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**ENVIRONMENTAL MONITORING REPORT:
JULY-DECEMBER 1967 AND 1967 SUMMARY**

H. F. Anderson and W. E. Sheehan

AEC Research and Development REPORT

MONSANTO RESEARCH CORPORATION

A SUBSIDIARY OF MONSANTO COMPANY

M O U N D L A B O R A T O R Y

MIAMISBURG, OHIO

OPERATED FOR

UNITED STATES ATOMIC ENERGY COMMISSION

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**ENVIRONMENTAL MONITORING REPORT: JULY-DECEMBER 1967
AND 1967 SUMMARY**

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MONSANTO RESEARCH CORPORATION

A Subsidiary of Monsanto Company

MOUND LABORATORY

Miamisburg, Ohio

operated for

UNITED STATES ATOMIC ENERGY COMMISSION

U S GOVERNMENT CONTRACT NO AT 33-1-GEN 53

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ABSTRACT

The concentration of radioactive materials detected in the environment surrounding Mound Laboratory, Miamisburg, Ohio, is presented for the second half of 1967, and a summary is presented for the entire year. The average concentration of radionuclides from Mound Laboratory in the Great Miami River and in the environmental air (average of all zones) was within the standards specified by the Atomic Energy Commission.

INTRODUCTION

This report is a summary of the Environmental Monitoring Program conducted by Monsanto Research Corporation, Mound Laboratory, Miamisburg, Ohio. The program considers all of the projects at Mound Laboratory and all of the radioisotopes which could be released into the environment. The monitoring procedures and counting techniques are those best suited for the detection and measurement of these radioactive materials.

The Radioactivity Concentration Guide (RCG) values in air and in water for the radionuclides in use at Mound Laboratory are taken from the USAEC Manual, Chapter 0524. The Radioactivity Concentration Guides for environmental air and water for the materials used at Mound Laboratory are:

Polonium-210

Air: 2×10^{-11} microcuries per cubic centimeter ($\mu\text{Ci/cc}$)
Water: 7×10^{-7} microcuries per cubic centimeter ($\mu\text{Ci/cc}$)

Plutonium-238

Air: 7×10^{-14} microcuries per cubic centimeter ($\mu\text{Ci/cc}$)
Water: 5×10^{-6} microcuries per cubic centimeter ($\mu\text{Ci/cc}$)

Hydrogen-3 (Tritium)

Air: 2×10^{-7} microcuries per cubic centimeter ($\mu\text{Ci/cc}$)
Water: 3×10^{-3} microcuries per cubic centimeter ($\mu\text{Ci/cc}$)

LIQUID CONTAMINATION

Polonium-Plutonium Liquid radioactive wastes from polonium and plutonium work at the Laboratory are processed separately to reduce the concentration of these radionuclides to a level at which they may be discharged to the environment. Treated polonium liquid waste is discharged to the Great Miami River via a closed sewer line which also carries the treated plant sewage. The treated plutonium waste is discharged to a drainage ditch which runs through the plant site and eventually reaches the river.

Tritium Helium-3 being purified at Mound Laboratory contains small quantities of tritium. In addition, tritium is being recovered from various AEC tritium-contaminated wastes. Liquid waste generated by these operations is treated (diluted with water when necessary) and is discharged to the same closed sewer line described above. Some tritium-contaminated liquid wastes are discharged to the drainage ditch which runs through the site and eventually reaches the river.

Water Sampling Water samples are collected weekly from the Great Miami River and from the drainage ditch. Samples collected from the river are analyzed for polonium, plutonium and tritium. Samples collected from the drainage ditch are analyzed for plutonium and tritium.

Map 1 shows the location of weekly water sampling points.

The results of the water sampling program are presented in Table 1, Table 2, and Table 3. The data presented in these tables indicate that the average concentrations of polonium, plutonium and tritium in water discharged to the environment were well below the Radioactivity Concentration Guides.

AIRBORNE CONTAMINATION

Polonium-Plutonium Air which is contaminated with polonium and plutonium particulates is treated by passing it through absolute filters before it is discharged to the environment via several building stacks.

Tritium Air which might be contaminated with gaseous tritium is discharged to the environment via stacks.

Off-Site Air Sampling All environmental air samples are collected weekly to a distance of 20 miles with sampling equipment mounted in a one-ton panel truck. Samples are collected upwind and downwind from the plant according to routes drawn for the different wind directions. The selection of the air sampling zone depends on the wind direction on the days that samples are collected. Since the sampling zone is dependent on the wind direction it is possible that air samples from all zones will not be collected during the reporting period. Maps 2 and 3 show the zones routinely sampled. Results of the air sampling program are presented in Tables 4 to 9. Table 10 lists the specific location of sampling sites by zone for the polonium and plutonium monitoring program. Table 11 lists the specific location of sampling sites by zone for the tritium monitoring program.

Airborne polonium and plutonium particulates are collected with a high volume air sampler. The filter papers are then processed such that counting results are specific for polonium and plutonium. One fourth of each filter paper is processed by spontaneous deposition to isolate polonium. Plutonium is isolated by processing the remaining three fourths of each filter paper through a resin column.

Prior to August 22, 1967, airborne tritium was monitored by drawing air through a calcium chloride drying tube then analyzing the collected moisture for tritium. Beginning August 22, 1967, the procedure was changed to bubbling an air sample through a liquid scintillation counting solution with p-dioxane as the organic solvent. The counting solution is then counted directly in a liquid spectrometer.

Table 1

SUMMARY OF OFF-SITE WATER MONITORING FOR POLONIUM

January-June 1967

<u>Sample Location (Great Miami River)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	26	4.50	1.97	0.28
Mound Lab Effluent (location No. 3 on map)	26	900.90	71.20	10.17
250 yards Downstream from Mound Lab Effluent (location No. 4 on map)	26	234.23	13.20	1.89
Chautauqua Road Bridge (location No. 5 on map)	26	3.60	1.87	0.27
Chautauqua Dam (loca- tion No. 6 on map)	26	3.60	1.91	0.27
Franklin, Ohio (loca- tion No. 7 on map)	25	1.80	1.80	0.26

July-December 1967

Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	23	1.80	1.80	0.26
Mound Lab Effluent (location No. 3 on map)	23	1180.18	86.89	12.41
250 yards Downstream from Mound Lab Effluent (location No. 4 on map)	23	1.80	1.80	0.26

Table 1 (continued)

SUMMARY OF OFF-SITE WATER MONITORING FOR POLONIUM

July-December 1967

Sample Location (Great Miami River)	Number of Samples Collected	Maximum Concentration ^a (10 ⁻⁹ μ Ci/cc)	Average Concentration ^a (10 ⁻⁹ μ Ci/cc)	Percent of RCG ^b for Average
Chautauqua Road Bridge (location No. 5 on map)	23	7.21	2.03	0.29
Chautauqua Dam (location No. 6 on map)	23	4.50	1.94	0.28
Franklin, Ohio (location No. 7 on map)	23	1.80	1.80	0.26

January-December 1967

Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	49	4.50	1.89	0.27
Mound Lab Effluent (location No. 3 on map)	49	1180.18	78.56	11.22
250 yd Downstream from Mound Lab Effluent (location No. 4 on map)	49	234.23	7.85	1.12
Chautauqua Road Bridge (location No. 5 on map)	49	7.21	1.95	0.28
Chautauqua Dam (location No. 6 on map)	49	4.50	1.92	0.27
Franklin, Ohio (location No. 7 on map)	48	1.80	1.80	0.26

^aLowest detectable limit for polonium in water is 1.80×10^{-9} μ Ci/cc. All samples which were not detectable were set equal to this value when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 2

SUMMARY OF OFF-SITE WATER MONITORING FOR PLUTONIUM

January-June 1967

Sample Location (Great Miami River)	Number of Samples Collected	Maximum Concentration ^a (10 ⁻⁹ μ Ci/cc)	Average Concentration ^a (10 ⁻⁹ μ Ci/cc)	Percent of RCG ^b for Average
Mound Lab Drainage Ditch (location No. 1 on map)	26	945.94	73.87	1.48
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	16	22.50	6.30	0.13
Mound Lab Effluent (location No. 3 on map)	14	27.00	8.10	0.16
250 yd Downstream from Mound Lab Effluent (location No. 4 on map)	17	9.00	4.95	0.10
Chautauqua Road Bridge (location No. 5 on map)	17	22.50	6.75	0.14
Chautauqua Dam (loca- tion No. 6 on map)	17	9.00	4.95	0.10
Franklin, Ohio (loca- tion No. 7 on map)	17	54.05	7.65	0.15

July-December 1967

Mound Lab Drainage Ditch (location No. 1 on map)	23	23,423.42	1,365.32	27.31
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	23	324.32	18.47	0.37
Mound Lab Effluent (location No. 3 on map)	23	1,279.28	101.35	2.03

Table 2 (continued)

SUMMARY OF OFF-SITE WATER MONITORING FOR PLUTONIUM

July-December 1967

Sample Location (Great Miami River)	Number of Samples Collected	Maximum Concentration ^a (10 ⁻⁹ μ Ci/cc)	Average Concentration ^a (10 ⁻⁹ μ Ci/cc)	Percent of RCG ^b for Average
250 yd Downstream from Mound Lab Effluent (location No. 4 on map)	23	18.02	5.41	0.11
Chautauqua Road Bridge (location No. 5 on map)	23	207.21	13.51	0.27
Chautauqua Dam (location No. 6 on map)	23	4.50	4.50	0.09
Franklin, Ohio (location No. 7 on map)	23	9.01	4.95	0.10

January-December 1967

Mound Lab Drainage Ditch (location No. 1 on map)	49	23,423.42	680.06	13.60
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	39	324.32	13.48	0.27
Mound Lab Effluent (location No. 3 on map)	37	1,279.28	66.07	1.32
250 yd Downstream from Mound Lab Effluent (location No. 4 on map)	40	18.02	5.21	0.10
Chautauqua Road Bridge (location No. 5 on map)	40	207.21	10.64	0.21

Table 2 (continued)

SUMMARY OF OFF-SITE WATER MONITORING FOR PLUTONIUM

January-December 1967

Sample Location (Great Miami River)	Number of Samples Collected	Maximum Concentration ^a (10 ⁻⁹ μ Ci/cc)	Average Concentration ^a (10 ⁻⁹ μ Ci/cc)	Percent of RCG ^b for Average
Chautauqua Dam (location No. 6 on map)	40	9.00	4.69	0.09
Franklin, Ohio (location No. 7 on map)	40	54.05	6.10	0.12

^aLowest detectable limit for plutonium in water is 4.50×10^{-9} μ Ci/cc. All samples which were not detectable were set equal to this value when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 3

SUMMARY OF OFF-SITE WATER MONITORING FOR TRITIUM

January-June 1967

<u>Sample Location (Great Miami River)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻³ μCi/cc)</u>	<u>Average Concentration^a (10⁻³ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
Mound Lab Drainage Ditch (location No. 1 on map)	26	0.55	0.09	3.00
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	26	0.10	0.05	1.67
Mound Lab Effluent (location No. 3 on map)	26	0.21	0.11	3.67
Chautauqua Road Bridge (location No. 5 on map)	26	0.07	0.05	1.67

July-December 1967

Mound Lab Drainage Ditch (location No. 1 on map)	23	1.80	0.22	7.33
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	23	0.63	0.08	2.67
Mound Lab Effluent (location No. 3 on map)	23	16.00	0.97	32.33
Chautauqua Road Bridge (location No. 5 on map)	23	0.08	0.05	1.67

January-December 1967

Mound Lab Drainage Ditch (location No. 1 on map)	49	1.80	0.15	5.00
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Table 3 (continued)

SUMMARY OF OFF-SITE WATER MONITORING FOR TRITIUM

January-December 1967

Sample Location (Great Miami River)	Number of Samples Collected	Maximum Concentration ^a (10 ⁻³ μ Ci/cc)	Average Concentration ^a (10 ⁻³ μ Ci/cc)	Percent of RCG ^b for Average
Linden Ave. Bridge, Miamisburg, Ohio (upstream-location No. 2 on map)	49	0.63	0.06	2.00
Mound Lab Effluent (location No. 3 on map)	49	16.00	0.51	17.00
Chautauqua Road Bridge (location No. 5 on map)	49	0.08	0.05	1.67

^aLowest detectable limit for tritium in water is 0.05×10^{-3} μ Ci/cc. All samples which were not detectable were set equal to this value when average values were calculated.

^bRCG-Radioactivity Concentration Guide.

Table 4

SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>North Zone</u>				
0 - 3 (upwind)	3	3.86	2.97	0.15
0 - 3 (downwind)	3	2.25	1.69	0.08
3 - 5 (downwind)	3	4.00	3.19	0.16
5 - 10 (downwind)	3	4.14	3.72	0.19
10 - 15 (downwind)	3	4.59	4.09	0.20
15 - 20 (downwind)	3	3.66	2.29	0.11
<u>Northeast Zone</u>				
0 - 3 (upwind)	5	3.58	2.87	0.14
0 - 3 (downwind)	5	3.20	2.54	0.13
3 - 5 (downwind)	5	4.09	2.93	0.15
5 - 10 (downwind)	5	4.19	3.15	0.16
10 - 15 (downwind)	5	3.36	2.88	0.14
15 - 20 (downwind)	5	2.26	1.93	0.10

Table 4 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>East Zone</u>				
0 - 3 (upwind)	5	1.95	1.07	0.05
0 - 3 (downwind)	5	1.26	1.12	0.06
3 - 5 (downwind)	5	3.48	1.99	0.10
5 - 10 (downwind)	5	3.29	1.69	0.08
10 - 15 (downwind)	5	2.82	1.42	0.07
15 - 20 (downwind)	5	2.24	1.02	0.05
<u>Southeast Zone</u>				
0 - 3 (upwind)	0	No samples were collected in this zone during the second half of 1967 because the prevailing winds were not out of the northwest on the days air samples were collected.		
0 - 3 (downwind)	0			
3 - 5 (downwind)	0			
5 - 10 (downwind)	0			
15 - 20 (downwind)	0			

Table 4 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>South Zone</u>				
0 - 3 (upwind)	1	3.62	3.62	0.18
0 - 3 (downwind)	1	1.90	1.90	0.10
3 - 5 (downwind)	1	0.80	0.80	0.04
5 - 10 (downwind)	1	2.24	2.24	0.11
10 - 15 (downwind)	1	2.28	2.28	0.11
15 - 20 (downwind)	1	1.08	1.08	0.05
<u>Southwest Zone</u>				
0 - 3 (upwind)	3	2.26	1.60	0.08
0 - 3 (downwind)	3	1.99	1.72	0.09
3 - 5 (downwind)	3	2.64	2.21	0.11
5 - 10 (downwind)	3	3.84	3.31	0.17
10 - 15 (downwind)	3	2.61	2.03	0.10
15 - 20 (downwind)	3	2.89	1.92	0.10

Table 4 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>West Zone</u>				
0 - 3 (upwind)	2	66.90	34.25	1.71
0 - 3 (downwind)	2	2.37	1.80	0.09
3 - 5 (downwind)	2	68.92	35.73	1.79
5 - 10 (downwind)	2	9.91	6.62	0.33
10 - 15 (downwind)	2	8.00	4.80	0.24
15 - 20 (downwind)	2	2.94	2.22	0.11
<u>Northwest Zone</u>				
0 - 3 (upwind)	2	2.54	1.75	0.09
0 - 3 (downwind)	2	1.88	1.20	0.06
3 - 5 (downwind)	2	4.02	2.41	0.12
5 - 10 (downwind)	2	3.46	2.73	0.14
10 - 15 (downwind)	2	1.51	1.33	0.07

Table 4 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>Northwest Zone</u>				
15 - 20 (downwind)	2	3.03	2.36	0.12

^aLowest detectable limit for polonium in air is 0.80×10^{-14} μ Ci/cc for samples collected 0-3 miles upwind, 3-5 miles downwind, 5-10 miles downwind and 10-15 miles downwind. The LDL is 0.53×10^{-14} μ Ci/cc for samples collected 0-3 miles downwind and 15-20 miles downwind. All values which were not detectable were set equal to these values when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 5

1967 YEARLY SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

January-June 1967, All Zones

<u>Range (miles)</u>	<u>Number of Samples</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of Polonium RCG^b for Average</u>
0 - 3 (upwind)	24	4.66	1.70	0.09
0 - 3 (downwind)	23	10.47	1.34	0.07
3 - 5 (downwind)	24	5.33	1.69	0.08
5 - 10 (downwind)	24	4.22	1.47	0.07
10 - 15 (downwind)	24	3.23	1.42	0.07
15 - 20 (downwind)	23	2.65	1.07	0.05

July-December 1967, All Zones

0 - 3 (upwind)	21	66.90	5.19	0.26
0 - 3 (downwind)	21	3.20	1.73	0.09
3 - 5 (downwind)	21	68.92	5.61	0.28
5 - 10 (downwind)	21	9.91	3.15	0.16
10 - 15 (downwind)	21	8.00	2.59	0.13
15 - 20 (downwind)	21	3.66	1.79	0.09

Table 5 (continued)

1967 YEARLY SUMMARY OF OFF-SITE AIR MONITORING FOR POLONIUM

January-December 1967, All Zones

<u>Range (miles)</u>	<u>Number of Samples</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of Polonium RCG^b for Average</u>
0 - 3 (upwind)	45	66.90	3.33	0.17
0 - 3 (downwind)	44	10.47	1.53	0.08
3 - 5 (downwind)	45	68.92	3.52	0.18
5 - 10 (downwind)	45	9.91	2.25	0.11
10 - 15 (downwind)	45	8.00	1.97	0.10
15 - 20 (downwind)	44	3.66	1.41	0.07

^aLowest detectable limit for polonium in air is 0.80×10^{-14} μ Ci/cc for samples collected 0-3 miles upwind, 3-5 miles downwind, 5-10 miles downwind, and 10-15 miles downwind. The LDL is 0.53×10^{-14} μ Ci/cc for samples collected 0-3 miles downwind and 15-20 miles downwind. All values which were not detectable were set equal to these values when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 6

SUMMARY OF OFF-SITE AIR MONITORING RESULTS FOR PLUTONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>North Zone</u>				
0 - 3 (upwind)	3	0.89	0.71	10.14
0 - 3 (downwind)	3	0.61	0.46	6.58
3 - 5 (downwind)	3	1.20	0.67	9.57
5 - 10 (downwind)	3	1.15	0.71	10.14
10 - 15 (downwind)	3	0.79	0.61	8.71
15 - 20 (downwind)	3	0.74	0.54	7.71
<u>Northeast Zone</u>				
0 - 3 (upwind)	5	2.64	1.02	14.57
0 - 3 (downwind)	5	6.05	1.70	24.29
3 - 5 (downwind)	5	7.24	2.11	30.14
5 - 10 (downwind)	5	0.92	0.54	7.71
10 - 15 (downwind)	5	1.02	0.51	7.29
15 - 20 (downwind)	5	2.73	0.82	11.71

Table 6 (continued)

SUMMARY OF OFF-SITE AIR MONITORING RESULTS FOR PLUTONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>East Zone</u>				
0 - 3 (upwind)	5	0.91	0.53	7.57
0 - 3 (downwind)	5	0.55	0.36	5.14
3 - 5 (downwind)	5	1.01	0.60	8.57
5 - 10 (downwind)	5	1.16	0.54	7.71
10 - 15 (downwind)	5	4.18	1.48	21.14
15 - 20 (downwind)	5	0.84	0.60	8.57
<u>Southeast Zone</u>				
0 - 3 (upwind)	0	No samples were collected in this zone the second half of 1967 because the prevailing winds were not out of the northwest on the days air samples were collected.		
0 - 3 (downwind)	0			
3 - 5 (downwind)	0			
5 - 10 (downwind)	0			
10 - 15 (downwind)	0			
15 - 20 (downwind)	0			

Table 6 (continued)

SUMMARY OF OFF-SITE AIR MONITORING RESULTS FOR PLUTONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>South Zone</u>				
0 - 3 (upwind)	1	0.37	0.37	5.29
0 - 3 (downwind)	1	0.70	0.70	10.00
3 - 5 (downwind)	1	0.31	0.31	4.43
5 - 10 (downwind)	1	0.31	0.31	4.43
10 - 15 (downwind)	1	0.56	0.56	8.00
15 - 20 (downwind)	1	0.24	0.24	3.43
<u>Southwest Zone</u>				
0 - 3 (upwind)	3	0.66	0.36	5.14
0 - 3 (downwind)	3	2.29	0.96	13.71
3 - 5 (downwind)	3	11.14	3.87	55.29
5 - 10 (downwind)	3	1.42	0.68	9.71
10 - 15 (downwind)	3	9.84	3.73	53.29
15 - 20 (downwind)	3	1.49	0.66	9.43

Table 6 (continued)

SUMMARY OF OFF-SITE AIR MONITORING RESULTS FOR PLUTONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>West Zone</u>				
0 - 3 (upwind)	2	1.16	1.10	16.71
0 - 3 (downwind)	2	1.06	0.72	10.29
3 - 5 (downwind)	2	1.52	1.26	18.00
5 - 10 (downwind)	2	0.86	0.78	11.14
10 - 15 (downwind)	2	0.57	0.54	7.71
15 - 20 (downwind)	2	0.55	0.43	6.14
<u>Northwest Zone</u>				
0 - 3 (upwind)	2	0.64	0.53	7.57
0 - 3 (downwind)	2	0.40	0.31	4.43
3 - 5 (downwind)	2	0.76	0.59	8.43
5 - 10 (downwind)	2	0.81	0.73	10.43
10 - 15 (downwind)	2	0.44	0.29	4.14

Table 6 (continued)

SUMMARY OF OFF-SITE AIR MONITORING RESULTS FOR PLUTONIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
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Northwest Zone

15 - 20 (downwind)	2	0.18	0.16	2.29
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^aLowest detectable limit for plutonium in air is 0.13×10^{-14} μ Ci/cc for samples collected 0-3 miles upwind, 3-5 miles downwind, 5-10 miles downwind and 10-15 miles downwind. The LDL is 0.09×10^{-14} μ Ci/cc for samples collected 0-3 miles downwind and 15-20 miles downwind. All values which were not detectable were set equal to these values when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 7

1967 YEARLY SUMMARY OF OFF-SITE AIR MONITORING FOR PLUTONIUM

January-June 1967, All Zones

<u>Range (miles)</u>	<u>Number of Samples</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of Plutonium RCG^b for Average</u>
0 - 3 (upwind)	25	28.22	1.62	23.14
0 - 3 (downwind)	25	12.17	1.14	16.28
3 - 5 (downwind)	25	5.79	0.80	11.43
5 - 10 (downwind)	24	1.11	0.34	4.86
10 - 15 (downwind)	25	5.62	0.51	7.28
15 - 20 (downwind)	25	2.38	0.34	4.86

July-December 1967, All Zones

0 - 3 (upwind)	21	2.64	0.69	9.86
0 - 3 (downwind)	21	6.05	0.82	11.71
3 - 5 (downwind)	21	11.14	1.48	21.14
5 - 10 (downwind)	21	1.42	0.61	8.71
10 - 15 (downwind)	21	9.84	1.20	17.14
15 - 20 (downwind)	21	2.73	0.58	8.29

Table 7 (continued)

1967 YEARLY SUMMARY OF OFF-SITE AIR MONITORING FOR PLUTONIUM

January-December 1967, All Zones

<u>Range (miles)</u>	<u>Number of Samples</u>	<u>Maximum Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Average Concentration^a (10⁻¹⁴ μCi/cc)</u>	<u>Percent of Plutonium RCG^b for Average</u>
0 - 3 (upwind)	46	28.22	1.20	17.14
0 - 3 (downwind)	46	12.17	0.99	14.14
3 - 5 (downwind)	46	11.14	1.11	15.86
5 - 10 (downwind)	45	1.42	0.47	6.71
10 - 15 (downwind)	46	9.84	0.83	11.86
15 - 20 (downwind)	46	2.73	0.45	6.43

^aLowest detectable limit for plutonium in air is 0.13×10^{-14} μ Ci/cc for samples collected 0-3 miles upwind, 3-5 miles downwind, 5-10 miles downwind and 10-15 miles downwind. The LDL is 0.09×10^{-14} μ Ci/cc for samples collected 0-3 miles downwind and 15-20 miles downwind. All values which were not detectable were set equal to these values when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 8

SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>North Zone</u>				
0 - 3 (upwind)	3	8.00	8.00	4.00
0 - 3 (downwind)	3	8.00	8.00	4.00
3 - 5 (downwind)	3	8.00	8.00	4.00
5 - 10 (downwind)	3	8.00	8.00	4.00
10 - 15 (downwind)	3	8.00	8.00	4.00
15 - 20 (downwind)	3	8.00	8.00	4.00
<u>Northeast Zone</u>				
0 - 3 (upwind)	5	9.61	8.32	4.16
0 - 3 (downwind)	4	8.00	8.00	4.00
3 - 5 (downwind)	4	8.00	8.00	4.00
5 - 10 (downwind)	4	8.00	8.00	4.00
10 - 15 (downwind)	4	8.00	8.00	4.00
15 - 20 (downwind)	4	8.00	8.00	4.00

Table 8 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>East Zone</u>				
0 - 3 (upwind)	4	8.00	8.00	4.00
0 - 3 (downwind)	4	8.30	8.07	4.04
3 - 5 (downwind)	4	8.00	8.00	4.00
55 - 10 (downwind)	4	8.00	8.00	4.00
10 - 15 (downwind)	4	8.00	8.00	4.00
15 - 20 (downwind)	4	8.00	8.00	4.00
<u>Southeast Zone</u>				
0 - 3 (upwind)	0	No samples were collected in this zone the second half of 1967 because the prevailing winds were not out of the northwest on the days air samples were collected.		
0 - 3 (downwind)	0			
3 - 5 (downwind)	0			
5 - 10 (downwind)	0			
10 - 15 (downwind)	0			
15 - 20 (downwind)	0			

Table 8 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>South Zone</u>				
0 - 3 (upwind)	1	8.00	8.00	4.00
0 - 3 (downwind)	1	8.00	8.00	4.00
3 - 5 (downwind)	1	8.00	8.00	4.00
5 - 10 (downwind)	1	8.00	8.00	4.00
10 - 15 (downwind)	1	8.00	8.00	4.00
15 - 20 (downwind)	1	8.00	8.00	4.00
<u>Southwest Zone</u>				
0 - 3 (upwind)	3	8.00	8.00	4.00
0 - 3 (downwind)	3	8.00	8.00	4.00
3 - 5 (downwind)	3	8.00	8.00	4.00
5 - 10 (downwind)	3	8.00	8.00	4.00
10 - 15 (downwind)	3	8.00	8.00	4.00
15 - 20 (downwind)	3	8.00	8.00	4.00

Table 8 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
<u>West Zone</u>				
0 - 3 (upwind)	3	25.00	14.65	7.33
0 - 3 (downwind)	3	26.90	16.15	8.08
3 - 5 (downwind)	3	10.55	8.85	4.43
5 - 10 (downwind)	2	10.69	9.34	4.67
10 - 15 (downwind)	1	8.00	8.00	4.00
15 - 20 (downwind)	2	9.40	8.70	4.35
<u>Northwest Zone</u>				
0 - 3 (upwind)	1	8.00	8.00	4.00
0 - 3 (downwind)	1	8.00	8.00	4.00
3 - 5 (downwind)	1	8.00	8.00	4.00
5 - 10 (downwind)	1	8.00	8.00	4.00
10 - 15 (downwind)	1	8.00	8.00	4.00

Table 8 (continued)

SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

July-December 1967

<u>Range (miles)</u>	<u>Number of Samples Collected</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
15 - 20 (downwind)	1	8.00	8.00	4.00

^aLowest detectable limit for tritium in air is 8.00×10^{-9} μ Ci/cc. All values which were not detectable were set equal to this value when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 9

1967 YEARLY SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

January-June 1967, All Zones

<u>Range (miles)</u>	<u>Number of Samples</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
0 - 3 (upwind)	13	8.00	8.00	4.00
0 - 3 (downwind)	13	12.79	8.60	4.30
3 - 5 (downwind)	12	8.00	8.00	4.00
5 - 10 (downwind)	13	8.00	8.00	4.00
10 - 15 (downwind)	12	8.00	8.00	4.00
15 - 20 (downwind)	6	8.57	8.10	4.05

July-December 1967, All Zones

0 - 3 (upwind)	20	25.00	9.08	4.54
0 - 3 (downwind)	19	26.90	9.30	4.65
3 - 5 (downwind)	19	10.55	8.13	4.07
5 - 10 (downwind)	18	10.69	8.15	4.08
10 - 15 (downwind)	17	8.00	8.00	4.00
15 - 20 (downwind)	18	9.40	8.08	4.04

Table 9 (continued)

1967 YEARLY SUMMARY OF OFF-SITE AIR MONITORING FOR TRITIUM

January-December 1967, All Zones

<u>Range (miles)</u>	<u>Number of Samples</u>	<u>Maximum Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Average Concentration^a (10⁻⁹ μCi/cc)</u>	<u>Percent of RCG^b for Average</u>
0 - 3 (upwind)	33	25.00	8.65	4.33
0 - 3 (downwind)	32	26.90	9.02	4.51
3 - 5 (downwind)	31	12.79	8.08	4.04
5 - 10 (downwind)	31	10.69	8.09	4.05
10 - 15 (downwind)	29	8.00	8.00	4.00
15 - 20 (downwind)	24	9.40	8.09	4.05

^aLowest detectable limit for tritium in air is 8.00×10^{-9} μ Ci/cc. All values which were not detectable were set equal to this value when average values were calculated.

^bRCG - Radioactivity Concentration Guide.

Table 10

SUMMARY OF AIR SAMPLING LOCATIONS FOR POLONIUM AND PLUTONIUM

North Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
1a	Cincinnati-Dayton Pike and Crains Run Rd. (Miamisburg, Ohio)	0-3 miles upwind
1b	Mound Rd. and Benner Rd. (Miamisburg, Ohio)	0-3 miles upwind
2a	Fifth St. and Central Ave. (Miamisburg, Ohio)	0-3 miles downwind
2b	Upper River Rd. and Soldiers Home-Miamisburg Rd.	0-3 miles downwind
2c	One mile north on Upper River Rd. from previous sample	0-3 miles downwind
3a	Farmersville-West Carrollton Rd. and Soldiers Home-West Carrollton Rd.	3-5 miles downwind
3b	Union Rd. and Bear Creek Rd. (after 6/1/67, Union Rd. and Farmersville-West Carrollton Rd.)	3-5 miles downwind
4a	Dayton Speedway (near intersection of State Route 4 and Liberty Dayton Rd.)	5-10 miles downwind
4b	Union Rd. and Liberty Dayton Rd.	5-10 miles downwind
5a	Siebenthaler Ave. and North Dixie Dr. (Dayton, Ohio)	10-15 miles downwind
5b	Trotwood, Ohio	10-15 miles downwind
6a	Murlin Heights on North Dixie Dr. (Dayton, Ohio) (after 6/1/67, North Dixie Dr. and Little York Dr.)	15-20 miles downwind
6b	Meeker St. and Heathcliffe Rd. (Dayton, Ohio)	15-20 miles downwind
6c	State Route 49 at Clayton, Ohio	15-20 miles downwind

South Zone

1a	West off State Route 725 between river bridge and railroad (Miamisburg, Ohio)	0-3 miles upwind
1b	First St. and Central Ave. (Miamisburg, Ohio) (after 6/1/67, Municipal Parking Lot on Central Ave.)	0-3 miles upwind
2a	Crains Run Rd. and Medlar Rd.	0-3 miles downwind
2b	Chautauqua, Ohio	0-3 miles downwind
2c	Cincinnati-Dayton Pike at south city limits of Miamisburg, Ohio (after 6/1/67, Miami Drive-In Theater on Cincinnati-Dayton Pike)	0-3 miles downwind
3a	State Route 73 and Interstate 75	3-5 miles downwind
3b	State Route 123 and Dayton-Oxford Rd.	3-5 miles downwind
4a	Red Lion, Ohio	5-10 miles downwind
4b	Blue Ball, Ohio (east edge of Middletown, Ohio)	5-10 miles downwind
5a	Lebanon, Ohio	10-15 miles downwind

Table 10 (continued)

South Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
5b	Monroe, Ohio	10-15 miles downwind
6a	South Lebanon, Ohio (after 6/1/67, Rt. 48 and Mason Rd.)	15-20 miles downwind
6b	Bethany Rd. and Mason Montgomery Rd.	15-20 miles downwind
6c	Bethany, Ohio	15-20 miles downwind

East Zone

1a	Riverview Ave. and Lower Miamisburg Rd. (Miamisburg, Ohio)	0-3 miles upwind
1b	Lower Miamisburg Rd. and Union Rd. (after 6/1/67, State Route 725 and Union Rd.)	0-3 miles upwind
2a	Maue Rd. and Linden Ave. (Miamisburg, Ohio) (after 6/1/67, Mound Park)	0-3 miles downwind
2b	Byers Rd. and Belvo Rd. (after 6/1/67, Benner Rd. and Byers Rd.)	0-3 miles downwind
2c	State Route 725 and Interstate 75	0-3 miles downwind
3a	Yankee St. and State Route 725	3-5 miles downwind
3b	Waldrue Park on Springboro Pike	3-5 miles downwind
4a	Clyo Rd. and Franklin St. (Centerville, Ohio)	5-10 miles downwind
4b	State Route 48 and Social Row Rd.	5-10 miles downwind
5a	Bellbrook, Ohio	10-15 miles downwind
5b	State Route 725 and U S 42 (after 6/1/67, U S 42 and Spring Valley-Paintersville Rd.)	10-15 miles downwind
6a	Xenia, Ohio	15-20 miles downwind
6b	Spring Valley-Paintersville Rd. and State Route 380	15-20 miles downwind
6c	Mt. Holly, Ohio	15-20 miles downwind

West Zone

1a	Belvo Rd. and Gebhart Church Rd.	0-3 miles upwind
1b	Maue Rd. and Miamisburg-Springboro Rd.	0-3 miles upwind
2a	Cincinnati-Dayton Pike at south city limits of Miamisburg (after 6/1/67, Miami Drive-In Theater on Cincinnati-Dayton Pike)	0-3 miles downwind
2b	Lower Miamisburg Rd. and Union Rd. (after 6/1/67, Riverview Rd. and Lower Miamisburg Rd.)	0-3 miles downwind
2c	Lower Miamisburg Rd. and Jamaica Rd.	0-3 miles downwind
3a	State Route 725 and State Route 4	3-5 miles downwind

Table 10 (continued)

West Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
3b	Germantown, Ohio	3-5 miles downwind
4a	Manning Rd. and Farmersville-Johnsville Rd. (after 6/1/67, Manning Rd. and Anthony Rd.)	5-10 miles downwind
4b	Oxford Rd. and Browns Run Rd.	5-10 miles downwind
5a	Gratis, Ohio	10-15 miles downwind
5b	Greenbush Rd. and State Route 122	10-15 miles downwind
6a	Eaton, Ohio	15-20 miles downwind
6b	Camden, Ohio	15-20 miles downwind
6c	Somerville, Ohio	15-20 miles downwind

Northeast Zone

1a	Cincinnati-Dayton Pike and Benner Rd.	0-3 miles upwind
1b	Miami Drive-In Theater on Cincinnati-Dayton Pike (Miamisburg, Ohio)	0-3 miles upwind
2a	Harmon Field (Miamisburg, Ohio)	0-3 miles downwind
2b	State Route 725 and Heincke Rd. (Miamisburg, Ohio)	0-3 miles downwind
2c	Elm St. and Cincinnati-Dayton Pike (West Carrollton, Ohio)	0-3 miles downwind
3a	Woody's Market on Cincinnati-Dayton Pike (West Carrollton, Ohio)	3-5 miles downwind
3b	Yankee St. and Mad River Rd. (after 6/1/67, Mad River Rd. and Alexandersville-Bellbrook Rd.)	3-5 miles downwind
4a	Springboro Pike and Dryden Rd. (Village of Moraine, Ohio) (after 6/1/67, Dorothy Lane and Springboro Pike)	5-10 miles downwind
4b	State Route 48 and Stroop Rd. - Town and Country Shopping Center - (Kettering, Ohio)	5-10 miles downwind
5a	Interstate 75 and Wagner-Ford Rd.	10-15 miles downwind
5b	Belmont Auto Theater, Patterson Rd. and County Line Rd. (Kettering, Ohio)	10-15 miles downwind
6a	State Route 201 and Chambersburg Rd.	15-20 miles downwind
6b	State Route 235 (Fairborn, Ohio)	15-20 miles downwind
6c	New Germany-Trebein Rd. and Fairground Rd. - approximately 3 miles south of previous sample	15-20 miles downwind

Northwest Zone

1a	Mound Ave. and Benner Rd.	0-3 miles upwind
1b	Medlar Rd. and Miamisburg-Springboro Rd.	0-3 miles upwind

Table 10 (continued)

Northwest Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
2a	Cincinnati-Dayton Pike and Mound Ave. (Miamisburg, Ohio)	0-3 miles downwind
2b	Union Rd. and State Route 725	0-3 miles downwind
2c	Union Rd. and Manning Rd. (after 6/1/67, State Route 725 and Jamaica Rd.)	0-3 miles downwind
3a	State Route 4 and Manning Rd. (after 6/1/67, Jamaica Rd. and State Route 4)	3-5 miles downwind
3b	State Route 4 and Farmersville-West Carrollton Pike	3-5 miles downwind
4a	Diamond Mill Rd. and Mile Rd.	5-10 miles downwind
4b	Farmersville, Ohio	5-10 miles downwind
5a	Clayton Rd. and Amity Rd. (after 6/1/67, Clayton Rd. and Providence Rd.)	10-15 miles downwind
5b	Farmersville-West Alexandria Pike and DeChant Rd.	10-15 miles downwind
6a	Brookville, Ohio	15-20 miles downwind
6b	Lexington Salem Rd. and Preble County Line Rd.	15-20 miles downwind
6c	Lexington Salem Rd. and Engle Rd.	15-20 miles downwind

Southeast Zone

1a	Fifth St. and Central Ave. (Miamisburg, Ohio)	0-3 miles upwind
1b	Union Rd. and State Route 725	0-3 miles upwind
2a	Mound Ave. and Benner Rd.	0-3 miles downwind
2b	Benner Rd. and Miamisburg-Springboro Pike	0-3 miles downwind
2c	Medlar Rd. and Miamisburg-Springboro Pike (after 6/1/67, Mound Park)	0-3 miles downwind
3a	Wood Rd. and Pennyroyal Rd.	3-5 miles downwind
3b	South Montgomery County Airport on State Route 741 at Austin Rd	3-5 miles downwind
4a	Springboro, Ohio	5-10 miles downwind
4b	At TV Tower on Lytle-Five Points Rd.	5-10 miles downwind
5a	State Route 122 and Utica Rd. (after 6/1/67, State Route 48 and State Route 73)	10-15 miles downwind
5b	Waynesville, Ohio	10-15 miles downwind
6a	Oregonia, Ohio (after 6/1/67, State Route 73, 1 mile east of State Route 42)	15-20 miles downwind
6b	Harveysburg, Ohio (after 6/1/67, 3 miles east of Harveysburg on State Route 73)	15-20 miles downwind
6c	After 6/1/67, 3 miles east of Harveysburg on State Route 73	15-20 miles downwind

Table 10 (continued)

Southwest Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
1a	State Route 725 and Alexandersville Rd.	0-3 miles upwind
1b	State Route 725 and Heincke Rd. (Miamisburg, Ohio)	0-3 miles upwind
2a	Miami Drive-In Theater on Cincinnati-Dayton Pike (Miamisburg, Ohio)	0-3 miles downwind
2b	Farmington Rd. and Chautauqua Rd.	0-3 miles downwind
2c	Farmington Rd. and Union Rd.	0-3 miles downwind
3a	Farmington Rd. and Butter St.	3-5 miles downwind
3b	Carlisle, Ohio	3-5 miles downwind
4a	Miami River Park on State Route 73 (Middletown, Ohio)	5-10 miles downwind
4b	Hetzler Rd. and Hinkle Rd. (after 6/1/67, Post Town, Ohio)	5-10 miles downwind
5a	State Route 4 and State Route 73	10-15 miles downwind
5b	Jacksonburg, Ohio	10-15 miles downwind
6a	State Route 4 and State Route 747	15-20 miles downwind
6b	New Miami, Ohio	15-20 miles downwind
6c	West Elkton Rd. and Tolbert Rd.	15-20 miles downwind

Table 11

SUMMARY OF AIR SAMPLING LOCATIONS FOR TRITIUM

North Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
1	Cincinnati-Dayton Pike and Crains Run Rd. (Miamisburg, Ohio)	0-3 miles upwind
2	Fifth St. and Central Ave. (Miamisburg, Ohio)	0-3 miles downwind
3	Farmersville-West Carrollton Rd. and Soldiers Home-West Carrollton Rd.	3-5 miles downwind
4	Dayton Speedway (near intersection of State Route 4 and Liberty-Dayton Rd.)	5-10 miles downwind
5	Trotwood, Ohio	10-15 miles downwind
6	Meeker St. and Heathcliffe Rd. (Dayton, Ohio)	15-20 miles downwind

Northeast Zone

1	Cincinnati-Dayton Pike and Benner Rd.	0-3 miles upwind
2	State Route 725 and Heincke Rd. (Miamisburg, Ohio)	0-3 miles downwind
3	Yankee St. and Mad River Rd. (after 6/1/67, Mad River Rd. and Alexandersville-Bellbrook Rd.)	3-5 miles downwind
4	State Route 48 and Stroop Rd. - Town and Country Shopping Center (Kettering, Ohio)	5-10 miles downwind
5	Belmont Auto Theater - Patterson Rd. and County Line Rd. (Kettering, Ohio)	10-15 miles downwind
6	State Route 235 (Fairborn, Ohio)	15-20 miles downwind

East Zone

1	Lower Miamisburg Rd. and Union Rd. (after 6/1/67, State Route 725 and Union Rd.)	0-3 miles upwind
2	Maue Rd. and Linden Ave. (Miamisburg, Ohio) (after 6/1/67, Mound Park)	0-3 miles downwind
3	Yankee St. and State Route 725	3-5 miles downwind
4	Clyo Rd. and Franklin St. (Centerville, Ohio)	5-10 miles downwind
5	State Route 725 and U.S. 42 (after 6/1/67, U.S. 42 and Spring Valley-Paintersville Rd.)	10-15 miles downwind
6	Xenia, Ohio	15-20 miles downwind

Southeast Zone

1	Union Rd. and State Route 725	0-3 miles upwind
2	Benner Rd. and Miamisburg-Springboro Pike	0-3 miles downwind

Table 11 (continued)

Southeast Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
3	South Montgomery County Airport on State Route 741 at Austin Rd.	3-5 miles downwind
4	At TV Tower on Lytle-Five Points Rd.	5-10 miles downwind
5	State Route 122 and Utica Rd. (after 6/1/67, State Route 48 and State Route 73)	10-15 miles downwind
6	Harveysburg, Ohio	15-20 miles downwind

South Zone

1	Fifth St. and Central Ave. (Miamisburg, Ohio) (after 6/1/67, Municipal Parking Lot on Central Ave.)	0-3 miles upwind
2	Crains Run Rd. and Medlar Rd.	0-3 miles downwind
3	State Route 73 and Interstate 75	3-5 miles downwind
4	Blue Ball, Ohio (east edge of Middletown, Ohio)	5-10 miles downwind
5	Monroe, Ohio	10-15 miles downwind
6	Bethany Rd. and Mason-Montgomery Rd.	15-20 miles downwind

Southwest Zone

1	State Route 725 and Heincke Rd. (Miamisburg, Ohio)	0-3 miles upwind
2	Farmington Rd. and Union Rd.	0-3 miles downwind
3	Farmington Rd. and Butter St.	3-5 miles downwind
4	Miami River Park on State Route 73 (Middletown, Ohio)	5-10 miles downwind
5	Jacksonburg, Ohio	10-15 miles downwind
6	New Miami, Ohio	15-20 miles downwind

West Zone

1	Belvo Rd. and Gebhart Church Rd.	0-3 miles upwind
2	Lower Miamisburg Rd. and Union Rd. (after 6/1/67, Riverview Rd. and Lower Miamisburg Rd.)	0-3 miles downwind
3	Germantown, Ohio	3-5 miles downwind
4	Oxford Rd. and Browns Run Rd.	5-10 miles downwind
5	Gratis, Ohio	10-15 miles downwind
6	Camden, Ohio	15-20 miles downwind

Table 11 (continued)

Northwest Zone

<u>Sample No.</u>	<u>Location</u>	<u>Range</u>
1	Mound Ave. and Benner Rd.	0-3 miles upwind
2	Union Rd. and Manning Rd. (after 6/1/67, State Route 725 and Jamaica Rd.)	0-3 miles downwind
3	State Route 4 and Manning Rd. (after 6/1/67, Jamaica Rd. and State Route 4)	3-5 miles downwind
4	Farmersville, Ohio	5-10 miles downwind
5	Clayton Rd. and Amity Rd. (after 6/1/67, Clayton Rd. and Providence Rd.)	10-15 miles downwind
6	Lexington Salem Rd. and Engle Rd.	15-20 miles downwind

MAP 1 - Great Miami River sample locations.

MAP 2 - Proximity air sample zones.

MAP 3 - Distant air sample zones.