	1.5	4.6	7.6	10.7
LATITUDE (°N)	48	48	48	48
LONGITUDE (°W)	117	117	117	117
	DPM/10^3 SCM			
^{7}Be	600	530	1200	2200
^{22}Na	0.07	0.07	0.32	0.49
^{24}Na	0.265 ± 0.021	1.861 ± 0.064	6.95 ± 1.4	22.53 ± 0.64
^{38}Cl		2.4 ± 2.4	8.1 ± 4.2	38.5 ± 6.4
^{39}Cl			4.5 ± 2.0	57.5 ± 3.4
^{54}Mn	0.[illegible]	9.2	9.5	17
^{60}Co	0.10	0.22	0.28	0.95
^{65}Zn	0.3	3.5	18	8.1
$^{95}ZrNb$	110	160	180	570
^{106}Ru	99	130	210	600
^{125}Sb	3.[illegible]	13	12	92
^{137}Cs	21	30	46	1[illegible]0
^{144}Ce	260	210	290	320
^{208}Tl	1[illegible] ± 4			

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JULY 25, 1968 - FLIGHT 26

SAMPLE NO.	R	L	L	R	R
ALTITUDE (Km)	8.8	8.8	10.1	10.1	11.3
LATITUDE (°N)	48-42	42-36	48-43	43-35	46-37
LONGITUDE (°W)	118-113	113-107	117-114	113-107	117-108
	DPM/10^3 SCM				
^{7}Be	1000	670	2800	570	2200
^{22}Na		0.18	1.1	0.13	
^{24}Na	8.51 ± 0.49	11.83 ± 0.53	18.2 ± 1.4	9.50 ± 0.67	
^{54}Mn	6.0		19	4.6	13
^{60}Co	0.35	0.27	1.4	0.14	0.88
^{65}Zn	3.9			2.3	
$^{95}ZrNb$	170	67	780	78	390
^{106}Ru	190	74	820	99	460
^{125}Sb	32	11			88
^{137}Cs	42	22	190	22	120
^{144}Ce	290	110	1400	99	810
^{208}Tl	2.88 ± 0.87	24.8 ± 1.6	4.8 ± 1.4	9.5 ± 1.2	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATE

AUGUST 26, 1968 - FLIGHT 27

SAMPLE NO.	Lα	Rα	Lβ	Rβ	Lγ	Rγ
ALTITUDE (Km)	6.1	6.1	9.1	9.1	12.2	12.2
LATITUDE (°N)	35-40	40-48	35	35-47	35	36-48
LONGITUDE (°W)	107-111	111-117	107	107-117	107	107-117
	DPM/10^3 SCM					
^{7}Be	530	830	130	920	670	8800
^{22}Na	0.17	0.26		0.85	0.22	
^{24}Na	1.94 ± 0.23	3.67 ± 0.39	2.82 ± 0.20	10.74 ± 0.21	13.35 ± 0.64	25.25 ± 0.95
^{54}Mn				2.9		24
^{60}Co		0.25	0.10	0.99	0.14	2.9
$^{95}ZrNb$	64	130	22	180	130	1700
^{103}Ru				53	32	
^{106}Ru	39	150	20	150	57	190
^{125}Sb			13		32	240
^{137}Cs	18	49	42	39	25	420
^{140}Ba	13	11	3.2	35	35	200
^{144}Ce		230	21	270	210	3200
^{208}Tl	15.5	8.13 ± 0.79	15.45 ± 0.74	4.12 ± 0.52	17.8 ± 1.4	4.93 ± 0.72

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

AUGUST 27, 1968 - FLIGHT 28

SAMPLE NO.	LR	LR	R	L	LR
ALTITUDE (Km)	1.5	3.0	6.1	9.1	12.2
LATITUDE (°N)	48	48	48	48	48
LONGITUDE (°W)	118	118	118	118	118
	DPM/10^3 SCM				
^{7}Be	74	350	1500	1700	14,000
^{22}Na	0.06	0.06	0.49	0.88	
^{24}Na	0.120 ± 0.024	0.308 ± 0.026	2.34 ± 0.24	12.68 ± 0.46	39.90 ± 0.74
^{38}Cl					480 ± 140
^{54}Mn	0.1	1.8	12		67
^{60}Co	0.14	0.16	0.71	1.4	4.9
^{65}Zn					71
$^{95}ZrNb$	13	67	310	300	3500
^{103}Ru					920
^{106}Ru	7.8	95	460	330	3200
^{125}Sb	2.4	20	46		880
^{137}Cs	4.6	22	110	78	710
^{140}Ba	0.06	0.02	0.92	39	460
^{144}Ce	29	140	640	530	4900
^{208}Tl	149.1 ± 8.3	3.67 ± 0.12	8.76	15.3 ± 1.5	8.22 ± 0.53

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

AUGUST 28, 1968 - FLIGHT 29

SAMPLE NO.	R	L	R	L	R
ALTITUDE (Km)	8.8	10.4	10.4	11.3	11.3
LATITUDE (°N)	41-35	48-41	41-35	48-42	42-40
LONGITUDE (°W)	113-107	118-112	112-107	118-113	113-111
	DPM/10^3 SCM				
^{7}Be	880	1300	1400	9500	350
^{22}Na					0.11
^{24}Na				6.50 ± 0.64	0.63 ± 0.34
^{54}Mn		5.7	3.5		
^{60}Co	0.22				0.18
^{65}Zn		4.9	4.2		
$^{95}ZrNb$	170	390	310	2200	130
^{103}Ru	57	130	85		
^{106}Ru	53	140	130	2300	110
^{125}Sb				290	
^{137}Cs	16	39	35	530	30
^{140}Ba	49	110	88	260	16
^{144}Ce	71	230	210		190
^{208}Tl					8.9 ± 1.5

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

SEPTEMBER 23, 1968 - FLIGHT 30

SAMPLE NO.	L	R	L	R	L	R
ALTITUDE (Km)	6.1	6.1	9.1	9.1	12.2	12.2
LATITUDE (°N)	36-40	40-48	35	35-48	35	35-47
LONGITUDE (°W)	107-111	111-118	107	107-118	107	107-118
	DPM/10^3 SCM					
^{7}Be	1300	190	7400	1300	10,000	6000
^{22}Na	0.22	0.08		0.11	3.1	1.2
^{24}Na	5.17 ± 0.20	2.73 ± 0.18	16.88 ± 0.64	7.31 ± 0.35	32.7 ± 3.0	25.43 ± 0.28
^{38}Cl						25 ± 11
^{39}Cl				24.0 ± 5.3		71.7 ± 8.5
^{54}Mn		0.9	42	3.4		24
^{60}Co	0.28	0.02	2.8	0.67	2.3	0.95
^{65}Zn			35	2.4		33
^{95}ZrNb	130	24	1100	170	2600	1100
^{103}Ru					640	190
^{106}Ru	160	23	1600	190	1400	1100
^{125}Sb	32	3.9	350	15		140
^{137}Cs	35	5.6	390	39	390	290
^{140}Ba	4.9	4.2	30	9.5	490	67
^{144}Ce			2400		3500	1800
^{208}Tl	3.77 ± 0.38	2.01 ± 0.27	7.12 ± 0.87	1.31 ± 0.23	8.9 ± 3.0	3.63 ± 0.64
^{214}Bi						11,690 ± 170

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

SEPTEMBER 24, 1968 - FLIGHT 31

SAMPLE NO.	LR	LR	L	R	LR
ALTITUDE (Km)	1.5	4.6	7.6	9.1	13.0
LATITUDE (°N)	48	48	49	49	49
LONGITUDE (°W)	118	118	118	118	118
	DPM/10^3 SCM				
^{7}Be	170	460	350		6000
^{22}Na	0.011		0.05	0.04	
^{24}Na	0.149 ± 0.026	1.69 ± 0.12	7.06 ± 0.42	5.58 ± 0.57	34.43 ± 0.49
^{38}Cl					89.3 ± 6.4
^{39}Cl			37 ± 17	69 ± 18	161 ± 23
^{54}Mn	0.18		2.6		24
^{60}Co	0.060		0.16		2.0
^{65}Zn	0.3		4.9		30
^{95}Zr-Nb	17	110	110	32	1800
^{103}Ru	6.0	42	16		570
^{106}Ru	14	24	19	12	990
^{125}Sb	3.5		11	35	
^{137}Cs	4.2	8.8	7.1	4.9	280
^{140}Ba	0.071	53	8.8		300
^{144}Ce					1700
^{208}Tl	440 ± 35	0.64 ± 0.10			
^{214}Bi		23,270 ± 490			10,200 ± 170

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

SEPTEMBER 25, 1968 - FLIGHT 32

SAMPLE NO.	L	R	L	R	L	R
ALTITUDE (Km)	8.8	8.8	10.1	10.1	11.3	11.3
LATITUDE (°N)	48-42	42-35	48-42	42-36	49-41	41-35
LONGITUDE (°W)	118-113	113-107	118-113	113-108	118-112	112-107
	DPM/10^3 SCM					
^{7}Be	490	740	1200	1900	1400	3400
^{22}Na			0.29	0.26		1.2
^{24}Na	2.81 ± 0.22	1.87 ± 0.42	13.8 ± 1.4	21.1 ± 0.57	17.6 ± 1.6	19.7 ± 1.1
^{54}Mn	1.7				4.2	28
^{60}Co	0.05	0.14	0.16	0.31	0.20	0.92
^{65}Zn	2.5		3.5			23
$^{95}ZrNb$	53	170	170	180	170	740
^{103}Ru	12	78			29	260
^{106}Ru	42	32	88	150	160	570
^{125}Sb	12				39	
^{137}Cs	12	21	25	39	39	150
^{140}Ba	4.9	92	28	42	16	74
^{144}Ce	71		95	340	340	
^{208}Tl	1.36 ± 0.62	3.9 ± 1.0	7.9 ± 2.0	1.48 ± 0.74	9.0 ± 4.6	5.4 ± 1.5

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 28, 1968 - FLIGHT 33

SAMPLE NO.	1	2	3	4	5	6	7	8	L	R
ALTITUDE (Km)	3.0	6.1	9.1	12.2	15.2	18.3	18.3	15.2	7.6	7.6
LATITUDE (°N)	35	35	35	35	35	35-40	40-45	47	35-41	41-47
LONGITUDE (°W)	107	107	107	107	107	107-110	110-115	117	107-111	111-117
	DPM/10^3 SCM									
^{7}Be	240				35,000	39,000	35,000	42,000	390	490
^{22}Na					11	12	240		0.08	0.16
^{24}Na	0.60 ± 0.17		7.7 ± 1.1	18.0 ± 2.4	61.6 ± 3.4	67.1 ± 5.7	76.6 ± 7.8	28.9 ± 1.6	6.10 ± 0.27	9.04 ± 0.53
^{54}Mn		2.1	3.5		190	286	240	60	0.1	
^{60}Co	0.11	0.18	0.11		16	17	22	1.3	0.10	0.18
^{65}Zn		2.7	6.7		170	290		35		
$^{95}ZrNb$	120	49	46	3900	3500	3500	3900	6400	39	64
^{103}Ru	74	23	46	2300				2200	16	13
^{106}Ru	25	1.1	6.7	260	8500	11,000	13,000	670	12	26
^{125}Sb			13		140	1100	1000			
^{137}Cs	9.2	3.2	2.0	130	2400	2700	3100	290	3.5	15
^{140}Ba	22	7.1	9.9	710	23			740	6.0	5.6
^{144}Ce	78				13,000	14,000	17,000	1700	53	67
^{208}Tl	20.6 ± 1.5	1.6 ± 1.2			11.1 ± 9.8					2.32 ± 0.43

ATMOSPHERIC RADIONUCLID ISINTEGRATION RATES

NOVEMBER 25, 1968 - FLIGHT 34

SAMPLE NO.	2	3	4	5	6	7	8	9	L	R
ALTITUDE (Km)	3.1	6.1	9.1	12.2	15.2	18.3	18.3	15.2	11.9	9.1
LATITUDE (°N)	35	35	5	35	35	36-40	40 45	46-47	42-44	45-47
LONGITUDE (°W)	107	107	07	107	107	107-110	110-117	117	114-117	117
	DPM/10^3 SCM									
^{7}Be	190	200	[illegible]10	5300		29,000	24,000	29,000	28,000	460
^{22}Na	0.24	0.30	0.4	1.1		9.5	12	20	5.7	
^{24}Na		3.14 ± 0.64	4 ± 1.0	15.3 ± 3.0		68.9 ± 4.9	78.0 ± 3.5	84.8 ± 7.8	46.3 ± 2.8	29 ± 13
^{38}Cl								350 ± 180	157 ± 33	
^{39}Cl								597 ± 99	315 ± 25	
^{54}Mn			8.8			260	290	190	140	
^{60}Co	0.30		0.32	0.7			13	12	11	0.4
^{65}Zn			3			390	320		120	
^{95}ZrNb	100	120	490	1500		3200	3000	8800	2700	180
^{103}Ru	30	29	1 0	420				2100		
^{106}Ru	39	27	[illegible]	390		8800	9500	8100	4900	39
^{125}Sb						1200	1200	780	670	
^{137}Cs	13	11	[illegible]	160		2500	2700	2500	1600	200
^{140}Ba	4 9	4.9	[illegible]	57		30	32	710	29	
^{144}Ce	250		5 0	990		14,000	14,000	8500	8100	160

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JANUARY 20, 1969 - FLIGHT 35

SAMPLE NO.	1	2	3	4	5	6	7	8	R	L
ALTITUDE (Km)	3.4	6.1	9.1	12.2	15.2	18.3	18.3	15.2	9.4	9.4
LATITUDE (°N)	35	35	35	35	35	37-41	41-46	47	36-42	42-48
LONGITUDE (°W)	107	107	107	107	107	108-113	113-117	117	108-113	113-118
	DPM/10^3 SCM									
^{7}Be	130	130	1700	4600	6000	24,000	24,000	23,000	1300	570
^{22}Na				0.66 ± 0.27	1.10 ± 0.70	12.0 ± 1.1	13.5 ± 1.5	9.3 ± 1.0	0.40 ± 0.10	
^{24}Na		1.77 ± 0.39	4.56 ± 0.57		28.9 ± 3.0	46.6 ± 5.3	56.9 ± 4.6			
^{54}Mn			9.5			180 ± 11	166 ± 10	111 ± 7	1.8 ± 0.8	
^{60}Co		0.10	0.92	0.60 ± 0.25	1.90 ± 0.54	15.6 ± 1.4	15.0 ± 1.4	11.1 ± 6.6	0.29 ± 0.08	0.64
^{65}Zn						109 ± 24		94 ± 15		
$^{95}ZrNb$	22	19	460	1200	4600	22,000	16,000	6000	220	120
^{103}Ru		8.5	320	230	880	3500	2700	920	290	100
^{106}Ru	60	22	190	320 ± 13	596 ± 24	6521 ± 76	6943 ± 76	5109 ± 51	196 ± 4	49
^{125}Sb		13	140	28 ± 4	33 ± 7	745 ± 12	781 ± 12	636 ± 8	33 ± 1	22
^{137}Cs	25	13	71	90 ± 1	163 ± 2	1924 ± 6	2068 ± 6	1500 ± 4	84 ± 1	22
^{140}Ba	3.1	1.3	320	3.5	14	88	46	34	270	110
^{144}Ce		49	600	600 ± 310	1100	13,000	15,000 ± 1000	9050 ± 860	440 ± 100	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JANUARY 22, 1969 - FLIGHT 36

DPM/10^3 SCM

SAMPLE NO.	10	11	R	L
ALTITUDE (Km)	15.2	15.2	11.3	11.3
LATITUDE (°N)	46-41	41-37	46-41	41-35
LONGITUDE (°W)	117-112	112-108	118-112	112-107
^{7}Be	2000			
^{22}Na	9.00 ± 0.86	9.5 ± 1.0	5.50 ± 0.46	8.74 ± 0.58
^{54}Mn	57 ± 6	103 ± 7	29 ± 3	74 ± 4
^{60}Co	9.91 ± 0.74	9.99 ± 0.78	7.65 ± 0.40	10.63 ± 0.47
$^{95}ZrNb$	9900	53,000	25,000	49,000
^{103}Ru		57,000	2600	60,000
^{106}Ru	5228 ± 47	7747 ± 60	4581 ± 28	7505 ± 36
^{125}Sb	593 ± 7	682 ± 8	474 ± 4	785 ± 5
^{137}Cs	1470 ± 3	1589 ± 4	1093 ± 2	1640 ± 2
^{140}Ba	1700	53,000	29,000	60,000
^{144}Ce	10,790 ± 820	14,900 ± 1000	9510 ± 470	15,670 ± 600

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

FEBRUARY 26, 1969 - FLIGHT 37

SAMPLE NO.	1	2	3	4	5	6	7
ALTITUDE (Km)	18.3	18.9	15.2	12.2	9.4	6.1	3.0
LATITUDE (°N)	33-42	42-47	47	47	47	47	47
LONGITUDE (°W)	109-113	113-118	118	118	118	118	118
	DPM/10³ SCM						
^{7}Be					9500	390	110
^{22}Na	25.9 ± 3.0	13.3 ± 2.5	16.4 ± 2.3	16.3 ± 1.7	4.05 ± 0.50	0.13	0.20
^{24}Na			56.9 ± 6.0	35.7 ± 2.9	15.9 ± 1.5	1.66 ± 0.39	0.55 ± 0.25
^{38}Cl					240 ± 110		
^{39}Cl					139 ± 58		
^{54}Mn	913 ± 25	509 ± 21	632 ± 19	350 ± 13	65 ± 4	6.4	2.3
^{60}Co	13.5 ± 1.4	13.0 ± 1.5	14.4 ± 1.3	13.2 ± 1.0	5.11 ± 0.56	0.12	
^{65}Zn						3.9	
$^{95}ZrNb$	890,000	480,000	580,000	220,000	5300	150	74
^{103}Ru	830,000	520,000	310,000	95,000	3500	31	34
^{106}Ru	42,000 ± 200	26,150 ± 160	31,450 ± 150	20,350 ± 100	2221 ± 29	57	17
^{125}Sb	3344 ± 27	2255 ± 24	2450 ± 21	1397 ± 14	296 ± 5	14	
^{137}Cs	4788 ± 11	3677 ± 10	3962 ± 9	2741 ± 6	715 ± 2	20	11
^{140}Ba			110,000	42,000	1000	15	7.4
^{144}Ce	103,700 ± 3400	63,400 ± 2900	70,700 ± 2500	48,300 ± 1800	4350 ± 330		
^{214}Bi					918 ± 38	32,500 ± 2300	35,400 ± 2400

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

FEBRUARY 27, 1969 - FLIGHT 38

SAMPLE NO.	3	4	R	L
ALTITUDE (Km)	15.2	15.2	11.3	11.3
LATITUDE (°N)	46-42	42-36	47-41	42-36
LONGITUDE (°W)	117-113	113-108	118-112	113-108
	DPM/10^3 SCM			
^{7}Be				180
^{22}Na	6.0 ± 1.2	17.6 ± 1.8	3.00 ± 0.32	0.76 ± 0.12
^{54}Mn	180 ± 10	421 ± 15	34 ± 2	
^{60}Co	6.27 ± 0.65	15.51 ± 0.86	2.66 ± 0.24	
$^{95}ZrNb$	210,000	490,000	16,000	130
^{103}Ru	130,000	300,000	9500	92
^{106}Ru	15,359 ± 82	40,330 ± 120	2340 ± 19	28.4 ± 2.6
^{125}Sb	1060 ± 11	2379 ± 16	275 ± 3	5.9 ± 1.4
^{137}Cs	1825 ± 5	4877 ± 7	598 ± 1	19.7 ± 0.4
^{140}Ba	42,000	110,000	3100	24
^{144}Ce	38,700 ± 1500	98,000 ± 2100	4460 ± 310	34

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

MARCH 25, 1969 - FLIGHT 39

SAMPLE NO.	1	2	3	4	5	6	7	8	R	L
ALTITUDE (Km)	3.1	6.1	9.4	12.2	15.2	18.3	18.3	15.2	7.6	10.7
LATITUDE (°N)	35	35	35	35	35	37-41	41-45	46-47	35-41	41-47
LONGITUDE (°W)	107	107	107	107	107	108-112	112-117	117	107-112	112-118
	DPM/10^3 SCM									
^{7}Be	570	600	9600 ± 1900							
^{22}Na	0.42	0.34	0.60 ± 0.40	14.4 ± 1.7	12.6 ± 2.0	23.2 ± 2.4	21.6 ± 2.4	46.8 ± 4.0		
^{24}Na	1.01 ± 0.32	4.48 ± 0.46		30.0 ± 3.0	33.7 ± 2.7	77.0 ± 3.9	69.7 ± 3.3	59.7 ± 7.4	4.02 ± 0.26	10.28 ± 0.53
^{54}Mn		3.9		144	315	615	434	1127		
^{60}Co	0.49			9.5 ± 1.0	6.4 ± 1.1	19.5 ± 1.5	20.2 ± 1.5	25.7 ± 1.8	0.21	
^{65}Zn									6.4	
^{95}ZrNb	200	330	3624 ± 33	120,000	230,000	250,000	260,000	780,000	570	
^{103}Ru	110	160		57,000	88,000	95,000	95,000	350,000	350	
^{106}Ru	49	78	537 ± 16	13,902 ± 86	20,070 ± 110	24,300 ± 130	25,220 ± 130	65,800 ± 220	88	
^{125}Sb			40 ± 3	1032	1275	1815	1781	4254		
^{137}Cs	23	29	133 ± 1	2231 ± 7	2426 ± 8	3781 ± 10	3867 ± 10	7522 ± 16	26	
^{140}Ba	10	17		7100	13,000	13,000	14,000	49,000	28	
^{144}Ce		950	1470 ± 280	29,600 ± 1400	50,300 ± 1900	62,100 ± 2200	66,800 ± 2200	166,300 ± 3600		
^{208}Tl	514.2 ± 6.2								0.25 ± 0.22	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JULY 8, 1969 - FLIGHT 40

SAMPLE NO.	2	3	4	5	6	7
ALTITUDE (Km)	3.0	6.1	9.1	12.2	15.2	18.3
LATITUDE (°N)	18.5	18.5	18.5	18.5	18.5	18.5
LONGITUDE (°W)	67	67	67	67	67	67
	DPM/10^3 SCM					
^{7}Be	250 ± 5	230 ± 5	475 ± 6	450 ± 9	2996 ± 68	7694 ± 59
^{22}Na	0.058 ± 0.027	0.070 ± 0.031	0.059 ± 0.049	0.34 ± 0.22		5.05 ± 0.81
^{24}Na	0.27 ± 0.18	0.82 ± 0.26	5.28 ± 0.66	6.8 + 1.1		12.5 ± 1.6
^{60}Co			0.44 ± 0.20	0.36 ± 0.10		2.88 ± 0.46
^{95}ZrNb	234 ± 1	149 ± 1	333 ± 1	1121 ± 2	962 ± 8	31,581 ± 11
^{103}Ru	31 ± 1	19 ± 1	55 ± 1	210 ± 1	170 ± 7	5133 ± 7
^{106}Ru	48.8 ± 1.1	23 ± 2	60 ± 3	200 ± 5	190 ± 6	5554 ± 30
^{125}Sb	18 ± 1			12.5 ± 0.7		505 ± 7
^{137}Cs	9.7 ± 0.3	3.4 ± 0.4	7.7 ± 0.4	27.0 ± 0.7	27.4 ± 0.9	851 ± 3
^{140}Ba	0.063 ± 0.058	0.106 ± 0.077	0.15 ± 0.11	0.43 ± 0.23		15.6 ± 1.3
^{144}Ce	98 ± 17	82 ± 16	230 ± 120	480 ± 140	940 ± 200	13,900 ± 500

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

SEPTEMBER 30, 1969 - FLIGHT 41

SAMPLE NO.	1	2	3	4	5	6	7	8
ALTITUDE (Km)	3.0	6.1	9.1	12.2	15.2	18.3	18.3	18.3
LATITUDE (°N)	65	65	65	65	65	65-60	60-55	55-50
LONGITUDE (°W)	148	148	148	148	148	148-137	137-132	132-126
	DPM/10³ SCM							
^{7}Be	89 ± 11	285 ± 13	1774 ± 20	12,990 ± 63	30,670 ± 140	32,323 ± 84	36,660 ± 78	23,211 ± 90
^{22}Na		0.202 ± 0.093	0.39 ± 0.21	5.49 ± 0.92	20.6 ± 2.1	14.0 ± 1.3	13.62 ± 0.78	12.74 ± 0.78
^{24}Na	0.39 ± 0.22	0.77 ± 0.26	7.80 ± 0.96	30.7 ± 2.5	57.5 ± 5.1	66.9 ± 3.5	72.0 ± 3.6	74.4 ± 3.2
^{54}Mn		4 ± 1	12 ± 1	105 ± 13	262 ± 11	271 ± 6	154 ± 15	269 ± 18
^{60}Co			0.26 ± 0.18	3.13 ± 0.56	11.9 ± 1.3	10.1 ± 1.0	9.21 ± 0.54	10.29 ± 0.54
$^{95}ZrNb$	79 ± 1	355 ± 1	1382 ± 3	14,963 ± 12	35,777 ± 24	19,058 ± 13	14,915 ± 11	34,926 ± 15
^{103}Ru	9 ± 1	31 ± 1	75 ± 2	1369 ± 8	2894 ± 15	2206 ± 10	1290 ± 9	3307 ± 10
^{106}Ru	34.7 ± 2.1	126.8 ± 3.6	483 ± 8	5302 ± 34	12,940 ± 71	9245 ± 46	8024 ± 37	14,177 ± 45
^{125}Sb	15 ± 3		67 ± 5	435 ± 17			641 ± 20	
^{137}Cs	12 ± 1	21 ± 1	83 ± 2	943 ± 7	2750 ± 14	1944 ± 7	1549 ± 9	2637 ± 8
^{140}Ba						4.4 ± 2.2	3.6 ± 1.3	2.9 ± 1.4
^{144}Ce	102 ± 40	266 ± 50	1380 ± 130	11,810 ± 500	31,400 ± 1100	20,020 ± 660	14,230 ± 430	31,220 ± 550
^{208}Tl	62.4 ± 6.3			22 ± 12				

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

NOVEMBER 18, 1969 - FLIGHT 42

SAMPLE NO.	1	2	3	4	5	6
ALTITUDE (Km)	3.0	6.1	9.1	12.2	15.2	18.3
LATITUDE (°N)	35	35	35	35	35	35
LONGITUDE (°W)	107	107	107	107	107	107
	DPM/10^3 SCM					
^{7}Be	145 ± 5	578 ± 7	217 ± 5	1826 ± 41		
^{22}Na		0.19 ± 0.09		5.4 ± 1.2		
^{24}Na	0.42 ± 0.14	4.56 ± 0.59	6.76 ± 0.73	27.1 ± 2.1	48.4 ± 2.4	53.0 ± 4.4
^{54}Mn			1.6 ± 0.5			
^{60}Co	0.09 ± 0.06	0.10 ± 0.08	0.19 ± 0.09	4.09 ± 0.86	5.9 ± 1.7	78.4 ± 4.7
$^{95}ZrNb$	67 ± 1	224 ± 1	49 ± 1	5974 ± 5	54,322 ± 15	205,580 ± 41
^{103}Ru	12 ± 1	23 ± 1	13 ± 1	1468 ± 5	37,376 ± 16	144, 896 ± 43
^{106}Ru	29.6 ± 1.3	108.0 ± 3.1	21.1 ± 1.0	2535 ± 18	9145 ± 37	24, 067 ± 97
^{137}Cs	8.6 ± 0.4	21 ± 1	4.4 ± 0.4	434 ± 4	2720 ± 8	
^{140}Ba	4.2 ± 0.2	6.7 ± 0.4	4.7 ± 0.4	827 ± 6	17, 728 ± 21	68, 244 ± 61
^{208}Tl	24.6 ± 1.3	1.16 ± 0.82				

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JUNE 9, 1968 FLIGHT 1A

SAMPLE NO.	2	3	4	5	6	7
ALTITUDE (Km)	15.2	15.2	15.2	15.2	15.2	15.2
LATITUDE (°N)	65-60	60-55	55-50	50-45	45-40	40-35
LONGITUDE (°W)	147-137	137-130	130-125	125-118	118-110	110-107
	DPM/10^3 SCM					
^{7}Be	28,000	35,000	28,000	42,000	32,000	21,000
^{22}Na	13	29	12	15	16	
^{24}Na	53.0 ± 6.0	71.3 ± 6.4	48.7 ± 6.0	48.0 ± 4.6	63.6 ± 3.2	29.3 ± 2.5
^{54}Mn	390	530	320		460	420
^{60}Co	27	31	20	25	28	20
^{65}Zn	320			950	490	420
$^{95}ZrNb$	20,000	23,000	19,000	21,000	24,000	17,000
^{106}Ru	18,000	19,000	16,000	18,000	20,000	14,000
^{125}Sb	1900		1800	1900	2500	2400
^{137}Cs	3300	3900	2900	3500	3900	2600
^{144}Ce	25,000	32,000	24,000	26,000	31,000	21,000
^{208}Tl					84 ± 11	19.3 ± 9.4

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 5, 1968 - FLIGHT 3A

SAMPLE NO.	1	2	3
ALTITUDE (Km)	18.3	18.3	18.3
LATITUDE (°N)	12.5-14	14 19	19-23
LONGITUDE (°W)	82	82-85	85-88
	— DPM/10^3 SCM —		
^{7}Be		12,000	24,000
^{22}Na	2.4	6.7	4.2
^{24}Na	53 ± 53	44.1 ± 1.1	56 ± 15
^{54}Mn	57	110	390
^{60}Co		10	23
$^{95}ZrNb$	1300	3900	5300
^{106}Ru	1300	4600	9500
^{125}Sb	420	920	2300
^{137}Cs	420	1500	2900
^{140}Ba	200	110	34
^{144}Ce	1800	8500	17,000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 8, 1968 - FLIGHT 4A

SAMPLE NO.	2	3	4	5	7	8	9
ALTITUDE (Km)	17.4	17.4	17.7	18.1	18.3	18.3	18.3
LATITUDE	30-25°S	25-20°S	20-15°S	15-10°S	5-0°S	0-5°N	5-8°N
LONGITUDE (°W)	69-73	73-76	76-80	80-83	85-78	78-81	81-80
	DPM/10^3 SCM						
^{7}Be							16,000
^{22}Na		3.5 ± 1.7	6.5 ± 1.4	5.8 ± 2.2	12.2 ± 5.8	4.3 ± 1.9	6.0 ± 1.7
^{24}Na				32 ± 16		23.3 ± 6.0	24.0 ± 9.5
^{54}Mn		204 ± 18	77 ± 10	285 ± 25	1174 ± 63	196 ± 22	177 ± 20
^{60}Co	57	34.7 ± 1.4	21.1 ± 1.2	18.0 ± 2.1	88.6 ± 5.0	12.8 ± 1.9	11.9 ± 1.5
$^{95}ZrNb$	1,100,000	920,000	490,000	280,000	2,000,000	46,000	24,000
^{103}Ru	420,000	460,000	240,000	99,000	1,000,000	16,000	7800
^{106}Ru	39,000	43,180 ± 170	21,030 ± 130	10,320 ± 180	92,910 ± 570	4910 ± 130	5320 ± 100
^{125}Sb		1543 ± 17	4600 ± 22	688 ± 24	3489 ± 56	604 ± 23	684 ± 21
^{137}Cs	12,600	4436 ± 7	8955 ± 10	1896 ± 10	9019 ± 23	1569 ± 9	1681 ± 7
^{140}Ba	420,000	420,000	200,000	100,000	95,000	11,000	3900
^{144}Ce	110,000	97,760 ± 3030	56,200 ± 2500	33,600 ± 3800	222,000 ± 10,000	5000 ± 2900	16,400 ± 2700

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 9, 1968 - FLIGHT 5A

SAMPLE NO.	3	4	5	6
ALTITUDE (Km)	18.3	18.3	18.3	18.3
LATITUDE (^{o}N)	15-20	20-25	25-30	30-35
LONGITUDE (^{o}W)	83-86	86-90	90-96	96-106
	DPM/10^3 SCM			
^{7}Be	28,000		28,000	35,000
^{22}Na	14		13	15
^{24}Na	35.3 ± 9.5	35.7 ± 6.4	37.8 ± 7.4	55.1 ± 7.4
^{54}Mn	300		280	350
^{60}Co	17		14	19
^{95}ZrNb	5300		4600	6400
^{106}Ru	8500		9200	12,000
^{125}Sb	950		1100	1500
^{137}Cs	2500		2500	3200
^{140}Ba	420		230	710
^{144}Ce	16,000		14,000	17,000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 9, 1968 - FLIGHT 6A

SAMPLE NO.	1	2	3	4	5
ALTITUDE (Km)	18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	60-55	55-50	50-45	45-40	40-36
LONGITUDE (°W)	137-130	130-125	125-118	118-110	110-107
	DPM/10^3 SCM				
^{7}Be	28,000	25,000	39,000	30,000	29,000
^{22}Na	6.7	12	23	11	14
^{24}Na	88.6 ± 6.0	74.9 ± 5.3	57.6 ± 9.2	76 ± 11	49.8 ± 3.1
^{54}Mn	300	150	230		420
^{60}Co	19	14	22	18	18
^{65}Zn					460
$^{95}Zr/Nb$	3900	3300	4200	4200	4600
^{106}Ru	11,000	11,000	14,000	12,000	11,000
^{125}Sb	2000	1500	1100		1100
^{137}Cs	2700	2100	2900	2900	2800
^{140}Ba				7.4	
^{144}Ce	14,000	12,000	15,000	16,000	14,000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

NOVEMBER 5, 1968 - FLIGHT 8A

SAMPLE NO.	1	2	3	4	5
ALTITUDE (Km)	18.3	18.3	18.3	18.3	18.3
LATITUDE (^{o}N)	60-55	55-50	50-45	45-40	40-35
LONGITUDE (^{o}W)	140-133	133-125	125-118	118-111	111-107
	DPM/10^3 SCM				
^{7}Be	26,000	27,000	39,000	35,000	35,000
^{22}Na	15	15	14	19	14
^{24}Na	80.2 ± 5.3	68.2 ± 4.6	64.3 ± 7.8	68.2 ± 9.9	66 ± 12
^{54}Mn	170	280	170	220	200
^{60}Co	16	19	16	17	20
^{95}ZrNb	2700	3200	3200	3000	3400
^{106}Ru	10,000	11,000	11,000	9900	13,000
^{125}Sb	1300	1900	1100		
^{137}Cs	2300	2600	2600	2600	3000
^{140}Ba	13	22			
^{144}Ce	12,000	13,000	13,000	14,000	15,000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

FEBRUARY 11, 1969 - FLIGHT 9A

SAMPLE NO.	2	3	4	5	6	7	8	9	10
ALTITUDE (Km)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
LATITUDE (°N)	12-15	15-18	18-21	21-24	24-26	26-29	29-31	31-33	33-35
LONGITUDE (°W)	81-83	83-84	84-87	87-89	89-91	91-95	95-98	98-102	102-106
	DPM/10^3 SCM								
^{7}Be	2300	2800		5700					
^{22}Na		0.53	1.7 ± 1.1		0.8 ± 0.8	0.98 ± 0.72	0.45 ± 0.31	0.97 ± 0.83	
^{24}Na	28.6 ± 9.9		20.1 ± 6.4	50 ± 18					
^{54}Mn	6.4	13					20 ± 4		
^{60}Co		0.30	1.63 ± 0.94		4.6	1.80 ± 0.56	0.76 ± 0.27	0.81 ± 0.51	
^{65}Zn	6.7	13			85				
$^{95}ZrNb$	780	1200		3500	8500	12,000	520 ± 300	2730 ± 450	
^{103}Ru	200	170		1500	7400	6700			
^{106}Ru	88	110	1000 ± 54	420	864 ± 48	965 ± 39	105.7 ± 8.8	678 ± 38	
^{125}Sb			10 ± 10		34 ± 13	70 ± 8	13 ± 4	73 ± 10	
^{137}Cs	35	53	174 ± 3	170	139 ± 3	171 ± 3	32 ± 1	152 ± 3	
^{140}Ba	31	22		670	2900	2000			
^{144}Ce	200	240	5000 ± 1800		2200 ± 1200	3060 ± 940		2800 ± 1100	

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

FEBRUARY 21 AND 22, 1969 - FLIGHTS 10A AND 11A

DATE (FEB)	21	22	22	22	22	22
FLIGHT NO.	10A	11A	11A	11A	11A	11A
SAMPLE NO.	2	1	2	3	4	5
ALTITUDE (Km)	15.2	15.2	15.2	15.2	15.2	15.2
LATITUDE (°N)	10-15	10-15	15-20	20-25	25-30	30-35
LONGITUDE (°W)	80-83	80-83	83-86	86-90	90-96	96-107
	DPM/10^3 SCM					
^{7}Be	2200		11,000			
^{22}Na		0.14				4.5 ± 1.1
^{24}Na	19.1 ± 6.0		28.6 ± 9.9		20.1 ± 6.4	50 ± 18
^{54}Mn	13		16	11.5 ± 4.9	24 ± 5	249 ± 11
^{60}Co	0.1	0.1	0.2	0.89 ± 0.34	1.02 ± 0.37	6.48 ± 0.68
^{65}Zn	10	4.9	14		78	84 ± 26
$^{95}ZrNb$	780	9.2	2200		6400	14,000
^{103}Ru	190		490		3900	170,000
^{106}Ru	92	2.3	190	223 ± 16	664 ± 27	12,114 ± 95
^{125}Sb				22 ± 5	59 ± 6	866 ± 11
^{137}Cs	32	9.9	78	55 ± 1	137 ± 2	1541 ± 5
^{140}Ba	42	0.19	120		990	39,000
^{144}Ce	220		710		1160 ± 580	27,800 ± 1600

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

MARCH 17, 1969 - FLIGHT 12A

SAMPLE NO.	1	2	3	4	5	6
ALTITUDE (Km)	17.7	18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	62-60	60-55	55-50	50-45	45-40	40-36
LONGITUDE (°W)	140-137	137-132	132-126	126-118	118-111	111-108
	DPM/10^3 SCM					
^{22}Na	12.0 ± 3.8	9.0 ± 2.6		16.5 ± 3.1	19.5 ± 3.4	
^{24}Na	89 ± 25	91 ± 35	90 ± 26			95 ± 18
^{54}Mn	347 ± 33	522 ± 23		798 ± 26	839 ± 30	4600
^{60}Co	15.3 ± 2.5	16.4 ± 1.8	32	19.9 ± 1.8	21.4 ± 1.9	
^{65}Zn		1600				3500
$^{95}ZrNb$	250,000	260,000	220,000	38,400 ± 2000	460,000 ± 2200	810,000
^{103}Ru	120,000	110,000	71,000			350,000
^{106}Ru	19,240 ± 270	20,200 ± 190	24,000	38,130 ± 240	44,100 ± 250	78,000
^{125}Sb	1288 ± 38	1464 ± 26		2673 ± 30	3132 ± 34	
^{137}Cs	2545 ± 15	2947 ± 11	10,000	4765 ± 13	5374 ± 14	25,000
^{140}Ba	22,000	21,000	14,000			64,000
^{144}Ce	46,300 ± 4800	46,300 ± 3300	57,000	86,600 ± 4000	110,800 ± 4500	180,000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

MARCH 31, 1969 - FLIGHT 13A

SAMPLE NO.	2	3	4	5	6	7
ALTITUDE (Km)	18.1	18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	62-60	60-55	55-50	50-45	45-40	40-35
LONGITUDE (°W)	140-137	137-132	132-126	126-118	118-110	110-108
	DPM/10^3 SCM					
^{22}Na		11.1 ± 1.6	9.4 ± 3.1		14.9 ± 3.4	24.2 ± 5.1
^{24}Na	57 ± 19		66 ± 21			53 ± 13
^{54}Mn	850	462 ± 13	610 ± 27	165 ± 11	736 ± 31	1036 ± 46
^{60}Co	17	11.36 ± 0.94	19.4 ± 2.2	6.75 ± 0.86	19.3 ± 2.0	14.9 ± 2.4
$^{95}ZrNb$	190,000	241,000 ± 1200	240,000	110,000	342,500 ± 3700	460,000
^{103}Ru	74,000		67,000	46,000		170,000
^{106}Ru	19,000	18,550 ± 110	23,310 ± 230	10,237 ± 81	36,650 ± 28	42,730 ± 400
^{125}Sb		1399 ± 16	1877 ± 32	688 ± 12	2688 ± 33	3126 ± 49
^{137}Cs	5700	2718 ± 7	3697 ± 14	1336 ± 5	4822 ± 14	5392 ± 20
^{140}Ba	8100		8500	4900		19,000
^{144}Ce	42,000	43,700 ± 1900	53,660 ± 3900	28,200 ± 1500	90,800 ± 4900	100,400 ± [illegible]

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

APRIL 10, 1969 - FLIGHT 14A

SAMPLE NO.	2	3	4	5	6
ALTITUDE (Km)	18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	11-15	16-20	21-25	25-30	30-35
LONGITUDE (°W)	81-83	83-86	87-90	90-96	96-107
	DPM/10^3 SCM				
^{7}Be	24,000				
^{22}Na	1.3 ± 1.3	3.1 ± 1.1	8.3 ± 1.8	7.3 ± 2.4	10.5 ± 2.4
^{24}Na	24.8 ± 3.5	37.1 ± 3.5	37.1 ± 8.5		53.0 ± 4.9
^{54}Mn	45 ± 14	37 ± 9	223 ± 15	351 ± 23	505 ± 20
^{60}Co	2.60 ± 0.95	2.28 ± 0.79	6.0 ± 1.1	6.7 ± 1.2	11.8 ± 1.3
$^{95}ZrNb$	29,000	35,000	130,000	164,300 ± 3300	240,000
^{103}Ru	11,000	13,000	53,000		57,000
^{106}Ru	2912 ± 86	3905 ± 58	13,070 ± 110	16,620 ± 190	24,350 ± 180
^{125}Sb	194 ± 16	248 ± 10	921 ± 16	1119 ± 24	1830 ± 24
^{137}Cs	438 ± 6	559 ± 4	1703 ± 7	2176 ± 10	3249 ± 10
^{140}Ba	780	810	3500		5700
^{144}Ce	6700 ± 1700	10,100 ± 1200	31,700 ± 2000	40,200 ± 3400	54,900 ± 3000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

APRIL 10, 1969 - FLIGHT 15A

SAMPLE NO.	2	3	4	5	6
ALTITUDE (Km)	15.2	15.2	15.2	15.2	15.2
LATITUDE (°N)	10-15	15-20	20-25	25-30	30-35
LONGITUDE (°W)	80-83	83-86	86-90	90-96	96-97
	DPM/10^3 SCM				
^{7}Be	1600	3000		4900	
^{22}Na		0.32	0.71 ± 0.34	0.85	7.7 ± 1.5
^{24}Na	13.0 ± 3.2	25.8 ± 3.9	26.8 ± 6.4	16.6 ± 6.0	
^{54}Mn	0.85	13 ± 5		15 ± 5	400 ± 13
^{60}Co			0.61 ± 0.28	0.48 ± 0.30	7.93 ± 0.78
^{65}Zn			57		225 ± 31
$^{95}ZrNb$	200	1800	5700	2700	199,300 ± 1400
^{103}Ru	67	670	2700	850	
^{106}Ru	27	216 ± 17	606 ± 17	343 ± 19	19,480 ± 120
^{125}Sb		18 ± 6	23 ± 3	15 ± 5	1432 ± 14
^{137}Cs	7.4	33 ± 2	92 ± 1	59 ± 1	2291 ± 6
^{140}Ba	3.4	42	130	57	
^{144}Ce	7.1	390	1570 ± 450	710 ± 450	44,900 ± 2000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

APRIL 11, 1969 - FLIGHT 16A

SAMPLE NO.	2	3	4	5	6
ALTITUDE (Km)	18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	10-15	15-20	20-25	25-30	30-35
LONGITUDE (°W)	80-83	83-86	86-90	90-96	96-106
	DPM/10^3 SCM				
^{7}Be	19,000				
^{22}Na	3.1 ± 1.6	4.1 ± 1.6	8.9 ± 2.7	9.0 ± 2.5	11.0 ± 2.4
^{24}Na	29.7 ± 7.4	39.9 ± 8.5	56 ± 14		40 ± 12
^{54}Mn	104 ± 15	51 ± 14	87 ± 25	383 ± 22	398 ± 21
^{60}Co	3.3 ± 1.0	2.75 ± 0.93	8.0 ± 1.8	8.9 ± 1.4	12.4 ± 1.4
^{65}Zn	92	130	950		
$^{95}ZrNb$	35,000	42,000	110,000	158,500 ± 1800	240,000
^{103}Ru	14,000	15,000	49,000		85,000
^{106}Ru	3783 ± 98	4320 ± 100	11,360 ± 190	18,970 ± 190	24,380 ± 190
^{125}Sb	281 ± 17	301 ± 17	738 ± 24	1327 ± 24	1701 ± 24
^{137}Cs	553 ± 6	648 ± 6	1471 ± 10	2448 ± 10	3245 ± 10
^{140}Ba	990	880	2900		6700
^{144}Ce	9200 ± 1900	11,000 ± 1900	33,400 ± 3800	43,400 ± 3300	60,200 ± 3300

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JULY 29, 1969 - FLIGHT 17A

SAMPLE NO.	2	3	4	5	6
ALTITUDE (Km)	15.2-18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	10-15	15-20	20-25	25-30	30-35
LONGITUDE (°W)	80-83	83-86	86-90	90-96	96-107
	DPM/10^3 SCM				
^{7}Be	11,700 ± 130	29,750 ± 180	10,870 ± 160	34,190 ± 140	33,280 ± 140
^{22}Na	9.15 ± 0.81	10.2 ± 1.7	12.3 ± 1.2	15.5 ± 3.3	9.0 ± 1.0
^{24}Na	37 ± 12	71 ± 21	96 ± 12	61 ± 19	61 ± 10
^{54}Mn	296 ± 24	447 ± 25	268 ± 17	87 ± 24	364 ± 20
^{60}Co	7.36 ± 0.54	9.5 ± 1.0	9.9 ± 1.3	8.1 ± 1.6	10.90 ± 0.54
$^{95}ZrNb$	57,574 ± 22	85,100 ± 34	98,938 ± 29	95,108 ± 30	98,348 ± 24
^{103}Ru	8134 ± 14	10,284 ± 21	13,808 ± 18	10,737 ± 17	9700 ± 15
^{106}Ru	12,144 ± 48	18,020 ± 100	18,550 ± 140	18,990 ± 210	19,968 ± 51
^{125}Sb	1193 ± 31	1703 ± 35	1526 ± 20	1376 ± 32	1770 ± 25
^{137}Cs	2173 ± 13	3410 ± 220	3081 ± 9	3101 ± 14	3444 ± 48
^{140}Ba	14.4 ± 1.8	20.5 ± 4.6	29.2 ± 2.6		28.1 ± 2.0
^{144}Ce	28,400 ± 600	46,700 ± 1200	44,700 ± 2400	55,200 ± 3900	51,140 ± 710

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

JULY 31, 1969 - FLIGHT 18A

SAMPLE NO.	2	3	4	5	6	7	8	9	10	11
ALTITUDE (Km)	16.5	16.6	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
LATITUDE	29-26°S	26-23°S	23-20°S	20-15°S	15-11°S	11-7°S	7-3°S	3°S-1°N	1-5°N	5-7°N
LONGITUDE (°W)	70-72	72-73	73-74	74-77	77-79	79-80	80-82	82-81	81-80	80
	DPM/10^3 SCM									
^{7}Be	21,500 ± 300	27,960 ± 350	18,700 ± 300	14,600 ± 170	9550 ± 170	9550 ± 190	7040 ± 170	11,710 ± 250	13,500 ± 270	10,880 ± 280
^{22}Na	3.3 ± 2.4	10.6 ± 3.0	6.8 ± 1.3	4.3 ± 1.8	4.7 ± 2.0	2.7 ± 1.2	3.1 ± 1.7	2.3 ± 1.7	6.8 ± 1.7	2.0 ± 1.8
^{54}Mn	489 ± 21	768 ± 25	466 ± 37	214 ± 12	85 ± 13	89 ± 10	75 ± 10	160 ± 15	56 ± 17	38 ± 15
^{60}Co	23.4 ± 2.5	41.8 ± 3.5	20.4 ± 1.4	8.5 ± 2.3		2.46 ± 0.85	1.63 ± 0.73		2.1 ± 1.2	3.0 ± 1.1
^{65}Zn			260 ± 31			116 ± 20	80 ± 22	120 ± 26		
$^{95}ZrNb$	26,455 ± 50	36,914 ± 60	21,800 ± 47	12,759 ± 27	6704 ± 23	9180 ± 20	5319 ± 22	12,965 ± 36	23,923 ± 44	18,658 ± 44
^{103}Ru	519 ± 36	1040 ± 41	688 ± 34	432 ± 20	461 ± 20	893 ± 22		1425 ± 29	2717 ± 31	1896 ± 32
^{106}Ru	10,540 ± 160	14,328 ± 190	8560 ± 74	4817 ± 68	2096 ± 58	2626 ± 48	1653 ± 58	3955 ± 99	5340 ± 120	4010 ± 100
^{125}Sb	795 ± 26	1061 ± 31	583 ± 14	424 ± 34	210 ± 35	192 ± 14	171 ± 13	296 ± 19	421 ± 19	316 ± 20
^{137}Cs	2535 ± 12	3533 ± 15	2200 ± 160	1331 ± 15	520 ± 14	475 ± 22	313 ± 5	739 ± 7	801 ± 8	585 ± 7
^{144}Ce	29,300 ± 1700	43,300 ± 3600	23,500 ± 1400	12,400 ± 1100	4800 ± 1000	4700 ± 830	2800 ± 1100	7300 ± 1700	11,000 ± 2300	10,000 ± 2000

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

AUGUST 2, 1969 - FLIGHT 20A

SAMPLE NO.	1	2	3	4	5
ALTITUDE (Km)	18.3	18.3	18.3	18.3	18.3
LATITUDE (°N)	10-15	15-20	20-25	25-30	30-35
LONGITUDE (°W)	80-83	83-86	86-90	90-96	96-107
	DPM/10^3 SCM				
^{7}Be	35,730 ± 360		26,470 ± 310	32,450 ± 330	27,000 ± 270
^{22}Na	6.3 ± 2.4	4.8 ± 2.4	12.9 ± 2.7	10.5 ± 2.6	7.3 ± 1.9
^{54}Mn	215 ± 19	254 ± 20	108 ± 19	566 ± 21	356 ± 15
^{60}Co	7.8 ± 1.5	9.5 ± 1.6			9.3 ± 1.1
$^{95}ZrNb$	51,651 ± 65	53,613 ± 61	44,316 ± 55	76,015 ± 65	65,895 ± 49
^{103}Ru	4009 ± 42	7509 ± 35	4009 ± 35	7499 ± 38	8207 ± 29
^{106}Ru	11,350 ± 160	11,530 ± 190	9600 ± 110	15,280 ± 120	15,440 ± 130
^{125}Sb	1003 ± 25	1071 ± 25			1448 ± 19
^{137}Cs	1976 ± 11	2119 ± 11	3123 ± 28	3212 ± 30	2601 ± 9
^{144}Ce	27,700 ± 2800	29,500 ± 1600	25,900 ± 1600	35,700 ± 1700	31,800 ± 2100

ATMOSHPERIC RADIONUCLIDE DISINTEGRATION RATES

AUGUST 2, 1969 - FLIGHT 21A

SAMPLE NO.	1	2	3	4
ALTITUDE (Km)	15.2	15.2	15.2	15.2
LATITUDE (°N)	10-15	15-20	20-25	25-30
LONGITUDE (°W)	80-83	83-86	86-90	90-96
	DPM/10^3 SCM			
^{7}Be	7860 ± 110	5520 ± 130	9990 ± 110	12,000 ± 110
^{22}Na	0.8 ± 0.8	2.0 ± 1.4	2.2 ± 1.0	1.37 ± 0.77
^{54}Mn	42 ± 8	68 ± 8	32 ± 8	69 ± 7
^{60}Co	0.4 ± 0.4	1.62 ± 0.85	2.11 ± 0.71	1.52 ± 0.43
^{65}Zn			83 ± 10	
$^{95}ZrNb$	7839 ± 17	8760 ± 23	9850 ± 18	12,826 ± 18
^{103}Ru	847 ± 12	1263 ± 16	1135 ± 12	1454 ± 14
^{106}Ru	1760 ± 34	1935 ± 53	2145 ± 53	3139 ± 53
^{125}Sb	120 ± 9		157 ± 9	244 ± 8
^{137}Cs	264 ± 3	361 ± 9	335 ± 3	461 ± 3
^{140}Ba		12.0 ± 5.6		
^{144}Ce	5200 ± 1100	3000 ± 680	6200 ± 1100	6960 ± 410

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 18, 1969 - FLIGHT 22A

SAMPLE NO.	2	3	4	5	6	7	8	9	10
ALTITUDE (Km)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
LATITUDE (°N)	12-15	15-18	18-21	21-24	24-26	26-29	29-31	31-33	33-35
LONGITUDE (°W)	81-83	83-84	84-87	87-89	89-91	91-95	95-98	98-102	102-106
	DPM/10^3 SCM								
^{7}Be	940 ± 180	2060 ± 190			940 ± 91	1080 ± 310	2910 ± 390	3380 ± 440	3560 ± 350
^{22}Na					0.59 ± 0.50	0.6 ± 0.6	1.55 ± 0.93	1.06 ± 0.86	
^{54}Mn					16 ± 5	13 ± 6		9.1 ± 7.3	
^{60}Co						0.68 ± 0.43	0.68 ± 0.52	1.65 ± 0.63	
$^{95}ZrNb$	1727 ± 17	2202 ± 19		412 ± 8	2217 ± 58	1366 ± 34	2542 ± 51	3124 ± 55	1818 ± 46
^{103}Ru	1735 ± 20	2005 ± 22		354 ± 10	2192 ± 72	946 ± 38	928 ± 49	1362 ± 56	349 ± 43
^{106}Ru	223 ± 37	303 ± 42		58 ± 17	427 ± 17	305 ± 20	814 ± 37	967 ± 39	819 ± 44
^{125}Sb					20 ± 7	34 ± 8	53 ± 11	69 ± 10	37 ± 11
^{137}Cs					71 ± 2	54 ± 2	143 ± 3	160 ± 3	136 ± 4
^{140}Ba	2287 ± 94	2850 ± 110		512 ± 43	3700 ± 260	1480 ± 130	1210 ± 130	2390 ± 180	200 ± 58
^{144}Ce					680 ± 49	1300 ± 580	3230 ± 910	2290 ± 800	1640 ± 990

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

OCTOBER 18, 1969 - FLIGHT 23A

SAMPLE NO.	2	3	4	5	6	7	8	9	10
ALTITUDE (Km)	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
LATITUDE (°N)	12-15	15-18	18-21	21-24	24-26	26-29	29-31	31-33	33-34
LONGITUDE (°W)	81-83	83-84	84-87	87-89	89-91	91-95	95-99	99-102	102-107
	DPM/10^3 SCM								
^{7}Be	10,640 ± 270								
^{22}Na	6.4 ± 4.2				4.0 ± 3.3	11.1 ± 3.1	7.1 ± 2.3	7.4 ± 2.2	1.0 ± 1.0
^{54}Mn					176 ± 27	80 ± 24	260 ± 16	195 ± 16	78 ± 11
^{60}Co					3.0 ± 1.3	4.3 ± 1.4	5.0 ± 1.2	6.0 ± 1.3	1.06 ± 0.69
$^{95}ZrNb$	8297 ± 40	79,080 ± 13	157,840 ± 510	147,740 ± 160	177,810 ± 600	160,320 ± 440	54,830 ± 260	32,030 ± 200	7890 ± 100
^{103}Ru	934 ± 32	74,400 ± 150	156,850 ± 590	153,060 ± 190	191,940 ± 740	174,060 ± 560	29,190 ± 310	13,730 ± 190	1237 ± 79
^{106}Ru	3250 ± 110	8670 ± 290	14,000 ± 1100	14,560 ± 400	16,570 ± 220	14,570 ± 180	9540 ± 130	8750 ± 130	2919 ± 78
^{125}Sb					1150 ± 37	941 ± 29	925 ± 24	919 ± 23	294 ± 16
^{137}Cs	639 ± 40				1746 ± 14	1538 ± 12	1650 ± 10	1661 ± 10	603 ± 6
^{140}Ba	360 ± 44	111,600 ± 780	241,800 ± 3200	237,310 ± 970	342,900 ± 2900	315,700 ± 2200	70,600 ± 1100	24,190 ± 660	1490 ± 160
^{144}Ce					45,400 ± 3900	40,400 ± 3300	17,600 ± 2100	17,200 ± 2100	5200 ± 1300

ATMOSPHERIC RADIONUCLIDE DISINTEGRATION RATES

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 3, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1218	12°24'	58°24'	1238	12°24'	58°24'	1	286 ±30	77.3 ±1.1	50.9 ±8.7	31.5 ±5.7	6.9 ±1.9	1.8 ±1.2
MM 5	1155	13°06'	59°30'	1215	12°24'	58°24'	5	297 ±57	113.5 ±1.5	88.2 ±7.4	40.3 ±2.0	7.3 ± .8	2.61 ±.30
MM 10	1431	12°23'	58°23'	1451	12°45'	56°10'	10	231 ±15	18.9 ± .2	15.1	8.7 ± .8	43.8 ± .5	
MM 20	1255	12°24'	58°24'	1315	13°48'	57°24'	20	570 ±43	99.0 ±1.3	64.2 ±4.5	51.5 ±6.8		6.4 ±3.3
MM 24	1411	13°05'	59°30'	1431	12°24'	57°07'	24	576 ±11	114.0 ±1.5	97.8 ±1.1	39.9 ±1.8	7.67 ±.63	2.96 ± .30
MM 30	1400	14°00'	60°28'	1420	12°23'	58°23'	30	539 ±40	110.2 ±3.0	76.4 ±4.5	36.8 ±2.3	7.08 ±.76	2.67 ± .51
MM 40	1433	12°23'	58°23'	1443	13°02'	57°54'	40	389 ±75	63.3 ±2.8	53 ±12	56 ±13	15.0 ±4.9	
MM 50	1412	13°32'	60°00'	1428	12°23'	58°23'	50	1932 ±45	443.3 ±2.1	315 ±15	150 ±10	40.6 ±3.4	11.1 ±2.4
DI 1	1550	14°30'	54°06'	1610	13°06'	53°54'	1	265 ±26	85.9 ± .8	74.4 ±7.0	37.6 ±3.4	7.9 ±1.6	2.5 ± .6
DI 5	1612	13°06'	53°54'	1632	13°06'	53°54'	5	237 ±34	144.1 ±1.3	88.0 ±3.8	77.0 ±6.7	27.4 ±2.0	3.6 ±1.6
DI 10	1453	12°50'	55°40'	1513	13°08'	53°51'	10	106	11.6 ± .4	12.2	4.6 ±2.0	2.3 ±1.1	
DI 20	1642	13°06'	53°54'	1702	14°06'	55°06'	20	470 ±100	112.4 ± .6	84.6 ±9.4	42.8 ±5.5	9.1 ±1.5	2.5 ± .7
DI 24	1449	13°00'	54°57'	1509	14°23'	54°04'	24	604	53.5 ± .3	36.5 ±1.0	17.2 ±1.5	3.1 ± .5	.9 ± .3
DI 30	1527	13°08'	53°51'	1547	15°22'	54°12'	30	787 ±32	231.0 ±1.3	233 ±45	64.2 ±5.7	18.3 ±2.1	
DI 40	1523	13°08'	53°51'	1533	13°36'	54°31'	40	740 ±100	83.9 ±4.1	25 ±11	39 ±21	14.5 ±9.2	
DI 50	1504	13°25'	55°28'	1520	13°08'	53°51'	50	1620 ±350	342.7 ±4.1	297 ±13	102 ±24	14.4 ±7.0	
OC 1	1500	17°36'	54°36'	1520	16°12'	54°18'	1	319 ±49	81.5 ± .8	63 ±10	40.3 ±3.5	8.7 ±1.2	
OC 5	1439	17°36'	54°36'	1459	17°36'	54°36'	5	82 ±17	28.7 ± .4	23.4 ±1.3	11.6 ±1.6	2.4 ± .9	2.5 ±1.1
OC 10	1417	17°36'	54°36'	1437	17°36'	54°36'	10	339	78.8 ±1.4	50.8	29.4 ±7.1	7.9 ±2.5	3.0 ±1.3
OC 20	1353	17°54'	55°30'	1413	17°36'	54°36'	20	313 ±30	37.8 ± .9	21.5 ±7.1	11.4 ±4.2	6.0 ±2.1	
OC 24	1638	16°08'	54°36'	1658	17°15'	56°15'	24	548 ±38	9.6 ± .5	8.3 ±4.7			
OC 30	1556	16°25'	54°15'	1616	17°25'	55°45'	30	381 ±38	68.9 ± .6	65.6 ±3.2	28.6 ±2.0	8.0 ±1.2	12.1 ±7.3
OC 40	1614	17°36'	54°34'	1624	16°57'	55°03'	40	1010 ±110	470 ±10	384 ±19	167 ±23	97 ±12	13.4 ±8.2
OC 50	1555	16°00'	55°55'	1611	17°36'	54°34'	50	6450 ±830	8114 ±19	6710 ±130	2410 ±86	457 ±20	202 ±22
RA 1	1825	16°48'	59°12'	1845	17°00'	60°48'	1	276 ±64	61.3 ± .7	40.9 ±2.4	32.5 ±3.6	5.7 ±1.3	
RA 5	1804	16°48'	59°12'	1824	16°48'	59°12'	5	1197 ±44	63.3 ± .4	45.9 ±1.7	21.6 ±1.8	3.8 ± .9	1.1 ± .4
RA 20	1740	15°48'	57°48'	1800	16°48'	59°12'	20	210	4.3 ±1.1				
RA 24	1716	16°57'	58°20'	1736	16°48'	60°44'	24	422 ±16	2.6 ± .2				
RA 30	1625	17°15'	56°50'	1645	17°20'	59°10'	30	479	36.9 ± .4	24.5	11.3 ±1.8	3.37 ± .70	2.4 ±1.6
RA 40	1709	16°50'	59°12'	1719	16°58'	60°13'	40	1030 ±90	277.9 ±3.6	222 ±10	109.2 ±9.5	22.5 ±1.9	
RA 50	1649	16°30'	57°35'	1705	16°50'	59°12'	50	6300 ±1900	5223 ±41	4010 ±270	1778 ±68	364 ±33	121 ±18
IN 20	1725	17°10'	62°20'	1755	18°05'	66°05'	20	920	14.7 ±1.6		14.2 ±8.5	10.4 ±1.9	
IN 18	1855	17°06'	61°18'	2005	18°18'	67°12'	18	57	5.1 ± .6				

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 4, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN K ft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1248	12°23'	58°23'	1308	12°23'	58°23'	1	208	39.9 ± .3	24.7	20.3 ± 1.3	6.29 ± .54	.81 ± .22
MM 5	1225	13°05'	59°30'	1245	12°23'	58°23'	5	244 ± 30	57.8 ± 2.1	53.1 ± 7.2	26.8 ± 4.9	4.9 ± 1.3	3.7 ± 2.0
MM 20	1325	12°23'	58°23'	1345	13°47'	57°23'	20	541	44.2 ± 2.1	66.3	18.3 ± 5.7	14.1 ± 4.7	
MM 24	1307	12°58'	59°25'	1327	12°38'	57°08'	24	557 ± 29	9.6 ± .9	7.5 ± 3.0	7.4 ± 6.6		
MM 40	1424	12°23'	58°23'	1434	13°02'	57°54'	40	532 ± 99	160.9 ± 9.0	131 ± 11	135 ± 29	77.6 ± 8.4	
DI 1	1629	14°24'	54°04'	1649	13°08'	53°51'	1	399 ± 28	100.5 ± 1.0	76.2 ± 2.9	43.0 ± 5.0	9.8 ± 1.8	1.96 ± .74
DI 5	1650	13°08'	53°51'	1710	13°08'	53°51'	5	137	53.6 ± .4	47.9	18.5 ± 1.8	5.88 ± .91	1.55 ± .28
DI 20	1725	13°08'	53°51'	1745	14°06'	55°08'	20	468	12.6 ± .5	17.5	10.5 ± 5.0	5.4 ± 2.7	1.5 ± 1.0
DI 24	1345	13°06'	54°47'	1405	14°36'	54°06'	24	512	9.9 ± .6	5.9 ± 2.3	4.8 ± 3.0	4.3 ± 1.4	1.04 ± .89
DI 40	1510	13°08'	53°51'	1520	13°36'	54°31'	40	745 ± 55	726.3 ± 2.7	680 ± 18	396 ± 30	213.1 ± 4.0	19.1 ± 2.7
DI 50	1452	13°30'	55°45'	1458	13°08'	53°51'	50	2696	2042 ± 23	1872	620 ± 120	126 ± 38	62 ± 25
OC 1	1536	17°36'	54°34'	1556	16°17'	54°23'	1	342 ± 53	88.5 ± .4	71.4 ± 4.3	41.1 ± 1.7	10.0 ± .6	2.0 ± .3
OC 5	1512	17°36'	54°34'	1532	17°36'	54°34'	5	112 ± 81	24.5 ± .9	12.1	11.5 ± 3.7	9.8 ± 3.0	.7 ± .6
OC 10	1449	17°36'	54°34'	1509	17°36'	54°34'	10	287	67.3 ± .4	40.5	23.8 ± 2.3	5.8 ± .9	1.2 ± .4
OC 20	1425	16°17'	55°33'	1445	17°36'	54°34'	20	239 ± 27	13.5 ± .5	13.5 ± 1.0	8.5 ± 1.8	2.0 ± .8	
OC 24	1529	16°26'	54°29'	1549	17°33'	55°40'	24	477	36.0 ± .8	35.7	19.9 ± 4.1	1.9 ± 1.7	
OC 40	1603	17°36'	54°34'	1613	15°27'	57°12'	40	604	185.9 ± 4.3	151 ± 11	77 ± 21	24.0 ± 8.3	
OC 50	1544	16°00'	54°55'	1601	17°36'	54°34'	50	2410 ± 260	298.3 ± 5.0	280 ± 15	145 ± 32	40.3 ± 9.6	
RA 1	1912	16°50'	59°12'	1932	17°00'	60°32'	1	293 ± 22	56.2 ± .8	40.3 ± 2.2	21.2 ± 3.3	8.4 ± 1.7	1.3 ± .6
RA 5	1850	16°50'	59°12'	1910	16°50	59°12'	5	205 ± 28	59.0 ± 1.1	40.5 ± 5.7	23.5 ± 4.4	7.5 ± 2.0	
RA 20	1826	15°55'	58°52'	1846	16°50'	59°12'	20	412	32.1 ± 1.7	46.1	11.2 ± 2.1	.99 ± .62	
RA 24	1609	17°16'	58°00'	1629	17°00'	60°08'	24	397	29.1 ± .9	36 ± 13	15.9 ± 5.0	1.66 ± .44	
RA 40	1657	16°50'	59°12'	1707	16°55'	60°10'	40	660 ± 70	107.2 ± 4.2	85 ± 12	37 ± 20	16.5 ± 8.9	
RA 50	1638	16°35'	57°35'	1654	16°50'	59°12'	50	2180	1356 ± 11	1077	466 ± 59	96 ± 15	
ON 18	1037	18°04'	66°00'	1209	13°52'	60°20'	18	507	98.5 ± 1.1	74.3	31.3 ± 3.7	7.69 ± .65	
IN 18	1941	17°06'	61°27'	2049	18°30'	66°00'	18	290	41.2 ± 1.1	43.6	14.9 ± 3.8	2.53 ± .89	

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 5, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1324	12°23'	58°23'	1344	12°23'	58°23'	1	538	110.9 ± 1.4	90.0	60.8 ± 7.4	17.4 ± 2.5	1.3 ± .7
MM 5	1300	13°05'	59°30'	1320	12°23'	58°23'	5	206 ± 22	55.6 ± .3	47.9 ± 4.2	23.7 ± 1.6	5.72 ± .71	1.3 ± .2
MM 10	1418	12°23'	58°23'	1438	12°45'	56°20'	10	339 ± 39	69.7 ± .4	50.0 ± 5.4	30.3 ± 1.1	4.61 ± .60	1.0 ± .6
MM 20	1403	12°23'	58°23'	1423	13°50'	57°25'	20	179	19.3 ± 1.7	29.1		8.7 ± 4.6	
MM 30	1348	14°00'	60°28'	1408	12°23'	58°23'	30	72*	1.61 ± .24				
MM 32	1258	13°03'	59°43'	1318	12°33'	57°18'	32	128	2.5 ± .4			1.05 ± .59	.87 ± .62
MM 40	1422	12°23'	58°23'	1432	13°02'	57°54'	40	355 ± 88	56.1 ± .9	37.7 ± 9.0	8.8 ± 5.0		
MM 50	1400	13°28'	59°55'	1416	12°23'	58°23'	50	1210	128.7 ± 1.8	74.7	38.2 ± 6.8	10.2 ± 2.4	8.5 ± 2.0
DI 1	1702	14°20'	54°05'	1722	13°08'	53°51'	1	490 ± 49	109.7 ± 1.1	76.7 ± 5.4	48.3 ± 5.1	11.5 ± 1.6	2.30 ± .81
DI 5	1726	13°08'	53°51'	1746	13°08'	53°51'	5	205 ± 70	62.3 ± .5	37.8 ± 5.0	22.8 ± 2.1	9.50 ± .95	1.80 ± .54
DI 10	1445	12°50'	56°00'	1505	13°08'	53°51'	10	662 ± 37	239.5 ± 1.5	174 ± 12.	80.5 ± 7.0	68.2 ± 2.2	5.91 ± .90
DI 20	1758	13°08'	53°51'	1818	14°16'	55°25'	20	240	43.4 ± 1.1	51.4	14.1 ± 4.6	3.4 ± 2.2	1.5 ± 1.2
DI 30	1519	13°08'	53°51'	1539	15°45'	54°20'	30	111	3.1 ± .5	5.8 ± 2.5	3.3 ± 2.8		
DI 32	1332	12°45'	55°37'	1352	14°00'	53°52'	32	312	6.0 ± 1.2			3.7 ± 1.5	
DI 40	1512	13°08'	53°51'	1522	13°36'	54°31'	40	322	58.8 ± 3.9	51	51 ± 27		
DI 50	1453	13°26'	55°35'	1509	13°08'	53°51'	50	1310 ± 370	176.0 ± 3.9	135 ± 31	66 ± 24	23.7 ± 9.7	
OC 1	1612	17°36'	54°34'	1632	16°16'	54°17'	1	305 ± 22	91.7 ± .9	72.7 ± 2.5	51.8 ± 5.4	9.0 ± 1.5	2.0 ± .7
OC 5	1550	17°36'	54°34'	1610	17°36'	54°34'	5	209 ± 35	62.6 ± 1.1	43.6 ± 3.8	29.6 ± 6.0	7.4 ± 2.4	3.7 ± 1.1
OC 10	1526	17°36'	54°34'	1546	17°36'	54°34'	10	332 ± 31	111.3 ± 4.3	73.2 ± 7.1	43.9 ± 7.5	9.1 ± 2.1	1.5 ± 1.0
OC 20	1500	16°17'	55°30'	1520	17°36'	54°34'	20	133*	15.0 ± .8	25.8	6.7 ± 3.8		
OC 30	1545	16°25'	54°25'	1605	17°35'	55°10'	30	344 ± 44	51.6 ± 3.8	56.1 ± 6.0	25.8 ± 7.5	3.2 ± 1.4	
OC 32	1523	16°20'	54°50'	1543	17°31'	56°19'	32	377	26.7 ± 3.6	26	10.8 ± 1.9	2.2 ± .8	
OC 40	1603	17°36'	54°34'	1613	16°57'	55°03'	40	573	69.1 ± 1.3	50.4	23.3 ± 7.0	3.7 ± 3.0	
OC 50	1548	15°55'	54°53'	1559	17°36'	54°34'	50	1970 ± 110	198.6 ± 4.2	85 ± 11	66 ± 18	22.2 ± 7.1	
RA 1	1942	16°50'	59°12'	2002	17°00'	60°40'	1	275	99.7 ± .9	73.7	38.1 ± 4.0	7.6 ± 2.0	2.5 ± .8
RA 5	1920	16°50'	59°12'	1940	16°50'	59°12'	5	220 ± 39	60.2 ± 1.3	23.2 ± 4.3	18.8 ± 6.2	7.3 ± 2.7	
RA 10	1649	16°50'	59°12'	1709	17°05'	61°15'	10	364 ± 20	56.7 ± 3.1	44.5 ± 4.1	31.2 ± 8.0	6.7 ± 1.4	1.3 ± .6
RA 20	1854	15°57'	67°57'	1914	16°50'	59°12'	20	197	41.6 ± .8	33.6	23.1 ± 5.4	6.5 ± 1.4	4.3 ± 2.3
RA 30	1621	17°15'	57°00'	1641	16°50'	59°20'	30	412	24.7 ± .3	18.9	9.2 ± 1.4	1.8 ± .6	.75 ± .37
RA 32	1558	17°14'	58°04'	1618	17°11'	60°27'	32	466	70.5 ± .7	71.0	26.6 ± 2.6	8.5 ± .8	.91 ± .50
RA 40	1710	16°50'	59°12'	1720	16°55'	60°03'	40	2530 ± 100	1019.8 ± 3.9	854 ± 12	328 ± 16	59.7 ± 5.2	22.7 ± 4.8
RA 50	1641	16°34'	57°47'	1657	16°50'	59°12'	50	1280	84.6 ± 4.8	44	17.8 ± 6.8		
3IN 18	2012	17°05'	61°20'	2124	18°10'	65°30'	18	197 ± 40	31.1 ± .4	23.6 ± 8.0	10.8 ± 2.0	9.54 ± .65	1.4 ± 1.0
9IN 18	1716	17°10'	61°45'	1745	18°00'	65°30'	18	806 ± 25	91.7 ± 6.2	11.7	33.8 ± 2.9	7.16 ± .68	
IN 29	1620	17°11'	60°27'	1706	17°55'	66°00'	29	587 ± 20	107.6 ± .9	82.4 ± 3.7	33.6 ± 3.8	11.0 ± 1.1	
OU 50	1303	17°44'	64°44'	1400	13°28'	59°55'	50	2212	479.8 ± 6.8	244	166 ± 19	20.5 ± 3.5	
IN 50	1730	17°00'	60°50'	1828	18°00'	65°52'	50	1931	902.7 ± 7.4	717	276 ± 22	39.6 ± 3.8	22.3 ± 4.0

* Counted on counter which has been found to give consistantly low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 6, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1217	12°23'	58°23'	1237	12°23'	58°23'	1	334 ±41	86.1 ± .6	47.9 ±3.8	36.6 ±4.0	8.1 ±1.2	1.5 ±1.1
MM 5	1155	13°10'	59°36'	1215	12°23'	58°23'	5	218	56.8 ± .8	41.8	20.4 ±4.7		
MM 10	1437	12°21'	58°25'	1457	12°41'	56°21'	10	250	7.3 ± .7				
MM 20	1257	12°23'	58°23'	1317	13°50'	57°16'	20	467 ±40	89.0 ±4.0	64.9 ±8.3	32.7 ±1.9	6.8 ± .8	1.06 ± .32
MM 29	1424	13°04'	59°31'	1444	12°36'	56°57'	29	320 ±220	1.6 ±3.4			6.8 ±4.0	
MM 30	1406	13°54'	60°22'	1426	12°21'	58°25'	30	333 ±45	16.2 ± .4	11.9 ±2.0	5.1 ±1.3		
MM 40	1431	12°23'	58°23'	1441	13°02'	57°54'	40	612	72.6 ±2.1		46 ±12	18.7 ±5.4	8.7 ±4.8
MM 50	1414	13°28'	59°55'	1429	12°23'	58°23'	50	1090 ±230	132.6 ±1.7	123 ±16	44.8 ±7.5	4.1 ±2.9	
DI 1	1546	14°22'	54°03'	1606	13°08'	53°51'	1	302	73.2 ± .8	55.9 ±2.6	33.4 ±4.0	9.1 ±1.2	2.0 ± .7
DI 5	1607	13°08'	53°51'	1627	13°08'	53°51'	5	169 ±33	46.1 ± .5	30.4 ±5.5	19.6 ±2.0	4.4 ±1.1	1.4 ± .3
DI 10	1504	12°48'	55°49'	1524	13°14'	54°01'	10	345 ±15	24.4 ± .3	13.2 ±3.1	9.4 ±1.1	1.9 ± .4	
DI 20	1639	13°08'	53°51'	1659	14°10'	55°20'	20	160*	12.9 ± .3	34.9	3.4 ±1.4	1.0 ± .7	
DI 29	1458	12°53'	55°10'	1518	14°11'	54°00'	29	311	3.9 ±1.3		1.6 ±1.4		
DI 30	1535	13°14'	54°01'	1555	15°59'	54°27'	30	570 ±110	34.0 ± .5	23.5	15.6 ±1.3	3.6	.9 ± .5
DI 40	1519	13°18'	53°51	1529	13°36'	54°31'	40	460 ±100	158.0 ±4.4	77 ±18	144 ±30	26.3 ±9.5	
DI 50	1501	13°26'	55°32'	1517	13°08'	53°51'	50	1140 ±190	148.4 ±2.7	120	45 ±11		
OC 1	1456	17°36'	54°34'	1516	16°08'	54°14'	1	338 ±20	114.7 ± .5	94.8 ±2.7	47.0 ±2.2	12.51 + .66	2.11 ± .60
OC 5	1434	17°36'	54°34'	1454	17°36'	54°34'	5	214 ±33	68.9 ±1.0	56.5 ±5.3	31.5 ±9.4	7.4 ±2.2	1.27 ± .73
OC 10	1412	17°36'	54°34'	1434	17°36'	54°34'	10	236 ±51	67.0 ±1.8	51.7 ±9.7	21.7 ±6.1	8.6 ±3.0	
OC 20	1350	16°24'	55°24'	1410	17°36'	54°34'	20	262	9.1 ±1.0		14.4 ±5.1	2.8 ±2.4	
OC 30	1600	16°29'	54°25'	1620	17°2[illegible]	55°38'	30	91 ±8*	2.92± .24	6.6 ±2.1			
OC 40	1608	17°36'	54°34'	1618	16°5[illegible]	55°03'	40	400 ±160	44.2 ±3.1	56 ±13	39 ±10	5.7 ±3.2	10.5 ±5.9
OC 50	1550	15°58'	54°53'	1606	17°36'	54°34'	50	1150	285.5 ±4.4	235	88 ±24	28.1 ±7.2	
RA 1	1806	16°50'	59°12'	1826	16°50'	59°12'	1	209 ±21	85.3 ± .4	68.3 ±2.7	29.0 ±1.8	7.8 ± .7	2.46 ± .32
RA 5	1828	16°50'	59°12'	1848	17°00'	60°36'	5	165	29.8 ± .8	22.5	12.3 ±4.0	4.8 ±2.1	.90 ± .51
RA 20	1739	15°57'	57°56'	1759	16°50'	59°12'	20	162*	51.8 ±1.2	50.2	11.3 ±2.8	2.68 ± .89	
RA 29	1731	17°10'	58°16'	1751	17°05'	60°28'	29	176 ±26	6.0 ± .4	6.8 ±1.7	5.6 ±2.9	2.4 ±1.4	
RA 30	1627	17°17'	56°44'	1647	16°59'	59°03'	30	632 ±34	244.9 ±1.5	198.0 ±3.9	88.7 ±7.5	20.3 ±2.1	5.6 ±1.5
RA 40	1659	16°50'	59°12'	1709	16°57'	60°10'	40	530 ±130	294.6 ±3.7	281 ±15	90 ±19	62 ±8	12.4 ±5.5
RA 50	1640	16°34'	57°31'	1656	16°50'	59°12'	50	1170	544.7 ±7.0	469	204 ±41	74 ±14	16 ±9
OU 18	1007	18°10'	66°00'	1150	13°11'	59°40'	18	472	43.5 ± .3		14.8 ±1.6	3.69 ± .37	
IN 18	1904	17°10'	61°25'	2009	18°20'	66°30'	18	588	240.9 ±2.1		86.6 ±2.0	14.51 ± .30	

* Counted on counter which has been found to give consistantly low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 7, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10³ S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1316	12°23'	58°23'	1336	12°36'	57°10'	1	190	63.3 ± .4	53.2 ±1.0	24.7 ±1.0	5.2 ±1.6	2.75 ± .74
MM 5	1254	12°23'	58°23'	1314	12°23'	58°23'	5	236	45.0 ±1.2	22.1	20.2 ±5.7	3.3 ±2.8	2.52 ± .91
MM 20	1229	13°12'	59°36'	1249	12°23'	58°23'	20	459	86.2 ±1.7	65.2	21 ±10	7.3 ±3.3	2.7 ±2.0
MM 24	1304	13°05'	59°25'	1324	12°35'	57°15'	24	639	49.3 ± .9	33.2	22.1 ±4.6	4.8 ±2.0	1.52 ± .61
MM 40	1424	12°23'	58°23'	1434	13°02'	57°54'	40	1200 ± 650	105.1 ±1.5	41.7 ±8.2	93 ±12	43.2 ±4.1	10.3 ±2.8
MM 50	1407	13°28'	59°55'	1423	12°23'	58°23'	50	1130 ± 140	94.4 ±5.2	117 ±19	66	37.9 ±5.6	
DI 1	1410	12°59'	55°08'	1430	13°08'	53°51'	1	224 ±7	62.9 ± .3	48.4 ±1.1	30.5 ±1.2	6.5 ± .5	1.3 ± .2
DI 5	1433	13°08'	53°51'	1453	13°08'	53°51'	5	234 ±57	64.8 ±1.0	45.1 ±3.1	26.4 ±5.9	6.1 ±2.7	1.6 ± .8
DI 20	1506	13°08'	53°51'	1526	14°37'	54°05'	20	323	22.7 ±1.1		2.2 ±4.7	.3 ±3.0	
DI 24	1342	12°55'	55°15'	1402	14°05'	54°00'	24	337 ±29	28.7 ± .8	29.2 ±7.1	7.8 ±5.4	1.8 ±1.2	
DI 40	1512	13°08'	53°51'	1522	13°36'	54°31'	40	595	88.4 ±3.1	53	68 ±18	26.2 ±6.9	
DI 50	1454	13°26'	55°32'	1510	13°08'	53°51'	50	1573 ± 100	160.9 ±3.7	117 ±11	50 ±24	17.7 ±7.9	29 ±24
OC 1	1654	17°36'	54°34'	1714	17°25'	55°55'	1	301 ±21	80.3 ± .9	63.9 ±2.6	39.7 ±4.1	8.5 ±1.4	1.0 ± .6
OC 5	1632	17°36'	54°34'	1652	17°36'	54°34'	5	192 ±29	90.0 ±1.1	76.9 ±3.3	30.1 ±4.8	9.9 ±1.9	.9 ± .8
OC 10	1609	17°36'	54°34'	1629	17°36'	54°34'	10	185	63.9 ±1.5	50.6	8.9 ±8.1	4.5 ±3.2	1.8 ±1.2
OC 20	1547	16°07'	54°16'	1607	17°36'	54°34'	20	360	22.7 ±1.9	22.9			
OC 24	1537	16°15'	54°15'	1557	17°25'	55°40'	24	300 ± 100	14.2 ±1.6	9.8 ±1.5	4.8 ±3.3	18.8 ±2.8	2.9 ±2.0
OC 40	1600	17°36'	54°34'	1610	16°57'	55°03'	40	519 ±34	70.0 ±5.1	35 ±11	61.8 ±8.8	9.1 ±3.1	2.5 ±1.3
OC 50	1542	15°58'	54°43'	1558	17°36'	54°34'	50	1690 ± 180	284.0 ±3.1	201 ±35	151 ±11	64.9 ±3.2	11.4 ±4.8
RA 1	1744	17°05'	57°47'	1804	16°50'	59°12'	1	264 ±42	73.5 ± .4	58.9 ±4.0	29.4 ±2.2	9.12 ± .62	2.44 ± .61
RA 5	1805	16°50'	59°12'	1825	16°50'	59°12'	5	158	53.7 ± .4	47.1 ±1.2	21.8 ±1.8	5.02 ± .88	1.04 ± .25
RA 20	1837	16°50'	59°12'	1857	17°00'	60°37'	20	513	60.6 ± .6	43.5	26.7 ±5.3	21.8 ±1.5	3.2 ±1.0
RA 24	1617	17°05'	58°00'	1637	17°00'	60°20'	24	127	7.1 ±1.1	12.8	13 ±12	9.6 ±3.2	2.7 ±2.3
RA 40	1653	16°50'	59°12'	1703	16°57'	60°10'	40	124 ±34	26.9 ±1.2	24.8 ±3.5	10.0 ±8.2	9.6 ±3.2	
RA 50	1634	16°34'	57°31'	1650	16°50'	59°12'	50	1930 ± 430	288.7 ±1.8	159 ±18	139 ±11	55.3 ±3.4	
OU 20	1051	18°00'	65°55'	1229	13°12'	59°36'	20	196	58.0 ±2.6	38.8	19.6 ± .9	4.13 ± .19	
IN 20	1857	17°00'	60°37'	2015	18°27'	61°21'	20	319	177.7 ±1.6	141.3	73.7 ±5.6	10.45 ± .98	

MAY 8, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 60	1401	13°15'	59°40'	1431	12°40'	56°45'	60	23850 ± 8200	36570 ± 140	27050 ± 1160	12170 ± 350	2140 ± 390	679 ± 36
DI 60	1459	13°08'	53°51'	1526	13°08'	53°51'	60	36370 ± 6810	49830 ± 280	33910 ± 93	14740 ± 300	2820 ± 600	892 ± 46
OC 60	1554	17°36	54°34'	1621	17°36'	54°34'	60	19790 ± 2060	37010 ± 210	28870 ± 250	12090 ± 60	1990 ± 110	732 ± 43
RA 60	1643	17°05'	57°45'	1710	17°00'	60°39'	60	53000 ± 12000	67440 ± 100	48500 ± 2300	21740 ± 210	4770 ± 220	1331 ± 34

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 9, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1323	12°23'	58°23'	1343	12°37'	57°09'	1	386 ± 13	97.6 ± .5	66.1 ± 1.3	39.3 ± 2.7	9.9 ± .8	1.0 ± .6
MM 5	1301	12°23'	58°23'	1321	12°23'	58°23'	5	115 ± 40	44.2 ± 1.0	31.7 ± 3.0	16.1 ± 4.4		1.0 ± .7
MM 10	1412	12°23'	58°23'	1432	12°45'	56°20'	10	355 ± 75	157.1 ± 4.1	128 ± 12	54.8 ± 3.6	10.1 ± 2.5	3.51 ± .72
MM 20	1235	13°13'	59°39'	1255	12°23'	58°23'	20	282	48.2 ± .8	36	24.2 ± 4.4	4.5 ± 1.6	
MM 30	1340	13°55'	60°20'	1400	12°23'	58°23'	30	71 ± 13	1.99 ± .34	3.7 ± 2.1	2.2 ± 1.1	1.7 ± .9	
MM 40	1425	12°23'	58°23'	1433	13°02'	57°54'	40	204 ± 64	26.8 ± 1.5	43.3 ± 4.3	14.4 ± 8.4	7.7 ± 4.1	
DI 1	1418	12°56'	55°05'	1438	13°08'	53°51'	1	219	58.2 ± 2.0	50.6 ± 1.1	28.5 ± 1.7	3.12 ± .52	.7 ± .5
DI 5	1441	13°08'	53°51'	1501	13°08'	53°51'	5	127 ± 19	46.6 ± .8	33.3 ± 2.1	14.2 ± 4.0	5.8 ± 1.5	
DI 10	1439	12°50'	55°50'	1459	13°08'	53°51'	10	459 ± 52	97.3 ± 1.0	62.8 ± 8.2	32.5 ± 1.5	6.5 ± .5	1.98 ± .23
DI 20	1515	13°08'	53°51'	1535	14°45'	54°07'	20	330	48.2 ± .4	44.0	20.4 ± 2.2	3.24 ± .86	1.51 ± .49
DI 30	1512	13°08'	53°51'	1532	15°55'	54°15'	30	80 ± 21	2.46 ± .57				
DI 40	1513	13°08'	53°51'	1523	13°36'	54°31'	40	443 ± 91	29.5 ± 3.0	18.5 ± 9.3		13.1 ± 6.9	
DI 50	1453	13°26'	55°32'	1509	13°08'	53°51'	50	1900 ± 550	80.9 ± 1.3	79 ± 50	70.6 ± 8.2	4.2 ± 2.9	2.3 ± 1.7
OC 1	1656	17°36'	54°34'	1716	17°20'	56°00'	1	243 ± 22	69.9 ± .4	50.1 ± 1.3	26.6 ± 2.0	6.11 ± .66	1.6 ± .7
OC 5	1635	17°36'	54°34'	1655	17°36'	54°34'	5	140 ± 70	36.2 ± 1.0	22.0 ± 4.2	18.2 ± 4.8	5.3 ± 2.7	
OC 10	1614	17°36'	54°34'	1634	17°36'	54°34'	10	96 ± 51	21.3 ± .7	15.7	10.4 ± 3.7	1.9 ± 1.4	
OC 20	1552	15°57'	54°18'	1612	17°36'	54°34'	20	232	29.1 ± .4	23.0	7.7 ± 1.9	1.6 ± .8	
OC 30	1537	16°25'	54°25'	1557	17°25'	55°40'	30	31 ± 20*	.95 ± .49	4.8 ± 2.1	3.7 ± 2.2	4.2 ± 1.8	
OC 40	1605	17°36'	54°34'	1614	16°57'	55°03'	40	311	52.9 ± 4.4	46	35 ± 24		
OC 50	1546	15°58'	54°53'	1602	17°36'	54°34'	50	1140 ± 240	232.0 ± 1.8	178 ± 5	79 ± 10	20.7 ± 3.9	5.4 ± 1.7
RA 1	1740	17°05'	57°50'	1800	16°50'	59°12'	1	212 ± 69	62.0 ± .8	47 ± 10	30.3 ± 4.4	7.9 ± 1.4	1.1 ± .7
RA 5	1802	16°50'	59°12'	1822	16°50'	59°12'	5	212 ± 28	46.5 ± 1.0	24.6 ± 4.5	22.2 ± 5.0	5.3 ± 2.1	.8 ± .7
RA 10	1638	16°50'	59°12'	1658	17°05'	61°40'	10	214 ± 19	41.5 ± 1.0	29.8 ± 1.7	15.9 ± 2.9	5.6 ± 1.0	1.17 ± .52
RA 20	1832	16°50'	59°12'	1852	17°02'	60°45'	20	163*	49.4 ± .4	39.3	25.0 ± 2.1	4.14 ± .73	
RA 30	1607	17°15'	56°55'	1627	16°50'	59°12'	30	362	1.21 ± .22			1.8 ± .6	
RA 40	1700	16°50'	59°12'	1710	16°57'	60°10'	40	740 ± 140	862.7 ± 7.1	686 ± 15	272 ± 50	146 ± 16	4.7 ± 3.1
RA 50	1639	16°34'	57°31'	1655	16°50'	59°12'	50	1711	569 ± 12	467	155 ± 28	57 ± 13	9.8 ± 7.0
OU 20	1055	18°05'	66°00'	1235	13°13'	59°39'	20	245	77.8 ± 1.1	61.8	30.2 ± 3.4	6.47 ± .59	
IN 20	1852	17°02'	60°45'	2004	18°05'	66°00'	20	302	75.9 ± 1.1	38.2	27.1 ± 3.2	7.55 ± .59	

* Counted on counter which has been found to give consistently low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 10, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba	^{58}Co	^{88}Y
MM 01	1214	12°23'	58°23'	1234	12°23'	58°23'	1	245 ± 120	58.5 ± .4	37.3 ± 7.7	23.3 ± 1.9	5.76 ± .86	1.48 ± .28		
MM 05	1151	13°08'	59°35'	1211	12°23'	58°23'	5	150 ± 15	58.8 ± .4	50.3 ± 1.2	21.8 ± 1.8	5.26 ± .66	1.91 ± .81		
MM 10	1415	13°05'	59°30'	1435	12°40'	58°39'	10	626	87.6 ± .9	47.8 ± 1.2	29.1 ± 4.8	7.6 ± 1.5	1.08 ± .55		
MM 20	1252	12°23'	50°23'	1312	13°41'	57°28'	20	363	39.7 ± 1.0	20.1	7.0 ± 4.5	4.4 ± 2.7	1.12 ± .71		
MM 29	1304	12°59'	59°14'	1324	12°30'	57°18'	29	230	8.4 ± 2.0						
MM 30	1348	13°34'	60°03'	1408	13°05'	59°30'	30	146*	5.2 ± .2	10.5	2.1 ± 1.2	1.36 ± .60			
MM 40	1425	12°23'	58°23'	1430	13°02'	57°54'	40	332	26.8 ± 2.5		28 ± 14				
MM 50	1403	13°28'	59°55'	1418	12°23'	58°23'	50	1540 ± 140	323.5 ± 5.0	242 ± 19	152 ± 27	84 ± 10		72 ± 21	16 ± 4
DI 01	1551	14°25'	54°05'	1611	13°08'	53°51'	1	235 ± 19	74.3 ± .8	55.8 ± 2.8	28.9 ± 2.0	5.39 ± .63	1.3 ± 1.0		
DI 05	1613	13°08'	53°51'	1633	13°08'	53°51'	5	237	54.1 ± 1.3	34.7	8.8 ± 7.2	5.7 ± 2.8	1.6 ± 1.0		
DI 10	1443	12°55'	55°20'	1503	13°09'	53°51'	10	559	113.6 ± 4.1	73.8	39.6 ± 3.6	8.2 ± 1.1	2.81 + .77		
DI 20	1645	13°08'	53°51'	1705	14°03'	55°10'	20	253	55.7 ± .7	39.8	24.8 ± 4.4	7.5 ± 3.3	4.3 + 3.0		
DI 29	1343	12°54'	54°54'	1403	14°08'	53°58'	29	206	1.1 ± 2.0		6.5 ± 3.3				
DI 30	1515	13°09'	53°51'	1535	15°30'	54°19'	30	144*	.95 ± .60		2.0 ± 2.5				
DI 40	1509	13°08'	53°51'	1519	13°36'	54°31'	40	540 ± 40	319.9 ± 1.7	286	222 ± 22	148.4 ± 9.6	10.2 ± 3.2	84 ± 10	32.0 ± 2.5
DI 50	1449	13°26'	55°32'	1505	13°08'	53°51'	50	1500 ± 53	256.2 ± 4.1	192 ± 10	78 ± 23	29.6 ± 6.7	17.1 ± 9.1		
OC 1	1502	17°36'	54°34'	1522	16°48'	54°21'	1	199	51.0 ± .3	35.8	18.9 ± 1.3	5.3 ± .6	1.08 ± .17		
OC 5	1440	17°36'	54°34'	1500	17°36'	54°34'	5	136	55.0 ± 1.4	38.0	19.0 ± 6.5	1.5 ± 3.4			
OC 10	1418	17°36'	54°34'	1438	17°36'	54°34'	10	304	142.3 ± 1.8	67.4	11.6 ± 8.0	7.0 ± 3.1	1.5 ± 1.0		
OC 20	1355	16°15'	55°35'	1415	17°36'	54°34'	20	350	30.1 ± 1.0	24.4	19.5 ± 5.3	3.7 ± 2.4	1.17 ± .81		
OC 29	1538	16°18'	54°16'	1558	17°18'	56°15'	29	31 ± 96		4 ± 16					
OC 30	1544	16°36'	54°27'	1604	17°23'	55°56'	30	144	1.25 ± .51	4.9	4.4 ± 2.7	2.3 ± 1.4			
OC 40	1558	17°36'	54°34'	1608	16°57'	55°03'	40	83 ± 42	14.8 ± .5	9.6 ± 5.4	22.7 ± 7.8	4.8 ± 1.1		7.5 ± 2.1	2.5 ± .7
OC 50	1541	15°58'	54°53'	1557	17°36'	54°34'	50	1655	432.8 ± 4.1	308	167 ± 11	42.2 ± 3.5	10.1 ± 2.6		
RA 1	1831	16°50'	59°12'	1851	17°00'	60°35'	1	137	48.0 ± .8	36.7	25.5 ± 4.0	3.9 ± 1.7	1.40 ± .62		
RA 5	1809	16°50'	59°12'	1829	16°50'	59°12'	5	132	61.9 ± .5	51.4	18.0 ± 2.3	3.7 ± 1.2	1.01 ± .34		
RA 10	1641	16°50'	59°20'	1701	16°46'	61°09'	10	408 ± 20	80.9 ± 1.6	48.3 ± 3.0	27.0 ± 4.2	7.4 ± 1.3	1.64 ± .64		
RA 20	1744	16°00'	57°56'	1804	16°50'	59°12'	20	290	28.6 ± .7	23.1	13.6 ± 3.5	3.3 ± 1.3			
RA 29	1619	16°57'	58°03'	1639	17°01'	60°29'	29	160 ± 100	5.3 ± .7						
RA 30	1615	17°13'	57°37'	1635	16°50'	59°20'	30	54	.97 ± .23						
RA 40	1651	16°50'	59°12'	1701	16°57'	60°10'	40	970 ± 150	1280 ± 34	1234 ± 35	957 ± 54	540 ± 19	22.4 ± 9.0	419 ± 36	119 ± 12
RA 50	1632	16°34'	57°31'	1648	16°50'	59°12'	50	1930 ± 120	553.6 ± 5.6	377 ± 13	286 ± 30	70.6 ± 8.0	20 ± 10	162 ± 23	61 ± 10
OU 18	1002	18°09'	66°10'	1137	13°52'	60°20'	18	182	18.9 ± .7	10.1	6.3 ± 1.8	6.36 ± .50			
IN 18	1901	17°05'	61°09'	2009	18°15'	66°00'	18	402	197.6 ± 1.9	147	72.1 ± 5.8	12.28 ± .90			
OU 29	1202	17°30'	64°27'	1304	12°59'	59°14'	29	128	5.48 ± .71	10.9 ± 5.3		1.86 + .59			
IN 29	1639	17°01'	60°29'	1700	18°08'	65°59'	29	438	120.8 ± 3.1	81.4	31.1 ± 7.2	10.6 ± 1.8			
OU 30	1300	17°44'	64°42'	1348	13°34'	60°03'	30	189	6.01 ± .90		3.4 ± 2.0	3.24 ± .76			
OU 50	1306	17°44'	64°42'	1403	13°28'	59°55'	50	1622	633.2 ± 7.3	531	209 ± 20	48.0 ± 3.5			
IN 50	1706	17°02'	60°46'	1751	17°59'	65°53'	50	4438	2234 ± 13	1733	781 ± 40	167.9 ± 6.1		76 ± 17	18 ± 6

* Counted on counter which has been found to give consistently low ^7Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 11, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1211	12°23'	58°23'	1231	12°23'	58°23'	1	177	56.3 ± 1.1	39.9	19.4 ± 5.0	8.5 ± 2.5	1.33 ± .77
MM 5	1145	13°05'	55°30'	1205	12°25'	58°25'	5	247	91.2 ± 1.2	40.8	21.0 ± 4.7	3.1 ± 2.2	1.76 ± .65
MM 10	1418	12°33'	58°23'	1438	12°35'	56°25'	10	167	26.6 ± .6	14.6	5.0 ± 3.3	4.1 ± 1.2	
MM 20	1249	12°23'	58°24'	1309	13°40'	57°30'	20	225	55.1 ± .9	37.9	28.5 ± 5.7	7.6 ± 1.5	1.3 ± 1.2
MM 29	1347	13°50'	60°20'	1407	12°33'	58°23'	29	229	4.82 ± .73	8.6		3.0 ± 2.0	
MM 31	1305	13°00'	59°20'	1325	12°20'	57°00'	31	320 ± 100	6.8 ± 2.1				
MM 40	1421	12°23'	58°23'	1431	13°02'	57°54'	40	406	100.5 ± 4.3	80	89 ± 27	12.9 ± 9.7	
MM 50	1404	13°28'	59°55'	1420	12°23'	58°23'	50	1190	372.2 ± 6.0	282	184 ± 33	50 ± 11	
DI 01	1550	14°32'	54°04'	1610	13°08'	53°51'	1	152	62.9 ± .9	58.0	29.7 ± 4.2	6.2 ± 1.7	
DI 05	1612	13°08'	53°51'	1632	13°08'	53°51'	5	181	77.6 ± 1.4	64.2	25.9 ± 6.3	12.3 ± 3.1	2.1 ± 1.0
DI 10	1445	12°45'	55°45'	1505	13°08'	53°51'	10	222	28.5 ± .2	18.3	11.7 ± 1.1	2.62 ± .40	
DI 20	1644	13°08'	53°51'	1704	14°10'	55°25'	20	123*	13.1 ± .8	8.8	5.4 ± 3.3		
DI 29	1517	13°08'	53°51'	1537	15°20'	54°10'	29	187*	2.97 ± .20	12.5			
DI 31	1340	12°55'	55°17'	1400	14°14'	54°05'	31	310	0				
DI 40	1509	13°08'	53°51'	1520	13°36'	54°31'	40	292	47.4 ± 3.6	30 ± 10	53 ± 26	11.1 ± 9.0	
DI 50	1449	13°26'	55°32'	1505	13°08'	53°51'	50	2130	667.5 ± 2.6	563	249 ± 13	51.4 ± 4.1	13.0 ± 2.5
OC 01	1459	17°36'	54°34'	1519	16°20'	54°17'	1	362	71.2 ± .9	54.3	39.8 ± 5.0	11.0 ± 1.8	1.20 ± .50
OC 05	1437	17°36'	54°34'	1457	17°36'	54°34'	5	104	8.9 ± .9			5.9 ± 2.8	1.12 ± .89
OC 10	1414	17°36'	54°34'	1434	17°36'	54°34'	10	359	120.8 ± 1.6	77.0	51.4 ± 8.9	10.9 ± 2.8	1.18 ± .97
OC 20	1350	16°15'	55°38'	1410	17°36'	54°34'	20	411	33.5 ± .9	22.3 ± 3.4	19.9 ± 4.9	2.1 ± 1.7	5.0 ± 3.5
OC 29	1544	16°35'	54°25'	1604	17°25'	55°50'	29	309	5.05 ± .78		6.0 ± 4.2		
OC 31	1530	16°43'	54°28'	1550	17°13'	56°12'	31	230	12.2 ± 2.1			3.6 ± 1.8	
OC 40	1605	17°36'	54°34'	1615	16°57'	55°03'	40	430 ± 110	123.8 ± 4.4	69	65 ± 21	17.3 ± 9.6	
OC 50	1545	15°58'	54°53'	1603	17°36'	54°34'	50	6640	5687 ± 21	4110	1722 ± 92	385 ± 26	129 ± 20
RA 01	1825	16°50'	59°12'	1845	17°00'	60°30'	1	320	70.0 ± .9	54.9	27.2 ± 4.3	7.1 ± 1.7	1.05 ± .48
RA 05	1803	16°50'	59°12'	1823	16°50'	59°12'	5	108	22.2 ± 1.0	7.8	8.5 ± 4.8		
RA 10	1642	16°50'	59°12'	1702	17°05'	61°25'	10	539	84.3 ± .9	55.6	26.7 ± 4.7	8.0 ± 1.5	1.87 ± .63
RA 20	1739	15°52'	57°47'	1759	16°50'	59°12'	20	315*	29.2 ± 3.2	34.6 ± 1.0	8.0 ± 1.6	1.91 ± .69	.95 ± .44
RA 29	1612	17°15'	56°55'	1632	16°50'	59°12'	29	163*	5.12 ± .21	14.4	.7 ± 1.1	3.51 ± .59	
RA 31	1604	17°00'	57°51'	1624	16°56'	60°08'	31		8.6 ± 2.2			3.6 ± 1.8	
RA 40	1659	16°50'	59°12'	1709	16°57'	60°10'	40	353	340.0 ± 5.9	299	166 ± 35	45 ± 11	
RA 50	1638	16°34'	57°31'	1656	16°50'	59°12'	50	2637	461.1 ± 6.3	337	175 ± 37	49 ± 11	
OU 18	0958	18°08'	66°08'	1136	13°40'	60°00'	18	219	29.7 ± .8	26.1	8.2 ± 1.8	1.75 ± .45	
IN 18	1855	17°05'	61°10'	2000	18°30'	66°30'	18	610	339.8 ± 2.8	257 ± 12	121.2 ± 7.9	21.3 ± 1.3	
OU 29	1259	17°45'	64°40'	1347	13°50'	60°20'	29	198	6.7 ± .8	14.9	5.2 ± 2.3	4.40 ± .73	
IN 29	1707	17°10'	62°00'	1740	17°38'	64°45'	29	305	87.7 ± 2.7	58	35.9 ± 6.3	5.8 ± 1.2	
OU 31	1209	17°44'	64°42'	1305	13°00	59°20'	31	168	14.2 ± .9	10.6		1.26 ± .68	
IN 31	1624	16°56'	60°08'	1700	17°35'	64°10'	31	324	70.4 ± 1.9	44	22.0 ± 5.0	5.5 ± 1.2	
OU 50	1308	17°44'	64°42'	1404	13°28'	59°55'	50	1905	397.0 ± 5.6	340 ± 31	155 ± 18	25.3 ± 3.1	
IN 50	1714	17°02'	60°46'	1757	17°59'	65°53'	50	740	399.1 ± 6.9	567	88 ± 15	29.8 ± 3.8	

* Counted on counter which has been found to give consistently low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 12, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1216	12°23'	58°23'	1236	12°23'	58°23'	1	109	38.7 ± .8	28.1	12.9 ± 3.8		.75 ± .44
MM 5	1154	13°10'	59°30'	1214	12°23'	58°23'	5	234	57.8 ± 1.0	34.4	24.0 ± 4.7	6.4 ± 2.1	.67 ± .45
MM 10	1415	13°05'	59°30'	1435	12°40'	56°41'	10	396	106.8 ± 1.0	73.5	38.3 ± 5.3	8.2 ± 1.6	2.06 ± .70
MM 20	1254	12°23'	58°23'	1314	13°46'	57°30'	20	253	41.4 ± 1.0	20.8	11.6 ± 5.9	4.2 ± 2.2	2.1 ± 1.0
MM 29	1347	13°56'	60°18'	1407	13°05'	59°30'	29	248*	23.0 ± .8	17.6	10.8 ± 3.9	1.1 ± 1.8	-
MM 40	1429	12°23'	58°23'	1439	13°02'	57°54'	40	311	16.3 ± 1.1	8.9	9.8 ± 6.0	4.4 ± 3.0	
MM 50	1410	13°28'	59°55'	1426	12°23'	58°23'	50	1790	157.6 ± 4.3	96	91 ± 22		9.3 ± 7.9
DI 01	1549	14°25'	54°23'	1609	13°08'	53°51'	1	238	85.0 ± .3	67.0 ± .9	35.6 ± 1.7	8.07 ± .62	1.63 ± .22
DI 05	1611	13°08'	53°51'	1631	13°08'	53°51'	5	333	74.3 ± 1.4	35.9 ± 4.0	37.4 ± 7.9	8.2 ± 2.7	2.6 ± 1.3
DI 10	1443	12°52'	55°51'	1503	13°08'	53°51'	10	328	81.3 ± .9	57.8	40.2 ± 5.4	6.3 ± 1.5	1.67 ± .61
DI 20	1642	13°08'	53°51'	1702	14°00'	55°00'	20	220	15.8 ± 1.0	15.3	12.6 ± 8.9	.6 ± 2.4	1.3 ± 2.1
DI 29	1517	13°08'	53°51'	1537	15°22'	54°12'	29	448	94.1 ± 1.0	75.5	37.5 ± 6.3	8.3 ± 2.9	1.9 ± 1.4
DI 40	1517	13°08'	53°51'	1526	13°36'	54°31'	40	740	100.2 ± 4.5	83.9	86 ± 27	8 ± 10	
DI 50	1459	13°26'	55°32'	1515	13°08'	53°51'	50	3750	2102 ± 13	1600	748 ± 68	148 ± 18	20 ± 10
OC 02	1502	17°36'	54°34'	1522	16°06'	54°18'	2	100	51.1 ± .8	43.1	30.2 ± 4.2	4.1 ± 1.6	
OC 05	1440	17°36'	54°34'	1500	17°36'	54°34'	5	59	6.76 ± .69				
OC 10	1418	17°36'	54°34'	1438	17°36'	54°34'	10	71	43.5 ± 1.0	31.3	9.8 ± 5.0	3.0 ± 2.0	1.55 ± .83
OC 20	1354	16°10'	55°36'	1414	17°36'	54°34'	20	318	430.0 ± 2.9	383	128 ± 13	40.5 ± 2.8	
OC 29	1545	16°03'	54°18'	1605	17°30'	55°27'	29	490	275.7 ± 2.1	249	111 ± 11	17.7 ± 2.8	5.7 ± 1.9
OC 40	1607	17°36'	54°34'	1617	16°57'	55°03'	40	826	78.7 ± 4.0	40 ± 12	69 ± 24		
OC 50	1548	15°58'	54°53'	1604	17°36'	54°34'	50	4460	1427 ± 10	1934	848 ± 68	185 ± 20	40 ± 13
RA 01	1832	16°50'	59°12'	1852	17°00'	60°40'	1	390	92.2 ± 1.1	60.3	34.7 ± 5.7	12.4 ± 1.8	1.47 ± .66
RA 05	1810	16°50'	59°12'	1830	16°50'	59°12'	5	73	58.4 ± .4	48.3	21.1 ± 2.1	2.2 ± 1.0	.76 ± .26
RA 10	1645	16°50'	59°20'	1705	17°11	61°13'	10	370	87.2 ± .3	61.1	34.6 ± 1.6	6.32 ± .49	1.29 ± .21
RA 20	1746	15°57'	57°54'	1806	16°50'	59°12'	20	742 ± 30	325.4 ± 2.0	215 ± 15	126 ± 14	25.1 ± 5.6	20.0 ± 4.9
RA 29	1615	17°11'	56°48'	1635	16°50'	59°20'	29	539	151.6 ± 1.2	113	63.5 ± 6.8	13.5 ± 2.2	
RA 40	1657	16°60'	59°12'	1707	16°57'	60°10'	40	1257	326.6 ± 6.1	247	106 ± 38	19 ± 11	
RA 50	1637	16°34'	57°31'	1653	16°50'	59°12'	50	2097	1427 ± 10	1164	481 ± 48	89 ± 13	15.4 ± 7.9
IN 31	1637	16°49'	60°17'	1730	18°15'	66°31'	31	490 ± 67	109.9 ± .3	77.8 ± 5.9	40.7 ± 1.2	6.99 ± .83	1.82 ± .17
OU 50	1312	17°44'	64°42'	1409	13°28'	59°55'	50	2810 ± 140	390.4 ± 1.2	256 ± 30	151.3 ± 3.8	27.0 ± 1.5	6.73 ± .42
IN 50	1902	17°08'	61°48'	2015	18°30'	67°08'	50	2600	759.5 ± 1.3	514 ± 86	280.0 ± 6.2	51.5 ± 1.9	12.20 ± .71

* Counted on counter which has been found to give consistently low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 13, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 01	1212	12°23'	58°23'	1232	12°23'	58°23'	1	3100 ± 1300	1601.6 ± 5.4	1205	597 ± 10	86.5 ± 7.8	22.6 ± 7.6
MM 05	1150	13°08'	59°35'	1210	12°23'	58°23'	5	81	41.1 ± .9	29.2	17.0 ± 4.4	3.7 ± 2.1	.74 ± .52
MM 20	1252	12°23'	58°23'	1312	13°12'	57°49'	20	341	227.4 ± 1.8	187	89.2 ± 8.8	16.8 ± 2.8	2.11 ± .93
DI 01	1556	14°24'	54°05'	1616	13°08'	53°51'	1	896	266.9 ± 1.6	209	101.6 ± 7.5	18.1 ± 2.2	3.05 ± .84
DI 05	1617	13°08'	53°51'	1637	13°08'	53°51'	5	291	93.2 ± 1.5	79.2	39.7 ± 7.2	10.1 ± 3.1	
DI 20	1648	13°08'	53°51'	1708	14°00'	54°57'	20	179	75.4 ± .6	57.9	29.5 ± 3.0	7.4 ± 1.1	
OC 01	1503	17°36'	54°34'	1523	16°15'	54°18'	1	323	93.2 ± 1.5	84.1	64.2 ± 5.9	15.9 ± 1.9	1.42 ± .66
OC 05	1441	17°36'	54°34'	1501	17°36'	54°34'	5	66	44.5 ± 1.3	31.2	19.3 ± 6.2	4.6 ± 3.2	1.16 ± .79
OC 10	1419	17°36'	54°34'	1439	17°36'	54°34'	10	742	511.5 ± 3.7	409	179 ± 18	45.1 ± 5.1	9.6 ± 2.7
OC 20	1352	17°00'	54°40'	1412	17°36'	54°34	20	143*	160.0 ± .6	152	64.2 ± 3.1	11.69 ± .91	3.37 ± .64
RA 01	1840	16°50'	59°12'	1900	17°01'	60°43'	1	233	72.0 ± 1.0	48.8	20.1 ± 4.2	4.7 ± 2.0	1.28 ± .55
RA 05	1818	16°50'	59°12'	1838	16°50'	59°12'	5		16.0 ± .4	14.4	5.4 ± 1.7		.39 ± .28
RA 20	1754	15°58'	57°55'	1814	16°50'	59°12'	20	171	24.8 ± 1.1	7.5	8.7 ± 4.7		1.42 ± .77

* Counted on counter which has been found to give consistently low ^7Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 14, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1308	12°23'	58°23'	1328	12°36'	57°15'	1	186	77.6 ± .9	64.4	37.3 ± 4.7	7.3 ± 1.7	.78 ± .54
MM 5	1247	12°23'	58°23'	1307	12°23'	58°23'	5	133	65.9 ± 1.3	41.8	28.0 ± 6.4	3.1 ± 2.9	1.7 ± 1.1
MM 10	1416	12°23'	58°23'	1436	12°42'	56°26'	10	262	126.8 ± 1.1	99.5	51.2 ± 5.6	13.4 ± 1.6	2.75 ± .84
MM 20	1219	13°35'	60°00'	1239	12°23'	58°23'	20	455	367.1 ± 2.5	292	127 ± 12	26.3 ± 3.5	4.1 ± 1.4
MM 29	1345	14°00'	60°26'	1405	12°23'	58°23'	29	681	212.0 ± 2.2	164	78.6 ± 3.1	12.8 ± 2.8	3.19 ± .53
MM 40	1421	12°23'	58°23'	1431	13°02'	57°54'	40	836	175.9 ± 1.6	157	70.8 ± 8.6	6.9 ± 3.3	3.2 ± 1.6
MM 50	1402	13°28'	59°55'	1418	12°23'	58°23'	50	3570 ± 490	2928 ± 6	2240 ± 80	95 ± 23	202.1 ± 6.8	36.6 ± 4.2
DI 1	1402	12°56'	55°07'	1422	13°08'	53°51'	1	259	87.3 ± 1.0	63.5	44.8 ± 5.0	8.4 ± 1.7	.77 ± .54
DI 5	1425	13°08'	53°51'	1445	13°08'	53°51'	5	195	50.7 ± 1.3	23.5	22.5 ± 6.0	8.8 ± 3.0	
DI 10	1443	12°50'	55°49'	1503	13°08'	53°51'	10	318	125.0 ± .4	85.5	50.2 ± 1.9	18.45 ± .56	1.97 ± .25
DI 29	1515	13°08'	53°51'	1535	15°28'	54°16'	29	1153	290.9 ± 2.0	201	103.7 ± 9.8	23.7 ± 2.8	5.1 ± 1.4
DI 40	1511	13°08'	53°51'	1521	13°36'	54°31'	40	1223	418.9 ± 2.1	347	145 ± 12	52.1 ± 3.8	8.6 ± 2.0
DI 50	1452	13°26'	55°32'	1508	13°08'	53°51'	50	4570	2279 ± 24	1672	872 ± 48	167 ± 13	45.8 ± 8.8
OC 1	1652	17°36'	54°34'	1712	17°22'	55°55'	1	162	57.9 ± 2.8	40.6	30.0 ± 1.5	6.21 ± .55	1.14 ± .18
OC 5	1628	17°36'	54°34'	1648	17°36'	54°34'	5	62	52.5 ± .4	44.0	18.8 ± 2.0	2.1 ± 1.0	.67 ± .25
OC 10	1607	17°36'	54°34'	1627	17°36'	54°34'	10	191	219.9 ± 2.1	183	93 ± 11	14.6 ± 3.1	5.7 ± 1.6
OC 20	1544	16°10'	54°22'	1604	17°36'	54°34'	20	399	128.4 ± 4.3	90	52.2 ± 8.9	13.2 ± 2.6	3.3 ± 1.3
OC 29	1545	16°38'	54°25'	1605	17°33'	56°00'	29	496 ± 20	90.0 ± .9	77.0	36.3 ± 4.7	8.1 ± 1.5	
OC 40	1602	17°36'	54°34'	1612	16°57'	55°03'	40	522	50.7 ± 1.3	19.9			
OC 50	1543	15°58'	54°53'	1559	17°36'	54°34'	50	3120	661.3 ± 5.4	461	273 ± 30	60.4 ± 7.8	7.0 ± 5.1
RA 1	1736	17°08'	57°38'	1756	16°50'	59°12'	1	362	94.7 ± 1.0	68.9	46.0 ± 5.1	11.3 ± 1.8	.79 ± .55
RA 5	1759	16°50'	59°12'	1819	16°50'	59°12'	5	115	42.5 ± .4	33.7	19.0 ± 2.8	6.51 ± .92	1.65 ± .59
RA 10	1638	16°50'	59°12'	1658	16°59'	61°38'	10	354 ± 40	242.4 ± .6	183.8 ± 7.9	92.3 ± 2.7	25.46 ± .82	3.38 ± .24
RA 20	1830	16°50'	59°12'	1850	17°05'	60°55'	20	99	83.1 ± 1.2	74.2	26.3 ± 5.4	5.3 ± 2.4	
RA 29	1610	17°25'	56°35'	1630	16°50'	59°12'	29	309*	583.0 ± 2.1	490	209 ± 10	31.2 ± 1.0	6.8 ± 1.6
RA 40	1652	16°50'	59°12'	1702	16°57'	60°10'	40	425	6.9 ± 1.8		26 ± 11	5.9 ± 4.7	
RA 50	1633	16°34'	57°31'	1649	16°50'	59°12'	50	2181	399.7 ± 2.1	308	159 ± 11	21.6 ± 3.5	6.5 ± 2.4

* Counted on counter which has been found to give consistently low ^7Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

MAY 15, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 60	1406	13°20'	59°40'	1433	12°35'	57°00'	60	14,770	19,201 ± 42	13,647	7,190 ± 210	1357 ± 53	250 ± 31
DI 60	1455	13°08'	53°51'	1522	13°08'	53°51'	60	14,580	13,456 ± 35	9,277 ± 62	5,480 ± 18	1199 ± 45	133 ± 26
OC 60	1600	17°36'	54°34'	1627	17°36'	54°34'	60	68,331*	57,284 ± 65	35,320	19,870 ± 310	4972 ± 73	881 ± 49
RA 60	1647	17°05'	57°50'	1714	17°00'	55°40'	60	12,060	41,993 ± 55	31,100	13,910 ± 260	2648 ± 59	640 ± 40
OU 60	1307	17°44'	64°42'	1406	13°20'	59°40'	60	56,150	61,157 ± 75	32,800	21,030 ± 240	3795 ± 34	

* Counted on counter which has been found to give consistently low ^7Be numbers.

MAY 24, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 60	1430	13°05'	59°30'	1458	12°45'	56°33'	60	27,400	50,612 ± 59	33,030	17,860 ± 300	3566 ± 64	466 ± 38
DI 60	1524	13°10'	53°49'	1551	13°10'	53°49'	60	23,960*	45,713 ± 58	28,460	15,820 ± 270	2412 ± 63	475 ± 41
OC 60	1632	17°35'	54°32'	1659	17°35'	54°32'	60	37,400	68,732 ± 81	43,200 ± 140	24,000 ± 380	4125 ± 98	634 ± 60
RA 60	1721	17°12'	57°10'	1753	17°04'	61°12'	60	49,000	50,932 ± 61	31,360	18,760 ± 320	4343 ± 68	517 ± 39

* Counted on counter which has been found to give consistently low ^7Be numbers.

MAY 31, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 60	1356	13°15'	59°35'	1423	12°39'	56°50'	60	17,360	37,000 ± 53	23,100	13,600 ± 260	2817 ± 54	271 ± 40
DI 60	1446	13°08'	53°51'	1513	13°08'	53°51'	60	16,930	25,130 ± 36	15,038	10,020 ± 170	1720 ± 36	171 ± 18
OC 60	1553	17°36'	54°34'	1620	17°36'	54°34'	60	50,600	88,097 ± 71	52,290	32,970 ± 330	5181 ± 73	663 ± 41
RA 60	1640	17°10'	57°27'	1707	17°00'	61°00'	60	38,600	79,178 ± 63	47,910	28,370 ± 290	4839 ± 62	603 ± 32
OU 60	1258	17°44'	64°42'	1358	13°15'	59°35'	60	10,840	109,380 ± 130	69,140	32,020 ± 360	5565 ± 5	
IN 60	1707	17°00'	61°00'	1747	17°59'	65°53'	60	74,800	60,987 ± 100	30,140	21,440 ± 320	3554 ± 50	

JUNE 11, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 60	1355	12°23'	58°23'	1422	12°23'	58°23'	60	24560	25009 ± 34	13570 ± 60	10990 ± 170	2361 ± 45	82 ± 20
DI 60	1435	13°08'	53°51'	1502	13°08'	53°51	60	36170	22380 ± 33	10800	9740 ± 160	2374 ± 43	74 ± 23
OC 60	1515	17°36'	54°34'	1542	17°36'	54°34'	60	32020	31490 ± 38	15651	13040 ± 180	2826 ± 49	111 ± 22
RA 60	1551	16°50'	59°12'	1618	16°50'	59°12'	60	28310	27817 ± 36	14549	12040 ± 170	2711 ± 47	74 ± 20
IN 60	1618	16°50'	59°12'	1655	17°59'	65°53'	60	21890	31073 ± 33	16473	13060 ± 150	2616 ± 41	109 ± 17

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 21, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN K ft	DPM/10^3 S.C.M. ^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1333	12°23'	58°23'	1353	12°35'	57°00'	1	177*	42.4 ± .8	20.1	22.8 ±4.4	6.6 ±1.6	
MM 5	1310	12°23'	58°23'	1330	12°23'	58°23'	5	17	9.7 ± .8	6.7	5.8 ±2.6		
MM 10	1410	12°23'	58°20'	1430	12°45'	56°36'	10	388	143.3 ±1.4	78.3	92 ±10	18.9 ±2.3	1.3 ±1.1
MM 20	1240	13°37'	59°50'	1300	12°23'	58°23'	20	151	25.9 ±1.1		24.8 ±7.3	3.0 ±2.3	
MM 27	1310	12°57'	59°13'	1330	12°36'	57°16'	27	99	13.2 ± .9	3.2		3.4 ±1.9	2.9 ±2.1
MM 30	1340	14°21'	61°05'	1400	13°03'	59°27'	30	58 ±21	11.5 ± .7	8.8 ±1.3		2.7 ±2.1	
MM 40	1428	12°23'	58°23'	1438	13°02'	57°54'	40	250	123.0 ±5.0	116	58 ±20	10.1 ±7.4	
MM 50	1408	13°28'	59°55'	1424	12°23'	58°23'	50	5883	1769 ±12	677	785 ±75	205 ±19	
MM 60	1358	13°20'	59°46'	1425	12°40'	56°51'	60	27590	21600 ±31	10451	9880 ±160	2180 ±42	58 ± 18
DI 1	1425	12°55'	55°10'	1445	13°08'	53°51'	1	440	210.4 ±1.8	120	92.4 ±2.4	22.4 ±2.5	
DI 5	1450	13°08'	53°51'	1510	13°08'	53°51'	5	208*	151.7 ±1.8	31.1	94 ±11	18.3 ±2.8	
DI 10	1436	12°54'	55°59'	1456	13°08'	53°51'	10	62*	246.0 ±1.8	145.2	118 ±11	29.0 ±2.7	
DI 20	1525	13°08'	53°51'	1545	14°45'	54°10'	20	90	16.1 ± .4	6.3	8.6 ±2.4		
DI 27	1348	12°54'	54°56'	1408	13°46'	55°31'	27	117	42.8 ±1.2	28.5	11.4 ±5.7	3.8 ±2.0	5.6 ±2.9
DI 30	1510	13°10'	54°07'	1530	15°30'	54°14'	30	122 ±42	24.2 ± .7	15.1 ±2.4	4.2 ±3.0	3.4 ±1.3	2.0 ±1.4
DI 40	1515	13°08'	53°51'	1525	13°36'	54°31'	40	854	1221 ±11	523	447 ±52	154 ±14	
DI 50	1456	13°26'	55°32'	1512	13°08'	53°51'	50	5500 ±1000	1877 ±15	910 ±170	909 ±53	208 ±31	
DI 60	1450	13°07'	54°00'	1517	13°10'	53°50'	60	30620	21567 ±31	10234	10106 ±160	2245 ±45	
OC 1	1716	17°36'	54°34'	1736	17°20'	56°10'	1	400	163.8 ±1.7	78.9	84.8 ±9.4	19.0 ±2.3	
OC 5	1654	17°36'	54°34'	1714	17°36'	54°34'	5	337	148.7 ±2.3	62.4	96 ±15	14.2 ±3.6	
OC 10	1630	17°36'	54°34'	1650	17°36'	54°34'	10	443	208.9 ±2.5	111	143 ±18	29.1 ±4.5	
OC 20	1605	16°00'	54°20'	1625	17°36'	54°34'	20	124	38.4 ±1.5	17.6	21 ±10	5.5 ±3.1	
OC 27	1539	16°25'	54°15'	1559	17°23'	55°40'	27	100	36.9 ± .3	22.2	18.0 ±1.9	6.16± .68	
OC 30	1539	16°22'	54°18'	1559	17°34'	55°39'	30	208	37.9 ±1.1	19.8	18.4 ±5.2	7.9 ±2.0	
OC 40	1604	17°36'	54°34'	1614	16°57'	55°03'	40	430 ±110	89.8 ±3.7	40 ±19		30.2 ±5.9	
OC 50	1545	15°58'	54°53'	1601	17°36'	54°34'	50	4327	378.5 ±2.8	110.2	197 ±21	63.2 ±5.6	
OC 60	1546	17°30'	54°30'	1613	17°30'	53°40'	60	36000	27712 ±35	13270	12500 ±170	2714 ±47	
RA 1	1758	17°05'	57°30'	1818	16°50'	59°12'	1	258	111.9 ± .4	61.1	57.6 ±2.7	12.38± .72	
RA 5	1822	16°50'	59°12'	1842	16°50'	59°12'	5	164	45.5 ±1.2	20.9	24.1 ±6.7	6.4 ±2.5	
RA 20	1857	16°50'	59°12'	1917	14°50'	59°30'	20	249	78.0 ± .4	35.7	42.0 ±2.7	7.77± .58	
RA 27	1618	16°59'	58°02'	1638	17°03'	60°37'	27	275	75.8 ±1.5	62.0 ±4.5	19.5 ±5.0	7.3 ±2.1	3.8 ±3.4
RA 50	1634	16°34'	57°31'	1650	16°50'	59°12'	50	4496	421.2 ±2.8	50 ±11	211 ±21	44.1 ±5.6	
RA 60	1633	17°06'	57°45'	1700	17°05'	61°15'	60	41720	29159 ±35	13401	13200 ±180	3001 ±47	76 ± 18
OU 20	1105	18°00'	65°53'	1240	13°27'	59°50'	20	208	57.8 ± .7	26.9	30.6 ±3.2	3.43± .67	
IN 20	1917	14°50'	59°30'	1935	14°00'	59°30'	20		15.5 ± .9	18.7			
OU 27	1215	17°22'	64°12'	1310	12°57'	59°13'	27	229	68.1 ± .6	48.3	31.9 ±3.9	6.19± .96	
IN 27	1638	17°03'	60°37'	1726	17°58'	66°18'	27	499	126.0 ±1.3	74.4	63.3 ±5.9	8.9 ±1.1	
OU 30	1306	17°23'	64°30'	1340	14°21'	61°05'	30	478	104.2 ± .4	53.1	46.3 ±2.3	11.90± .66	
OU 50	1312	17°44'	64°42'	1408	13°28'	59°55'	50	4834	991.9 ±4.6	379	464 ±25	103.3 ±6.0	
IN 50	1707	17°02'	60°46'	1754	17°59'	65°53'	50	6778	2181 ±7	903	1008 ±34	212.4 ±8.1	
OU 60	1257	17°43'	64°45'	1358	13°20'	59°46'	60	41460	27005 ±22	11478	12230 ±110	2984 ±29	43 ± 10
IN 60	1700	17°05'	61°15'	1726	17°43'	64°45'	60	39920	28197 ±36	12918	12810 ±180	2913 ±47	61 ± 19

* Counted on counter which has been found to give consistently low ^7Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 22, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10³ S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1159	12°23'	58°23'	1219	12°23'	58°23'	1	468	176.0 ± 1.6	82.1	86.5 ± 8.6	15.6 ± 5.3	
MM 5	1137	13°04'	59°24'	1157	12°23'	58°23'	5	331	159.5 ± 1.7	88.7	76 ± 11	16.5 ± 3.0	
MM 10	1417	12°23'	58°23'	1437	12°46'	56°07'	10	346	133.3 ± 1.4	75.6	67.9 ± 9.0	16.9 ± 2.3	
MM 20	1237	12°23'	58°23'	1257	14°12'	57°07'	20	173 ± 26	35.6 ± .9	21.3 ± 5.3	19.0 ± 9.0	3.3 ± 1.7	
MM 27	1257	13°05'	59°29'	1317	12°33'	57°10'	27	113	22.73 ± .28	14.3	11.8 ± 1.7	2.82 ± .65	
MM 30	1348	13°40'	60°14'	1407	12°23'	58°23'	30	169	18.9 ± 1.1	6.6	6.2 ± 8.3		
MM 40	1426	12°23'	58°23'	1457	13°02'	57°54'	40	2317	430.5 ± 1.0	134.1	208.0 ± 7.7	55.7 ± 2.1	2.1 ± 1.3
MM 50	1410	13°28'	59°55'	1426	12°23'	58°23'	50	6121	2089 ± 10	1032	946 ± 73	156 ± 20	
DI 1	1638	13°08'	53°51'	1658	13°08'	53°51'	1	265	98.6 ± 1.6	45.4	48.3 ± 8.1	11.9 ± 2.3	
DI 5	1443	12°56'	55°32'	1503	13°08'	53°51'	5	406	144.9 ± 1.3	78.1	66.0 ± 6.0	16.9 ± 1.8	
DI 10	1548	14°58'	54°12'	1628	13°08'	53°51'	10	440	186.1 ± 1.7	89.5	109 ± 10	17.8 ± 2.2	
DI 20	1711	13°08'	53°51'	1731	15°00'	56°30'	20	225	57.6 ± 1.7	33.5	23.2 ± 6.6	5.1 ± 1.7	
DI 27	1333	12°50'	55°16'	1353	14°19'	54°22'	27	118	25.6 ± .9	23.8		4.6 ± 2.0	
DI 30	1514	13°08'	53°51'	1534	15°22'	54°12'	30	168	19.0 ± 1.1	8.3		4.1 ± 2.8	
DI 40	1514	13°08'	53°51'	1525	13°36'	54°31'	40	3707	792.2 ± 9.6	422.6	404 ± 48	56 ± 12	
DI 50	1457	13°26'	55°32'	1514	13°08'	53°51'	50	5890 ± 250	555 ± 28	73.8	281 ± 14	37.9 ± 2.4	
OC 1	1407	17°36'	54°34'	1427	17°36'	54°34'	1	244	117.3 ± 1.7	59.7	62 ± 10	12.2 ± 2.6	
OC 5	1429	17°36'	53°34'	1449	17°36'	54°34'	5	137	64.8 ± 1.2	37.6	29.3 ± 7.5	11.7 ± 2.0	
OC 10	1455	17°36'	53°34'	1535	15°30'	54°20'	10	350 ± 40	207.5 ± 3.0	107.0 ± 2.7	113 ± 8	22.0 ± 4.3	
OC 20	1336	16°12'	55°37'	1356	17°36'	54°34'	20	127	61.1 ± 1.4	35.4	15.5 ± 6.8	6.7 ± 2.5	
OC 27	1516	16°21'	54°42'	1536	17°24'	56°10'	27	375	69.2 ± 1.1	40.2 ± 2.8	12.6 ± 6.5	12.5 ± 2.1	
OC 30	1543	16°40'	54°21'	1603	17°21'	56°03'	30	658	134.3 ± 1.9	67.2	63 ± 12	16.7 ± 3.1	
OC 40	1606	17°36'	54°34'	1615	16°57'	55°03'	40	6589	1562 ± 15	898	753 ± 72	102 ± 16	
OC 50	1546	15°58'	54°53'	1604	17°36'	54°34'	50	5171	1115 ± 9	489	501 ± 62	136 ± 16	
RA 1	0430	16°50'	59°12'	0450	16°50'	59°12'	1	208	86.6 ± 1.5	41.8	37 ± 11	9.1 ± 3.1	3.2 ± 2.0
RA 5	0454	16°50'	59°12'	0514	17°00'	60°43'	5	259	88.9 ± 1.3	35.5	44.0 ± 9.2	7.2 ± 2.6	1.6 ± 1.5
RA 10	1638	16°50'	59°12'	1654	17°04'	61°06'	10	651	241.5 ± 1.9	135.4	121 ± 11	34.8 ± 2.8	
RA 20	1808	15°55'	57°48'	1828	16°50'	59°12'	20	312	83.4 ± 1.6	46.9	31.6 ± 9.3	6.6 ± 2.6	
RA 27	1551	17°08'	58°00'	1611	16°57'	60°27'	27	633	165.7 ± 1.6	100.6	60.0 ± 9.8	19.2 ± 2.6	
RA 30	1609	17°13'	56°53'	1627	17°01'	59°12'	30	800	171.6 ± 2.1	76.3	94 ± 15	22.3 ± 3.8	
RA 40	1657	16°50'	59°12'	1707	16°57'	60°10'	40	4176	1209 ± 3	463.1	546 ± 23	119.2 ± 6.5	
RA 50	1639	16°34'	57°31'	1657	16°50'	59°12'	50	10290	2318 ± 10	858	1109 + 68	317 ± 19	
OU 18	0952	18°12'	65°58'	1123	13°55'	60°23'	18	262	72.0 ± .8	32.4	30.9 ± 3.2	6.36 ± .68	
OU 18	2340	18°15'	66°15'	0415	16°50'	59°12'	18						
IN 18	0527	17°02'	61°05'	0625	18°27'	66°00'	18	267	87.2 ± 1.1	41.8	35.1 ± 4.3	7.78 ± .96	
OU 27	1150	17°59'	65°43'	1257	13°05'	59°29'	27	544	134.8 ± 1.2	55.3	68.1 ± 5.2	10.64 ± .95	
IN 27	1611	16°57'	60°27'	1655	17°57'	65°40'	27	463	192.2 ± 1.1	119.7	93.1 ± 6.8	15.7 ± 1.5	
OU 30	1300	17°44'	64°42'	1348	13°40'	60°14'	30	982	152.1 + 1.3	37.9	77.9 ± 7.8	19.9 ± 1.9	
OU 50	1314	17°44'	64°42'	1410	13°28'	59°55'	50	3458	2387 ± 7	1445	961 ± 37	190.7 ± 7.8	3.6 ± 2.7
IN 50	1707	17°02'	60°46'	1806	17°59'	65°53'	50	629	594.0 ± .7	1643	197.3 ± 3.5		

* Counted on counter which has been found to give consistently low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 23, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN K ft	DPM/10³ S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs	^{140}Ba
MM 1	1204	12°23'	58°23'	1224	12°23'	58°23'	1	476 ± 37	207.1 ± 2.5	104.1 ± 4.1	112 ± 11	26.3 ± 2.6	
MM 5	1139	13°05'	59°30'	1159	12°23'	58°23'	5	201	52.5 ± 1.1	16.3 ± 2.4	37.7 ± 6.4	9.8 ± 1.9	
MM 27	1409	13°15'	59°40'	1429	12°50'	57°10'	27	210	27.6 ± 1.1	11.5 ± 3.6	3.2 ± 3.2	7.8 ± 2.0	
MM 40	1519	12°23'	58°23'	1529	13°02'	57°54'	40	1250	576.6 ± 7.7	251	240 ± 69	22 ± 19	
MM 50	1500	13°28'	59°55'	1516	12°23'	58°23'	50	5452	1272 ± 3	361 ± 11	574 ± 23	211.4 ± 6.1	
DI 27	1442	13°08'	55°10'	1502	14°25'	55°15'	27	195	43.5 ± 1.0	29.6	11.1 ± 6.1	6.5 ± 1.9	
DI 40	1608	13°08'	53°51'	1618	13°36'	54°31'	40	480	118.0 ± 6.5	33			
DI 50	1548	13°26'	55°32'	1604	13°08'	53°51'	50	5593	2603 ± 12	1086	1270 ± 77	169 ± 20	
OC 27	1628	16°30'	54°25'	1648	17°20'	55°43'	27	401	86.9 ± 1.3	52.1	36.8 ± 6.5	15.4 ± 2.2	
OC 40	1658	17°36'	54°34'	1708	16°57'	55°03'	40	807	367.9 ± 2.4	97.8	159 ± 22		
OC 50	1639	15°58'	54°53'	1655	17°36'	54°34'	50	16136	6578 ± 6	2611	3183 ± 32	687.6 ± 8.5	15.1 ± 5.3
RA1 1	0528	16°50'	59°12'	0548	16°50'	59°12'	1	255 ± 26	119.9 ± 1.1	64.0 ± 2.6	62.9 ± 7.1	12.7 ± 1.8	
RA 28	1706	17°05'	58°00'	1726	16°55'	60°22'	28	296	76.8 ± .4	54.3	38.1 ± 2.5	5.11 ± .73	
RA 40	1750	16°50'	59°12'	1800	16°57'	60°10'	40	542	198.3 ± 6.9	41	80 ± 67		
RA 50	1729	16°34'	57°31'	1745	16°50'	59°12'	50	13700 ± 2000	8048 ± 62	3620 ± 310	3738 ± 74	713 ± 32	
IN 10	1238	12°55'	59°10'	1432	26°00'	67°05'	10	309	135.1 ± .6	76.1	1352 ± 33	296.8 ± 7.9	
OU 18	0955	18°10'	66°03'	1133	13°25'	59°55'	18	235	69.9 ± .7	35.0	31.3 ± 3.1	5.96 ± .66	
OU 20B	2350	18°27'	66°10'	0520	16°50'	59°12'	20	432	127.8 ± .5	53.4	62.5 ± 2.6	13.21 ± .43	
OU 50	1405	17°44'	64°42'	1500	13°28'	59°55'	50	7452	2878 ± 7	1260	1352 ± 33	296.8 ± 7.9	
IN 50	1804	17°02'	60°46'	1849	17°59'	65°53'	50	5081	2247 ± 7	971	1061 ± 35	169.9 ± 8.4	

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 24, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10³ S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 1	1217	12°23'	58°23'	1237	12°23'	58°23'	1	427	141.0 ± 1.9	54.0	78 ± 11	20.9 ± 3.0
MM 5	1144	14°00'	60°40'	1213	12°23'	58°23'	5	453	191.6 ± 2.0	88.9	100 ± 12	20.8 ± 3.2
MM 10	1446	12°23'	58°23'	1506	12°47'	56°24'	10	458	231.8 ± 2.8	137.2	121.3 ± 7.0	22.4 ± 1.4
MM 20	1256	12°23'	58°23'	1316	13°47'	57°20'	20	157	39.9 ± 1.5	15.8	30 ± 11	
MM 27	1307	12°58'	59°18'	1327	12°33'	56°58'	27	292	109.3 ± 1.5	56.2	42.6 ± 7.6	11.8 ± 2.2
MM 30	1416	13°48'	60°11'	1435	12°23'	58°23'	30	582 ± 55	265.2 ± 1.8	154.0 ± 8.5	128.4 ± 9.6	27.3 ± 2.2
MM 40	1427	12°23'	58°23'	1437	13°02'	57°54'	40	900 ± 130	139.4 ± 4.7	40.8 ± 6.0	70 ± 14	29.4 ± 7.9
MM 50	1408	13°28'	59°55'	1424	12°23'	58°23'	50	4571	3195 ± 12	1421	1378 ± 77	113 ± 21
DI 1	1632	13°08'	53°51'	1652	13°08'	53°51'	1	189	92.9 ± .5	47.4	45.9 ± 3.2	11.9 ± 1.0
DI 6	1512	12°51'	55°51'	1534	13°14'	53°54'	6	187 ± 20	74.6 ± .9	38.3 ± 2.1	41.5 ± 4.3	9.4 ± 1.1
DI 10	1548	15°22'	54°12'	1628	13°08'	53°51'	10	503	253.2 ± 2.0	146.5	136 ± 14	31.0 ± 3.2
DI 20	1708	13°08'	53°51'	1728	14°00'	55°03'	20	235	55.2 ± 1.3	26.0 ± 3.2	24.9 ± 6.0	6.6 ± 2.3
DI 27	1343	12°54'	54°49'	1403	14°19'	53°58'	27	296	124.6 ± 1.6	81.8	44.2 ± 7.7	13.8 ± 2.3
DI 30	1550	13°09'	53°45'	1610	15°30'	54°11'	30	275	154.7 ± 1.7	99.0	76 ± 10	14.6 ± 2.7
DI 40	1516	13°08'	53°51'	1526	13°36'	54°31'	40	790	157.1 ± 4.9	70	36 ± 17	7.8 ± 7.8
DI 50	1457	13°26'	55°23'	1513	13°08'	53°51'	50	10770	5051 ± 16	2186	2484 ± 88	471 ± 21
OC 1	1422	17°36'	54°34'	1442	17°36'	54°34'	1	180	95.5 ± 1.4	53.3	40.4 ± 5.8	11.2 ± 1.7
OC 5	1444	17°36'	54°34'	1504	17°36'	54°34'	5	298 ± 30	104.1 ± 2.2	51.9 ± 3.4	55.4 ± 7.1	11.8 ± 1.9
OC 10	1507	17°36'	54°34'	1547	15°22'	54°12'	10	511 ± 28	231.0 ± 1.5	122.3 ± 2.9	118.5 ± 8.1	26.7 ± 4.3
OC 20	1355	16°25'	55°23'	1415	17°36'	54°34'	20	194	52.1 ± 1.2	26.7	12.9 ± 4.6	
OC 27	1536	16°21'	54°12'	1556	17°25'	55°37'	27	384	91.4 ± 1.4	46.0	28.7 ± 5.9	9.0 ± 2.1
OC 30	1618	16°25'	54°20'	1638	17°23'	55°40'	30	286	64.6 ± 1.5	37.8	21.8 ± 5.6	8.1 ± 2.3
OC 40	1607	17°36'	54°34'	1617	16°57'	55°03'	40	1563	667.1 ± 8.7	348	259 ± 47	38 ± 11
OC 50	1548	15°58'	54°53'	1604	17°36'	54°34'	50	33120	19940 ± 34	8257	9170 ± 150	1895 ± 34
RA 1	0530	16°50'	59°12'	0550	16°50'	59°12'	1	203 ± 99	93.1 ± 1.8	49 ± 10	38.2 ± 5.7	12.2 ± 1.7
RA 5	0553	16°50'	59°12'	0613	17°00'	60°00'	5	234	126.3 ± 1.4	73.1	74.5 ± 8.3	13.8 ± 2.1
RA 10	1718	16°47'	59°13'	1738	16°47'	61°16'	10	516	246.7 ± 1.8	144	124.0 ± 9.9	31.3 ± 2.4
RA 20	1808	15°53'	57°45'	1828	16°50'	59°12'	20	349	105.2 ± 1.6	55.4	28.2 ± 6.8	7.0 ± 2.6
RA 27	1612	17°08'	57°35'	1632	16°57'	60°28'	27	290	89.5 ± 1.5	52.2	42.4 ± 6.8	8.1 ± 2.1
RA 30	1646	17°11'	56°37'	1706	16°45'	59°02'	30	302	70.1 ± 1.6	40.6	19.2 ± 6.0	7.1 ± 2.3
RA 40	1702	16°50'	59°12'	1712	16°57'	60°10'	40	1150	279.9 ± 6.3	130	99 ± 26	55.4 ± 9.5
RA 50	1643	16°34'	57°31'	1659	16°50'	59°12'	50	17490	11050 ± [illegible]	4732	4880 ± 130	968 ± 21
OU 27	1211	17°26'	64°32'	1307	12°58'	59°18'	27	715	143.7 ± .4	39.0	75.1 ± 2.0	19.04 ± .49
OU 30	1332	17°19	64°20'	1416	13°48'	60°11'	30	638	94.6 ± 1.1	22.7	34.6 ± 7.8	13.6 ± 2.0
IN 50	1717	17°02'	60°10'	1758	17°59'	65°53'	50	6310	2120 ± 11	1003	998 ± 49	157.7 ± 8.9

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 25, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 1	1206	12°23'	58°23'	1226	12°23'	58°23'	1	90 ± 14	42.9 ± .5	25.4 ± 7.2	24.8 ± 3.3	5.1 ± 1.2
MM 5	1144	13°06'	59°31'	1204	12°23'	58°23'	5	217	89.4 ± .9	54.9 ± 2.7	39.7 ± 5.2	12.0 ± 2.1
MM 10	1402	12°23'	58°23'	1422	12°50'	56°24'	10	539	188.2 ± .5	92.3	104.0 ± 3.3	26.41 ± .79
MM 20	1243	12°23'	58°23'	1303	13°50'	57°30'	20	683	226.9 ± 2.3	101	109 ± 13	20.8 ± 3.3
MM 30	1333	14°03'	60°27'	1353	12°23'	58°23'	30	269 ± 26	54.0 ± 1.0	37.4 ± 3.4	17.4 ± 4.6	8.0 ± 1.6
MM 40	1422	12°23'	58°23'	1451	13°02'	57°54'	40	2877	2005 ± 9	1124	853 ± 42	146 ± 9
MM 50	1405	13°28'	59°55'	1421	12°23'	58°23'	50	9509	4420 ± 16	2051	2032 ± 90	497 ± 23
DI 1	1534	14°25'	54°04'	1554	13°08'	53°51'	1	115 ± 11	64.0 ± .4	38.5 ± 3.9	32.7 ± 2.1	6.67 ± .75
DI 5	1556	13°08'	53°51'	1616	13°08'	53°51'	5	239 ± 36	113.9 ± 1.5	51.0 ± 7.6	46.7 ± 9.4	15.3 ± 3.8
DI 10	1427	12°52'	55°52'	1447	13°08'	53°51'	10	481 ± 26	181.5 ± 2.0	97.9 ± 2.9	88.4 ± 5.4	25.2 ± 1.6
DI 20	1627	13°08'	53°51'	1647	14°05'	55°05'	20	205 ± 27	74.6 ± 1.2	42.4 ± 3.3	19.4 ± 4.0	8.7 ± 1.8
DI 30	1500	13°08'	53°51'	1520	15°56'	54°23'	30	475	213.5 ± 1.9	140	111 ± 12	19.5 ± 2.9
DI 40	1507	13°08'	53°51'	1518	13°36'	54°31'	40	8746	13017 ± 34	9396	6570 ± 200	1399 ± 36
DI 50	1451	13°26'	55°32'	1506	13°08'	53°51'	50	9075	5185 ± 16	2340	2315 ± 94	415 ± 25
OC 1	1445	17°36'	54°34'	1505	16°10'	54°20'	1	208	86.9 ± 1.3	24.8	109 ± 12	5.8 ± 2.4
OC 5	1425	17°36'	54°34'	1445	17°36'	54°34'	5	221	137.7 ± .7	58.5	73.2 ± 4.5	14.2 ± 1.3
OC 10	1403	17°36'	54°34'	1423	17°36'	54°34'	10	386	271.0 ± 2.7	139	118 ± 14	34.5 ± 3.9
OC 20	1340	16°18'	55°32'	1400	17°36'	54°34'	20	724 ± 63	345.8 ± 2.2	179.3 ± 5.1	158 ± 12	36.4 ± 5.1
OC 30	1521	16°25'	54°25'	1541	17°29'	55°35'	30	1666	921.6 ± 3.8	616	452 ± 23	59.4 ± 4.7
OC 40	1557	17°36'	54°34'	1625	16°57'	55°03'	40	16410 ± 410	6814 ± 20	2560 ± 390	3269 ± 18	510 ± 12
OC 50	1536	15°58'	54°53'	1554	17°36'	54°34'	50	70608	27750 ± 12	8067	13380 ± 54	3916 ± 13
RA 1	1817	16°50'	59°12'	1837	17°10'	60°40'	1	220	99.3 ± .4	60.0	46.2 ± 2.0	8.49 ± .60
RA 5	1755	16°50'	54°12'	1815	16°50'	59°12'	5	286	96.7 ± 1.7	41.7	56.4 ± 9.6	12.6 ± 2.8
RA 10	1615	16°50'	59°12'	1635	16°47'	60°58'	10	238	115.4 ± .5	63.3	61.9 ± 4.6	
RA 20	1730	16°05'	58°00'	1750	16°50'	59°12'	20	465	180.2 ± 2.2	82.3	74 ± 14	23.6 ± 3.7
RA 30	1548	17°18'	56°31'	1608	16°50'	59°12'	30	388	230.2 ± 2.2	162	66 ± 12	26.1 ± 2.8
RA 40	1642	16°50'	59°12'	1650	16°57'	60°10'	40	670	1015 ± 10	538	500 ± 87	12.59 ± .67
RA 50	1626	16°34'	57°31'	1641	16°50'	59°12'	50	9140	3864 ± 5	1392	1832 ± 29	429.0 ± 7.9
OU 18	1005	17°00'	65°55'	1135	13°50'	60°00'	18	253	88.2 ± .8	44.7	45.6 ± 3.8	6.66 ± .79
OU 27	1206	18°03'	66°14'	1308	13°40'	60°07'	27	363	61.1 ± .8	30.6	20.9 ± 3.0	5.00 ± .74
IN 29	1643	16°50'	61°48'	1705	17°19'	64°40'	29	230	53.2 ± 1.5	40.5	18.9 ± 5.3	6.0 ± 1.6
OU 30	1250	17°23'	64°21'	1333	14°03'	60°27'	30	1253	293.6 ± 1.5	121	130.8 ± 9.1	34.6 ± 2.2
OU 50	1310	17°44'	64°42'	1405	13°28'	59°55'	50	8670	4279 ± 8	2012	2040 ± 39	386.6 ± 1.9
IN 50	1651	17°02'	60°46'	1745	17°59'	65°53'	50	5480	2361 ± 6	1056	1167 ± 32	220 ± 8

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 26, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 1	1215	13°05'	59°30'	1235	13°05'	59°30'	1	174 ± 30	107.6 ± 1.4	65.6 ± 3.0	48.0 ± 4.9	14.6 ± 2.1
MM 5	1151	13°15'	59°40'	1211	13°05'	59°30'	5	488	329.4 ± 2.2	132	147 ± 14	46.9 ± 3.4
MM 10	1417	12°27'	58°22'	1437	12°43'	56°26'	10	407	104.4 ± 1.2	46.2	59.2 ± 8.5	.12.5 ± 2.1
MM 27	1306	12°58'	59°23'	1326	12°35'	57°04'	27	357	57.7 ± 1.2	29.4	23.2 ± 7.3	9.4 ± 2.1
MM 30	1345	13°41'	60°22'	1405	12°29'	58°22'	30	586	156.0 ± 1.9	92.9	57.8 ± 8.5	15.5 ± 2.6
MM 40	1431	12°23'	58°23'	1441	13°02'	57°54'	40	640	172.6 ± 5.4	93	54 ± 20	20.1 ± 8.1
MM 50	1413	13°28'	59°55'	1429	12°23'	58°23'	50	6441	2926 ± 5	1443	1424 ± 27	255 ± 7
DI 10	1441	12°47'	55°58'	1501	13°07'	54°00'	10	120	26.2 ± .8	15.7	11.2 ± 4.8	
DI 27	1344	12°59'	54°50'	1404	14°33'	54°01'	27	300	86.5 ± 1.4	51.9	30.0 ± 7.9	9.9 ± 2.2
DI 30	1515	12°42'	53°49'	1535	14°49'	54°23'	30	309	132.1 ± 1.9	105.4	41.3 ± 7.6	8.9 ± 2.5
DI 40	1517	13°08'	53°51'	1527	13°36'	54°31'	40	1020	446.8 ± 6.9	210	247 ± 44	41 ± 11
DI 50	1458	13°26'	55°32'	1514	13°08'	53°51'	50	10630	5113 ± 15	2274	2478 ± 89	538 ± 24
OC 27	1534	16°20'	54°25'	1554	17°20'	55°55'	27	577	184.4 ± 2.0	109	91 ± 11	11.0 ± 2.4
OC 30	1547	16°14'	54°35'	1607	17°16'	55°49'	30	383	159.4 ± 1.9	103	64 ± 10	19.4 ± 2.7
OC 40	1608	17°36'	54°34'	1618	16°57'	55°03'	40	2896	2550 ± 17	1242	1310 ± 89	190 ± 19
OC 50	1549	15°58'	54°53'	1605	17°36'	54°34'	50	43636	32730 ± 35	14560	15310 ± 180	3109 ± 47
RA 10	1645	16°48'	59°07'	1705	16°44'	60°55'	10	332	120.0 ± 1.3	56.2	66.3 ± 7.7	10.5 ± 2.0
RA 27	1612	17°05'	58°00'	1632	16°58'	60°22'	27	385	138.4 ± 1.8	655	61.7 ± 9.9	10.8 ± 2.3
RA 30	1615	17°08'	56°46'	1635	16°42'	59°10'	30	404	169.0 ± 2.0	91.5	72.9 ± 9.6	16.4 ± 2.6
RA 40	1658	16°50'	59°12'	1708	16°57'	60°10'	40	1315	1186 ± 9	510	510 ± 73	183 ± 21
RA 50	1639	16°34'	57°31'	1655	16°50'	59°12'	50	19600 ± 4600	10620 ± 240	4660 ± 640	5202 ± 38	1095 ± 69
IN 14	1245	12°38'	58°45'	1452	18°04'	65°59'	14	200	77.3 ± .7	39.6	39.3 ± 3.0	7.19 ± .57
OU 18	1007	18°15'	66°30'	1143	13°52'	60°06'	18	345	108.9 ± .9	48.3	48.8 ± 3.9	9.65 ± .80
IN 24	1712	17°07'	61°54'	1744	17°46'	65°57'	24	332	35.7 ± .9	19.2	20.2 ± 3.3	4.06 ± .98
OU 27	1206	17°47'	64°51'	1306	12°58'	59°23'	27	320	52.4 ± .3	23.9	27.6 ± 3.5	4.71 ± .77
IN 27	1632	16°58'	60°22'	1720	17°50'	67°00'	27	292	51.1 ± .8	32.4	18.2 ± 4.7	4.60 ± .89
OU 30	1259	17°35'	64°27'	1345	13°41'	60°22'	30	464	137.4 ± 1.5	77.7	62.0 ± 6.4	14.9 ± 1.4
OU 50	1316	17°44'	64°42'	1413	13°28'	59°55'	50	13224	5860 ± 3	2385	2869 ± 14	575.7 ± 3.4
IN 50	1714	17°02'	60°46'	1748	17°59'	65°53'	50	12710	15131 ± 29	8113	6900 ± 130	1098 ± 19

JUNE 27, 1969

MM 60	1358	13°20'	59°40'	1425	12°40'	56°56'	60	32890	21778 ± 34	8350	10250 ± 166	2627 ± 41
DI 60	1449	13°05'	54°25'	1516	13°40'	53°55'	60	45770	24127 ± 11	8469	11610 ± 56	3223 ± 15
OC 60	1545	17°00'	54°30	1612	17°30'	55°10'	60	32690	34531 ± 41	12830	14150 ± 180	2111 ± 47
RA 60	1629	17°10'	57°25'	1658	17°05'	60°55'	60	68660	41400 ± 44	13015	17290 ± 200	3408 ± 49
OU 60	1305	17°25'	64°10'	1357	13°20'	59°40'	60	32780	36100 ± 150	17099	16350 ± 226	3144 ± 33
IN 60	1659	17°05'	60°55'	1737	17°45'	64°45'	60	18670	18386 ± 43	8763	7930 ± 180	1589 ± 28

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 28, 1969

SAMPLE NO.	ON			OFF			ALT.	DPM/10^3 S.C.M.				
	TIME (Z)	LAT °N	LONG °W	TIME (Z)	LAT °N	LONG °W	IN Kft	^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 1	1218	12°23'	58°23'	1238	12°23'	58°23'	1	165 ± 35	47.8 ± 1.2	25.7 ± 6.8	20.1 ± 8.7	9.3 ± 1.9
MM 5	1155	12°23'	58°23'	1215	12°23'	58°23'	5	204 ± 27	124.5 ± 1.2	70.7 ± 3.1	54.3 ± 5.9	14.8 ± 1.6
MM 10	1418	12°23'	58°23'	1438	12°47'	56°29'	10	101	7.0 ± .42		2.1 ± 1.6	2.1 ± .9
MM 20	1259	12°23'	58°23'	1319	13°45'	57°25'	20	262	48.4 ± 1.6	21.0	39 ± 10	6.6 ± 3.1
MM 27	1315	13°04'	59°28'	1335	12°34'	57°08'	27	348	61.4 ± 1.3	27.4	18.8 ± 7.0	7.8 ± 2.0
MM 30	1348	13°46'	60°07'	1408	12°23'	58°23'	30	146	19.07 ± .32	8.4	5.2 ± 1.8	
MM 40	1417	12°23'	58°23'	1427	13°02'	57°54'	40	1110 ± 120	290.8 ± 6.3	118 ± 20	109 ± 33	28.8 ± 6.9
MM 50	1358	13°28'	59°55'	1414	12°23'	58°23'	50	2230 ± 160	131.7 ± 4.6	44	69 ± 22	27.8 ± 8.4
DI 1	1705	13°08'	53°51'	1725	13°08'	53°51'	1	50 ± 18	18.7 ± .6	10.8 ± 1.9	13.2 ± 3.4	3.7 ± 1.4
DI 5	1446	12°57'	55°35'	1506	12°53'	53°55'	5	30 ± 12	10.8 ± 1.1	7.8 ± 1.5	4.9 ± 2.3	3.2 ± 1.5
DI 10	1617	14°38'	54°04'	1657	13°08'	53°51'	10	365 ± 34	133.9 ± 1.4	62.4 ± 2.9	67.7 ± 8.6	16.2 ± 1.8
DI 20	1730	13°08'	53°51'	1750	13°38'	54°34'	20	122 ± 45	16.5 ± .8	3.8 ± 3.0	5.7 ± 2.9	2.7 ± 1.6
DI 27	1352	12°59'	55°02'	1412	14°29'	54°04'	27	271	82.8 ± 1.3	47.1	22.7 ± 7.1	5.9 ± 2.2
DI 30	1518	13°15'	54°01'	1538	15°48'	54°36'	30	265	90.7 ± 1.4	50.2	35.1 ± 7.9	10.3 ± 2.4
DI 40	1506	13°08'	53°51'	1516	13°36'	54°31'	40	1400	428.0 ± 7.3	209	235 ± 39	44 ± 11
DI 50	1447	13°26'	55°32'	1503	13°08'	53°51'	50	2260 ± 190	192.7 ± 5.1	115 ± 19	116 ± 28	34.5 ± 9.7
OC 1	1428	17°36'	54°34'	1448	17°36'	54°34'	1	171	56.3 ± 1.3	26.7	21.9 ± 5.6	5.7 ± 2.0
OC 5	1450	17°36'	54°34'	1510	17°36'	54°34'	5	198	61.4 ± .4	10.4	27.8 ± 2.5	7.91 ± .84
OC 10	1515	17°36'	54°34'	1555	16°08'	54°14'	10	348	132.5 ± 1.7	69.4	68 ± 10	16.4 ± 2.7
OC 20	1400	17°00'	55°07'	1420	17°36'	54°34'	20	352	128.0 ± 2.0	74.1	64 ± 14	13.3 ± 3.4
OC 27	1544	16°40'	54°18'	1604	17°22'	55°47'	27	598	366.7 ± 2.5	206	163 ± 14	34.6 ± 3.0
OC 30	1546	16°36'	54°36'	1606	17°33'	56°14'	30	455	192.7 ± 2.1	128.4	83 ± 12	22.6 ± 2.8
OC 40	1557	17°36'	54°34'	1607	16°57'	55°03'	40	1680	766.8 ± 8.6	381	329 ± 47	79 ± 11
OC 50	1538	15°58'	54°53'	1554	17°36'	54°34'	50	17110	13430	5413	6330 ± 130	949 ± 30
RA 10	1643	16°46'	58°50'	1703	17°02'	60°57'	10	223 ± 8	66.3 ± .9	32.1 ± 5.3	31.4 ± 2.4	8.1 ± .6
RA 20	1840	16°00'	58°05'	1900	16°50'	59°12'	20	405	139.3 ± 3.3	58.4	70.0 ± 8.2	13.7 ± 2.0
RA 27	1617	17°03'	57°45'	1637	17°04'	60°08'	27	345	176.7 ± .6	89.5	64.9 ± 3.0	16.03 ± .83
RA 30	1615	17°18'	57°00'	1635	16°46'	59°19'	30	298 ± 78	84.3 ± 1.1	50.0 ± 7.1	28.9 ± 5.4	10.3 ± 1.6
RA 40	1650	16°50'	59°12'	1700	16°57'	60°10'	40	1150	306.6 ± 6.3	127	120 ± 29	47.0 ± 9.4
RA 50	1631	16°34'	57°31'	1647	16°50'	59°12'	50	18070 ± 620	7064 ± 18	3140 ± 120	3108 ± 70	648 ± 25
OU 18	1012	18°00'	66°00'	1141	14°00'	60°40'	18	250	104.9 ± .3	51.1	46.1 ± 1.2	8.95 ± .26
IN 20	1902	16°50'	58°05'	2019	18°28'	66°12'	20	247*	136.0 ± .9	68.1	53.8 ± 4.1	7.4 ± 1.0
OU 27	1213	17°53'	65°04'	1315	13°04'	59°28'	27	479	58.6 ± .3	2.4	26.5 ± 1.6	5.40 ± .40
IN 27	1637	17°04'	60°08'	1726	18°10'	66°32'	27	414	41.1 ± .8	18.8	29.4 ± 4.4	4.30 ± .81
OU 30	1302	17°31'	64°34'	1348	13°46'	60°07'	30	359	42.7 ± .9	27.4	23.8 ± 4.0	4.88 ± .94
IN 30	1712	17°04'	62°01'	1740	18°06'	66°08'	30	307	75.1 ± 1.5	46.2	35.9 ± 6.3	6.8 ± 1.5
OU 50	1303	17°44'	64°42'	1358	13°28'	59°55'	50	9518	5357 ± 15	2456	2556 ± 66	411 ± 11
IN 50	1707	17°02'	60°46'	1745	17°59'	65°53'	50	27930	10914 ± 5	3473	5358 ± 23	1365 ± 6

* Counted on counter which has been found to give consistently low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 29, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	DPM/10^3 S.C.M. ^{95}Zr	DPM/10^3 S.C.M. ^{103}Ru	DPM/10^3 S.C.M. ^{106}Ru	DPM/10^3 S.C.M. ^{137}Cs
MM 1	1240	12°27'	58°22'	1300	12°23'	58°22'	1	35 ± 17	8.59 ± .64	5.3	7.0 ± 2.4	3.2 ± 1.0
MM 5	1210	13°12'	59°38'	1230	12°23'	58°23'	5	59 ± 27	22.3 ± .9	12.3 ± 5.0	8.8 ± 4.0	4.7 ± 1.9
MM 10	1440	12°27'	58°08'	1500	12°49'	56°08'	10	211	52.8 ± .3	22.5	33.5 ± 2.0	11.51 ± .60
MM 20	1325	12°23'	58°23'	1345	13°50'	57°25'	20					
MM 27	1309	12°57'	59°27'	1325	12°33'	57°27'	27	125	240.8 ± 2.2	199	166 ± 14	66.2 ± 3.5
MM 30	1409	14°02'	60°30'	1429	12°23'	58°19'	30	349	94.7 ± 1.3	47.8	35.0 ± 7.4	66.8 ± 2.7
MM 40	1414	12°23'	58°23'	1424	13°02'	57°54'	40	1170 ± 170	1334 ± 23	724 ± 40	726 ± 49	353 ± 13
MM 50	1356	13°28'	59°55'	1412	12°23'	58°23'	50	1930 ± 140	306.0 ± 2.5	208	71 ± 8	47.1 ± 8.7
DI 1	1713	13°08'	53°01'	1733	13°08'	53°01'	1	165 ± 17	67.8 ± .9	30.9 ± 4.8	36.1 ± 4.4	7.9 ± 1.3
DI 5	1502	12°51'	55°54'	1522	13°16'	54°07	5	279	93.5 ± 1.1	43.6 ± 2.5	54.7 ± 7.7	12.3 ± 1.8
DI 10	1630	15°08'	54°15'	1710	13°08'	53°01'	10	307	134.0 ± 1.5	65.5	68.4 ± 8.7	19.4 ± 2.2
DI 20	1748	13°08'	53°01'	1808	14°16'	55°23'	20	402	155.1 ± 3.8	71.0	69.0 ± 7.5	21.6 ± 2.9
DI 27	1345	13°04'	54°59'	1405	14°20'	54°03'	27	129	17.6 ± 1.0	9.3		2.7 ± 1.9
DI 30	1535	13°16'	54°18'	1555	15°53'	54°35'	30	105	19.10 ± .27	13.8	8.3 ± 1.6	3.98 ± .64
DI 40	1459	13°08'	53°51'	1509	13°36'	54°31'	40	680 ± 100	227.5 ± 4.2	118 ± 13	143 ± 22	26.3 ± 6.2
DI 50	1441	13°26'	55°32'	1457	13°08'	53°51'	50	11190	3136 ± 7	1300	1802 ± 87	534 ± 22
OC 1	1455	17°36'	54°34'	1515	17°36'	54°34'	1	206	72.6 ± .9	32.6	41.0 ± 5.2	6.4 ± 2.0
OC 5	1502	12°51'	55°54'	1522	13°16'	54°07'	5	246	96.7 ± 1.4	54.1 ± 3.4	49.1 ± 6.8	8.6 ± 3.3
OC 10	1630	15°08'	54°15'	1710	13°08'	53°01	10	350	155.1 ± 1.6	74.0	64.8 ± 7.7	17.0 ± 2.1
OC 20	1748	13°08'	53°01'	1808	14°16'	55°23'	20	281*	161.0 ± 1.9	75.0	79 ± 10	12.7 ± 2.6
OC 27	1345	13°04'	54°59'	1405	14°20'	54°03'	27	340	227.9 ± 1.9	145.5	94 ± 10	19.1 ± 1.1
OC 30	1535	13°16'	54°18'	1555	15°53'	54°35'	30	389	78.3 ± 1.3	43.5	27.0 ± 7.5	10.1 ± 2.1
OC 40	1459	13°08'	53°51'	1509	13°36'	54°31'	40	450 ± 140	410.4 ± 5.3	198 ± 14	200 ± 26	91 ± 12
OC 50	1441	13°26'	55°32'	1457	13°08'	53°51'	50	16960	11945 ± 23	5666	5550 ± 120	1117 ± 29
RA 1	0532	16°50'	59°12'	0552	16°50'	59°12'	1	179 ± 26	82.3 ± 1.2	41.0 ± 2.6	38.7 ± 6.7	12.8 ± 2.1
RA 5	0554	16°50'	59°12'	0614	17°00'	60°37'	5	273 ± 23	110.0 ± 1.1	63.1 ± 4.0	51.9 ± 6.2	11.4 ± 1.5
RA 5B	0642	16°50'	59°12'	0702	17°20'	61°15'	5	158	32.2 ± .7	9.3	16.8 ± 4.7	6.1 ± 1.7
RA 10	1648	17°03'	59°09'	1708	17°02'	61°19'	10	204	119.8 ± 1.2	77.9	47.6 ± 6.3	11.6 ± 1.7
RA 20	1904	16°50'	59°12'	1924	17°00'	60°38'	20	356 ± 29	224.2 ± 3.2	123.9 ± 5.3	106.1 ± 8.4	19.8 ± 2.4
RA 27	1620	16°55'	58°07'	1640	16°59'	60°23'	27	314	84.6 ± 1.2	55.8	35.5 ± 7.8	10.3 ± 2.2
RA 30	1621	17°22'	56°35'	1641	17°00	59°09'	30	465	321.6 ± .8	165	150.5 ± 4.2	57.3 ± 1.0
RA 40	1637	16°50'	59°12'	1647	16°57'	60°10'	40	1130	334.2 ± 6.6	121	201 ± 35	31.9 ± 9.6
OU 18	2345	18°10'	66°03'	0525	16°50'	59°12'	18	391	226.6 ± .7	118	111.7 ± 2.8	18.52 ± .44
IN 18	0625	17°10'	61°17'	0720	18°10'	66°03'	18	471	262.3 ± 1.7	143	121.0 ± 7.9	23.8 ± 1.6
OU 19	1030	18°00'	65°50'	1200	13°35'	60°18'	19	304	84.9 ± .9	42.9	37.9 ± 3.7	8.83 ± .74
IN 20B	0710	17°10'	62°15'	0755	18°00'	66°00'	20	411	104.5 ± 1.4	43.5	52.4 ± 7.4	10.[illegible] ± 1.7
OU 27	1207	17°47'	65°02'	1309	12°57'	59°27'	27	303	44.1 ± .5	33.7	19.2 ± 2.9	5.09 ± .76
OU 30	1326	17°44'	64°42'	1409	14°02'	60°30	30	335	75.9 ± .7	51.5	25.9 ± 4.3	5.8 ± 1.2
IN 30	1646	16°59'	60°23'	1718	17°49'	65°03'	30	529	202.4 ± 1.9	98.6	109.0 ± 8.9	17.8 ± 1.6
IN 30	1716	17°06'	62°20'	1744	17°48'	65°54'	30	502	170.9 ± 2.0	82.7	78.2 ± 8.8	13.3 ± 2.0
OU 50	1302	17°44'	64°42'	1356	13°28'	59°55	50	9536	6964	3174	3375 ± 47	625 ± 11
IN 50	1652	17°02'	60°40'	1737	17°59'	65°53'	50	15070	10992 ± 23	4861	5390 ± 100	766 ± 19

* Counted on counter which has been found to give consistently low ^{7}Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JUNE 30, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^7Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 1	1147	12°23	58°23'	1207	12°23'	58°23'	1	176	108.0 ± 2.0	45.4	68 ± 14	10.9 ± 3.8
MM 5	1110	13°05'	59°30'	1130	12°20'	58°22'	5	512 ± 17	194.5 ± .8	73.1 ± 2.2	95.2 ± 6.3	25.9 ± 1.4
MM 10	1406	12°23'	58°23'	1426	12°23'	56°49'	10	388	149.0 ± 1.6	73.6	75.6 ± 9.4	19.8 ± 2.3
MM 20	1225	12°23'	58°23'	1245	13°48'	57°26'	20	107*	54.1 ± 1.3	28.5	23.5 ± 6.5	3.7 ± 2.3
MM 27	1258	13°02'	59°31'	1318	12°38'	57°15'	27	176	10.3 ± .7	1.4	3.1 ± 5.6	2.5 ± 1.9
MM 30	1339	13°44'	60°20'	1359	12°23'	58°23'	30	163	43.2 ± 1.2	28.0 ± 3.2	7.5 ± 5.9	7.2 ± 2.3
MM 40	1419	12°23'	58°23'	1430	13°02'	57°54'	40	1228	364.1 ± 7.2	241	217 ± 39	60 ± 10
MM 50	1400	13°28'	59°55'	1416	12°23'	58°23'	50	8510	4760 ± 14	1392	1568 ± 84	549 ± 22
DI 1	1633	13°08'	53°51'	1653	13°08'	53°51'	1	202	146.7 ± 1.4	78.0 ± 3.4	75 ± 18	16.4 ± 3.0
DI 5	1433	12°31'	56°12'	1453	12°44'	54°16'	5	300	119.8 ± .4	57.2	68.3 ± 2.7	15.23 ± .62
DI 10	1527	15°06'	54°12'	1607	13°08'	53°51'	10	196	76.0 ± 1.2	30.7	38.4 ± 6.0	11.1 ± 1.7
DI 20	1708	13°08'	53°51'	1728	14°17'	55°27'	20	340	35.8 ± 1.2	12.0	17.4 ± 5.6	7.4 ± 2.2
DI 27	1335	12°58'	55°07'	1355	14°22'	54°02'	27	214 ± 29	16.3 ± .6	2.7 ± 2.2	2.2 ± 1.7	2.0 ± 1.3
DI 30	1507	13°22'	54°36'	1527	15°59'	54°51'	30	253 ± 21	56.3 ± .9	27.7 ± 4.6	29.1 ± 6.0	4.5 ± 1.7
DI 40	1508	13°08'	53°51'	1518	13°36'	54°31'	40	265 ± 96	38.6 ± 2.7			
DI 50	1449	13°26'	55°32'	1505	13°08'	53°51'	50	11080	3866 ± 15	1481	1819 ± 87	447 ± 22
OC 1	1352	17°36'	54°34'	1412	17°36'	54°34'	1	140 ± 29	112.8 ± 1.4	61.6 ± 3.4	43.7 ± 6.9	17.4 ± 2.1
OC 5	1414	17°36'	54°34'	1434	17°36'	54°34'	5	224 ± 31	103.2 ± 1.8	50.5 ± 6.2	44.5 ± 8.5	8.6 ± 5.4
OC 10	1438	17°36'	54°34'	1518	15°30'	54°12'	10	203 ± 19	118.0 ± 1.0	59.5 ± 4.2	59.5 ± 5.6	17.1 ± 3.0
OC 20	1326	16°30'	55°25'	346	16°20'	55°38'	20	418 ± 38	239.1 ± 1.9	125.5 ± 4.6	118 ± 10	25.3 ± 2.4
OC 27	1525	16°23'	54°20'	1545	17°25'	55°48'	27	817	717.2 ± 3.2	445	322 ± 18	83.9 ± 4.0
OC 30	1524	16°37'	54°57'	1554	17°31'	56°02'	30	1304 ± 66	695.3 ± 5.1	385.9 ± 5.1	316 ± 15	71.7 ± 6.1
OC 40	1558	17°36'	54°34'	1608	16°57'	55°03'	40	850 ± 200	338.0 ± 4.9	174 ± 22	104 ± 19	40.1 ± 7.0
OC 50	1539	15°58'	54°53'	1555	17°36'	54°34'	50	14200	7851 ± 20	3597	4090 ± 110	736 ± 27
RA 10	1628	17°04'	59°50'	1648	17°35'	61°42'	10	307	121.4 ± 1.4	67.0 ± 2.2	61.1 ± 4.9	6.2 ± 1.6
RA 20	1805	15°52'	57°50'	1825	16°50'	59°12'	20	580 ± 130	365.1 ± 2.1	177 ± 16	174.3 ± 1.1	31.0 ± 4.5
RA 27	1604	17°05'	57°55'	1624	17°00'	60°32'	27	1117	1054 ± 4	605.7 ± 7.0	483 ± 23	102.5 ± 4.7
RA 30	1601	17°25'	56°50'	1621	17°04'	59°11'	30	1360 ± 140	1091 ± 3	614 ± 7	571 ± 40	102.2 ± 3.6
RA 40	1652	16°50'	59°12'	1702	16°57'	60°10'	40	7440	4752 ± 22	2348	2150 ± 110	397 ± 25
RA 50	1633	16°34'	57°31'	1648	16°50'	59°12'	50	12320	8394 ± 21	3944	4010 ± 110	825 ± 28
OU 18	0920	18°14'	65°55'	1055	13°52'	60°20'	18	413	214.4 ± 1.2	103	97.7 ± 5.5	18.0 ± 1.1
IN 20	1651	17°37'	61°56'	1723	18°45'	65°48'	20	1400	833.7 ± 3.3	422	405 ± 16	71.3 ± 3.0
OU 27	1202	17°37'	64°34'	1258	13°02'	59°31'	27	696	86.0 ± .7	187.8	139.7 ± 7.0	56.8 ± 1.4
IN 28	1624	17°00'	60°32'	1713	18°05'	66°18'	28	1445	764.8 ± 3.0	390	376 ± 14	53.6 ± 2.6
OU 30	1255	17°26'	64°25'	1339	13°44'	60°20'	30	798	525.3 ± 1.9	293	255 ± 11	50.6 ± 2.4
OU 50	1306	17°44'	64°42'	1400	13°28'	59°55'	50	4570	7589 ± 3	4290	3671 ± 18	501.5 ± 3.9
IN 50	1702	17°02'	60°46'	1752	17°59'	65°53'	50	4320	7521 ± 3	4174	3586 ± 17	545.7 ± 3.6

* Counted on counter which has been found to give consistently low ^7Be numbers.

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JULY 1, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
RA 1	0600	16°52'	59°13'	0620	16°52'	59°13'	1	226	99.5 ± 1.3	55.8	35.2 ± 7.3	11.1 ± 2.0
RA 5	0622	16°52'	59°13'	0642	17°00'	61°00'	5	312	113.6 ± 1.5	50.8	92 ± 11	20.7 ± 2.4
IN 20	0656	17°25'	62°20'	0742	18°30'	66°00'	20	764	509.9 ± 2.8	252	271 ± 17	52.1 ± 2.5
MM 1	1202	12°23'	58°23'	1222	12°23'	58°23'	1	298	110.3 ± 2.0	47.1	42 ± 12	15.1 ± 3.6
MM 5	1138	13°05'	59°30'	1158	12°23'	58°23'	5	240 ± 24	69.3 ± 1.0	25.9 ± 4.0	36.4 ± 6.3	11.6 ± 2.0
MM 10	1420	12°23'	58°23'	1440	12°42'	56°10'	10	192 ± 41	66.0 ± .8	35.1 ± 7.3	38.3 ± 4.1	9.9 ± 1.1
MM 10B	2116	12°30'	58°12'	2257	13°08'	53°51'	10	250	120.2 ± .8	50.3 ± 1.6	58.2 ± 4.6	13.2 ± 1.1
MM 20	1243	12°23'	58°23'	1303	13°43'	57°27'	20	65 ± 27	11.1 ± .8	4.0 ± 2.9	5.3 ± 3.2	
MM 20B	1748	12°24'	58°30'	1808	12°23'	58°23'	20	199	18.8 ± 1.2		7.5 ± 4.6	2.9 ± 2.5
MM 27A	1308	13°04'	59°28'	1318	13°05'	59°39'	27	183	23.5 ± 1.5	17.7		
MM 27B	1318	13°05'	59°30'	1328	12°24'	56°60'	27	187	19.8 ± 1.5	16.1		
MM 30	1345	14°08'	59°49'	1405	12°23'	58°23'	30	207	59.1 ± 1.3	31.2	16.3 ± 7.4	5.7 ± 2.4
MM 40	1428	12°23'	58°23'	1438	13°02'	57°54'	40	1110	594.0 ± 8.2	288	295 ± 45	64 ± 12
MM 50	1409	13°28'	59°55'	1425	12°23'	58°23'	50	5130	1861 ± 11	794	892 ± 74	203 ± 19
DI 1	1543	14°43'	54°00'	1603	13°08'	53°51'	1	307	167.1 ± .6	93.0	94.9 ± 3.3	17.02 ± .82
DI 5	1607	13°08'	53°51'	1627	12°08'	53°51'	5	529	287.1 ± 2.4	239	269 ± 18	198.7 ± 4.3
DI 10	1414	12°50'	55°56'	1504	13°08'	53°51'	10	520	135.9 ± .8	45.4	55.9 ± 4.3	12.0 ± 1.1
DI 20	1640	13°08'	53°51'	1700	13°54'	55°00'	20	129	6.0 ± .7			
DI 27A	1345	12°55'	54°47'	1355	13°09'	53°57'	27	147	8.4 ± 1.4	11.0		4.3 ± 3.6
DI 27B	1355	13°09'	53°51'	1405	14°25'	54°01'	27	194	8.3 ± 1.4	2.9 ± 4.6		8.4 ± 3.8
DI 30	1517	13°08'	53°51'	1537	15°21'	54°09'	30	327	59.8 ± 1.2	30.6	23.7 ± 7.9	9.0 ± 2.3
DI 40	1517	13°08'	53°51'	1527	13°36'	54°31'	40	650 ± 100	79.5 ± 3.5	48 ± 11	65 ± 30	12.2 ± 5.6
DI 50	1458	13°26'	55°32'	1514	13°08'	53°51'	50	6250	1240 ± 9	443	723 ± 71	177 ± 19
OC 1	1453	17°36'	54°34'	1513	16°30'	54°20'	1	331	144.9 ± 1.6	74.0	95 ± 11	20.7 ± 2.6
OC 5	1429	17°36'	54°34'	1444	17°36'	54°34'	5	354	173.9 ± 2.5	88.3	98 ± 15	23.0 ± 4.1
OC 10	1407	17°36'	54°34'	1427	17°36'	54°34'	10	556	290.5 ± 2.7	122	131 ± 12	31.0 ± 4.8
OC 20	1343	16°18'	55°30'	1403	17°36'	54°34'	20	172	34.1 ± 1.5	14.7		
OC 27A	1536	16°11'	54°09'	1546	17°10'	54°21'	27	196	37.9 ± 1.7	27.7		10.3 ± 3.8
OC 27B	1546	17°10'	54°21'	1556	16°56'	55°38'	27	194	42.3 ± 1.7	27.6		9.1 ± 3.9
OC 30	1544	16°14'	54°17'	1604	17°18'	55°52'	30	319	50.1 ± 1.2	28.5	12.0 ± 8.0	6.8 ± 2.2
OC 40	1608	17°36'	54°34'	1618	16°57'	55°03'	40	770	452.0 ± 7.1	245	191 ± 42	59 ± 11
OC 50	1549	15°58'	54°53'	1605	17°36'	54°34'	50	7232	3554 ± 15	1652	1803 ± 85	357 ± 22
RA 1	1827	16°50'	59°12'	1847	17°00'	60°32'	1	267	108.5 ± 1.4	61.7	70.8 ± 8.3	9.4 ± 2.0
RA 5	1805	16°50'	59°12'	1825	16°50'	59°12'	5	245	101.5 ± .6	48.2	53.2 ± 3.2	14.87 ± .92
RA 10	1645	16°50'	59°12'	1705	16°53'	61°44'	10	590	267.1 ± 4.2	139	142.0 ± 9.4	22.4 ± 1.6
RA 20	1740	16°00'	57°45'	1800	16°50'	59°12'	20	230	46.2 ± 1.2	14.7	40.6 ± 8.4	10.7 ± 2.5
RA 27A	1615	16°29'	57°46'	1625	16°50'	59°20'	27	273	147.7 ± .8	62.4	69.1 ± 4.7	52.1 ± 1.5
RA 27B	1625	16°50'	59°20'	1635	16°22'	60°07'	27	602	180.2 ± 2.9	78.7	71 ± 16	26.7 ± 4.4
RA 27C	1635	16°22'	60°07'	1705	17°05'	61°20'	27	790 ± 110	331.9 ± 6.2	163 ± 23	171.7 ± 3.6	33.1 ± .6
RA 30	1614	16°56'	58°07'	1634	16°50'	59°12'	30	52	23.3 ± .3	14.0	12.1 ± 2.0	4.29 ± .74
RA 47	1655	16°50'	59°12'	1705	16°57'	60°10'	47	15600	7207 ± 7	2561	3248 ± 40	716 ± 10
RA 50	1636	16°34'	57°31'	1651	16°50'	59°12'	50	9930	5744 ± 17	2643	2694 ± 97	477 ± 24
OU 18	0950	18°02'	66°00'	1123	14°00'	60°20'	18	494	272.4 ± 1.5	125	133.1 ± 6.5	26.7 ± 1.2
OU 27	1213	17°32'	64°29'	1308	13°04'	59°24'	27	518	202.8 ± 1.5	106	103.7 ± 6.9	23.5 ± 1.4
OU 50	1311	17°44'	64°42'	1409	13°28'	59°55'	50	17240	7138 ± 3	2624	3489 ± 15	685.3 ± 3.7
IN 50	1705	17°02'	60°46'	1753	17°59'	65°53'	50	18852	12905 ± 25	5875	6237 ± 110	1030 ± 19

RADIONUCLIDE DISINTEGRATION RATES IN AIR FILTER SAMPLES COLLECTED BY AIRCRAFT DURING THE BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT

JULY 2, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	DPM/10^3 S.C.M. ^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
RA 108	0125	17°00'	57°12'	0138	16°55'	58°54'	10	471	240.9 ± 3.6	122	78 ± 16	27.3 ± 5.2
MM 10	1416	12°23'	58°23'	1436	12°42'	55°58'	10	89	8.59 ± .38		4.0 ± 1.6	2.0 ± 1.1
MM 30	1348	13°52'	60°20'	1408	12°23'	58°23'	30	657	78.8 ± 1.3	38.7	29.9 ± 8.2	10.0 ± 2.4
MM 40	1427	12°23'	58°23'	1437	13°02'	57°54'	40	938	619.9 ± 8.2	339 ± 18	337 ± 46	77 ± 12
MM 50	1407	13°28'	59°55'	1424	12°23'	58°23'	50	2628	358.6 ± 6.6	120	116 ± 60	49 ± 16
MM 60	1410	13°20'	59°40'	1437	12°37'	57°00'	60	64540	30056 ± 13	8974	14811 ± 63	4528 ± 16
DI 5	1443	12°51'	55°07'	1503	13°04'	53°40'	5	79	10.3 ± .6	6.7	8.1 ± 4.0	2.2 ± 1.5
DI 30	1507	13°04'	53°40'	1527	15°16'	54°10'	30	274	43.3 ± 1.1	22.3	10.9 ± 6.9	9.6 ± 2.3
DI 40	1519	13°08'	53°51'	1529	13°36'	54°31'	40	280 ± 110	115.0 ± 5.3	48 ± 10	31 ± 15	30.5 ± 6.6
DI 50	1500	13°26'	55°32'	1516	13°08'	53°51'	50	5310	853.0 ± 2.8	221	462 ± 22	109.4 ± 6.0
DI 60	1501	13°03'	54°24'	1528	13°38'	53°55'	60	45960	32475 ± 40	12551	15650 ± 200	3830 ± 49
OC 30	1542	16°52'	54°26'	1602	12°17'	56°02'	30	321	87.9 ± 1.1	50.0	38.3 ± 8.1	8.3 ± 2.5
OC 40	1604	17°36'	54°34'	1614	16°57'	55°03'	40	1380 ± 190	914 ± 10	438	485 ± 54	73 ± 13
OC 50	1548	15°58'	54°53'	1603	17°36'	54°34'	50	2894	722.4 ± 8.3	350	391 ± 47	80 ± 13
OC 60	1556	17°00'	54°30'	1623	17°30'	55°10'	60	55010	37926 ± 43	13706	18090 ± 210	4671 ± 53
RA 10	1635	16°47'	59°06'	1655	16°51'	61°16'	10	224	69.8 ± 1.0	34.0	39.1 ± 5.9	9.0 ± 1.5
RA 30	1609	17°08'	56°48'	1629	16°47'	59°06'	30	478	166.5 ± 1.7	92.5	69 ± 11	29.0 ± 2.7
RA 40	1657	16°50'	59°12'	1707	16°57'	60°10'	40	5522	1999 ± 4	600	973 ± 26	293.7 ± 7.0
RA 50	1639	16°34'	57°31'	1654	16°50'	59°12'	50	5046	1090 ± 10	464	678 ± 78	137 ± 20
RA 60	1641	17°03'	61°00'	1747	17°03'	61°00'	60	17250	15807 ± 18	5268	6219 ± 82	1247 ± 21
OU 27	1202	17°29'	64°56'	1259	12°32'	59°29'	27	332	95.9 ± .8	54.6	48.1 ± 4.3	10.19 ± .86
IN 27	1658	16°51'	61°16'	1723	17°08'	64°42'	27	602	188.5 ± 2.1	100	95 ± 11	18.6 ± 2.2
OU 30	1252	17°42'	64°35'	1348	13°52'	60°20'	30	639	198.0 ± 1.6	95.4	106.2 ± 7.4	17.7 ± 1.4
OU 50	1312	17°44'	64°42'	1407	13°28'	59°55'	50	10890	6974 ± 17	3110	3620 ± 79	529 ± 13
IN 50	1708	17°02'	60°46'	1749	17°59'	65°53'	50	9245	5254 ± 17	1981	3320 ± 87	400 ± 14
OU 60	1309	17°44'	64°42'	1410	13°20'	59°40'	60	7434	27011 ± 40	16254	13000 ± 180	2365 ± 28
IN 60	1708	17°03'	61°00'	1747	17°59'	65°53'	60	32581	35893 ± 67	21095	13070 ± 230	2362 ± 34

JULY 21, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 60	1525	11°30'	55°30'	1551	11°30'	57°30'	60	44380	27824 ± 36	8161	15320 ± 190	3728 ± 49
DI 60	1445	13°22'	54°25'	1511	12°40'	54°20'	60	40020	31547 ± 39	10420	17210 ± 210	3635 ± 51
RW 60	1425	15°00'	56°15'	1433	14°20'	55°30'	60	63300	43460 ± 86	15640 ± 60	25780 ± 480	5680 ± 120
OU 60	1303	17°44'	64°42'	1407	15°40'	58°00'	60	25920	31492 ± 37	11631	17310 ± 210	2904 ± 42

JULY 26, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
MM 60	1520	11°30'	59°15'	1547	10°00'	57°30'	60	36080	19878 ± 29	5584	11710 ± 170	3085 ± 43
OU 60	1400	17°42'	64°48'	1520	11°30'	59°15'	60	24390	20009 ± 17	6667	11617 ± 92	2464 ± 23

JULY 28, 1969

SAMPLE NO.	ON TIME (Z)	ON LAT °N	ON LONG °W	OFF TIME (Z)	OFF LAT °N	OFF LONG °W	ALT. IN Kft	^{7}Be	^{95}Zr	^{103}Ru	^{106}Ru	^{137}Cs
A 60	1508	15°25'	56°35'	1535	15°25'	56°35'	60	25430	15545 ± 16	5140	9640 ± 160	2416 ± 39
B 60	1535	15°45'	56°09'	1602	17°30'	54°00'	60	16030*	14276 ± 10	5077	8554 ± 66	1502 ± 13
C 60	1602	17°30'	54°00'	1629	17°30'	54°00'	60	14260	12921 ± 10	5099	7872 ± 60	1691 ± 13
D 60	1630	17°30'	54°00'	1653	16°05'	56°00'	60	13040	14599 ± 39	6494	8660 ± 230	1778 ± 41
E 60	1653	16°05'	56°00'	1720	15°55'	58°53'	60	28260	14269 ± 10	4278	9133 ± 62	2217 ± 13
OU 60	1422	16°15'	61°30'	1505	15°25'	56°35'	60	17840	16378 ± 7	6219 ± 13	10037 ± 45	1882 ± 9
IN 50	1720	15°55'	58°53'	1809	17°42'	64°47'	60	15940	16208 ± 7	6308 ± 12	10161 ± 43	2198 ± 8

* Counted on counter which has been found to give consistantly low ^{7}Be numbers.

END

DATE FILMED

7 / 19 / 93