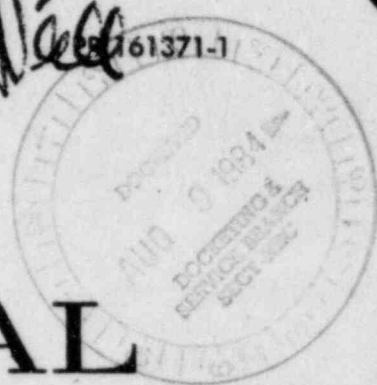


Release



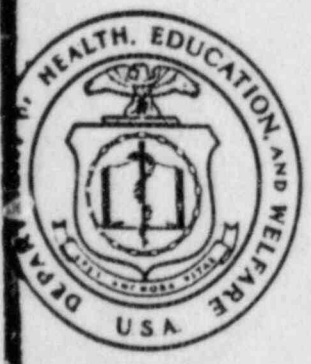
# RADIOLOGICAL HEALTH DATA

## MONTHLY REPORT

April 1960

NUCLEAR REGULATORY COMMISSION

Docket No. 50-352/353 Official Exh. No. 161  
 In the matter of PECO - Emerald 193  
 Staff \_\_\_\_\_ IDENTIFIED   
 Applicant  RECEIVED \_\_\_\_\_  
 Intervenor \_\_\_\_\_ REJECTED \_\_\_\_\_  
 Cont'g Off'r \_\_\_\_\_  
 Contract \_\_\_\_\_ DATE 6/19/84  
 Other \_\_\_\_\_ Witness \_\_\_\_\_  
 Reporter Mary Simon



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

8411270209 840619  
PDR ADOCK 05000352  
G PDR

Distributed by U.S. Department of Commerce, Office of Technical Services, Washington 25, D.C.,  
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TABLE VIII. PUBLIC HEALTH SERVICE NATIONAL WATER QUALITY NETWORK  
 RADIOACTIVITY IN RAW SURFACE WATERS  
 (Micromicrocuries per liter)  
 (Continued)

Station	Quarter ending Sept. 30, 1959	Month of $\alpha$ , 1959 (Average to nearest whole number)					
		Strontium-90	Beta Activity			Alpha Activity	
			Susp.	Dis.	Tot.	Susp.	Dis.
CONNECTICUT RIVER Northfield, Mass.	1.9	-	-	-	-	-	
DELAWARE RIVER Philadelphia, Pa.	0.6	4	4	8	0	0	
GREAT LAKES							
Gary, Ind.	0.4	3	2	5	0	1	
Duluth, Minn.	0.2	1	4	5	0	1	
Detroit, Mich.	0.6	4	3	7	0	0	
Buffalo, N. Y.	0.8	28	1	29	0	1	
HUDSON RIVER Poughkeepsie, N. Y.	1.0	<1	6	7	0	1	
MERRIMACK RIVER Lowell, Mass.	1.2	15	6	21	-	-	
MISSISSIPPI RIVER							
Red Wing, Minn.	0.5	2	2	4	0	2	
Dubuque, Iowa	1.6	<1	11	11	-	-	
Burlington, Iowa	1.1	17	9	26	2	2	
East St. Louis, Ill.	1.2	5	2	7	16	2	
Cape Girardeau, Mo.	1.2	39	7	46	16	4	
West Memphis, Ark.	1.3	17	10	27	-	-	
Delta, La.	1.3	36	6	42	7	0	
New Orleans, La.	1.0	5	9	14	13	1	
MISSOURI RIVER							
Williston, N. D.	0.5	6	2	8	2	4	
Bismarck, N. D.	0.8	26	7	33	19	4	
Yankton, S. D.	0.4	2	8	10	-	-	
Omaha, Nebr.	1.1	12	22	34	4	4	
St. Joseph, Mo.	0.6	26	5	31	7	3	
Kansas City, Kans.	0.3	15	14	29	6	11	
St. Louis, Mo.	0.5	26	10	36	12	2	
OHIO RIVER							
East Liverpool, O.	1.2	6	10	16	0	0	
Huntington, W. Va.	1.0	8	18	26	1	1	
Cincinnati, O.	0.9	0	<1	<1	0	0	
Evansville, Ind.	2.0	-	-	-	-	-	
Cairo, Ill.	1.2	1	6	7	0	1	

PB 161371-3

*Sample Dummy*  
**RADIOLOGICAL  
HEALTH  
DATA**

**MONTHLY REPORT**

**June 1960**

**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE**  
**Public Health Service**



Published by U.S. Department of Commerce, Office of Technical Services, Washington 25, D.C.,  
price 50 cents single issue, \$3 for six months subscription.

TABLE VI.—PUBLIC HEALTH SERVICE NATIONAL WATER QUALITY NETWORK  
<sup>226</sup>RADIOACTIVITY IN RAW SURFACE WATERS  
(Micromicrocuries per liter)

Station	Quarter ending 12/31/59	Month of December, 1959 (Average to nearest whole number)						
		Strontium-90	Beta activity			Alpha activity		
			Susp.	Dis.	Tot.	Susp.	Dis.	Tot.
ALSEA RIVER Alsea, Oreg.	0.2	<1	<1	<1	0	0	0	
KANSAS RIVER Coolidge, Kans.	0.4	0	0	0	3	36	39	
Ponca City, Okla.	0.6	6	6	12	1	0	1	
Fort Smith, Ark.	1.2	-	-	-	-	-	-	
Fendleton Ferry, Ark.	0.6	2	0	2	-	-	-	
SAWTOOTH RIVER Columbus, Ga.	0.2	<1	0	<1	-	-	-	
COLORADO RIVER Loma, Colo.	0.3	0	8	8	1	12	13	
Page, Ariz.	0.3	26	14	40	19	10	29	
Hoover Dam, Ariz.-Nev.	0.7	0	2	2	0	7	7	
Parker Dam, Ariz.-Calif.	0.7	2	10	12	0	7	7	
Loma, Ariz.	0.6	0	0	0	-	-	-	
COLUMBIA RIVER Wenatchee, Wash.	0.8	0	1	1	-	-	-	
Pasco, Wash.	0.9	84	711	795	0	0	0	
Sunnyside Dam, Oreg.	1.0	33	295	328	-	-	-	
Watskanie, Oreg.	0.5	30	167	197	-	-	-	
CONNECTICUT RIVER Northfield, Mass.	0.3	<1	0	<1	0	0	0	
DELAWARE RIVER Philadelphia, Pa.	0.6	0	0	0	-	-	-	
DECATUR LAKES Ellettsville, Ind.	0.4	1	2	3	0	0	0	
St. Cloud, Minn.	0.3	<1	0	<1	0	0	0	
Detroit, Mich.	0.7	<1	2	2	0	0	0	
Buffalo, N. Y.	1.1	4	6	10	0	0	0	
DECATUR RIVER Watkinsville, N. Y.	1.3	2	0	2	1	0	1	
DELMAR RIVER Wells, Mass.	0.5	2	1	3	1	0	1	
MISSISSIPPI RIVER St. Wing, Minn.	0.7	0	2	2	0	0	0	
Des Moines, Iowa	0.4	0	4	4	0	1	1	
Washington, Iowa	1.0	0	2	2	1	0	1	
St. Louis, Ill.	0.5	0	2	2	0	1	1	
St. Girardeau, Mo.	0.4	7	6	13	1	1	2	
Memphis, Ark.	1.3	1	0	1	2	1	3	
New Orleans, La.	1.0	6	3	9	3	1	4	
New Orleans, La.	0.9	5	1	6	2	0	2	

# RADIOLOGICAL HEALTH DATA

*MONTHLY REPORT*

September 1960



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

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price 50 cents single issue, \$3 for six months subscription.

TABLE IX.—RADIOACTIVITY IN RAW SURFACE WATERS  
Public Health Service National Water Quality Network  
(Micromicrocuries per liter)

Station	Quarter ending 3/31/60	Month of March 1960						
		Strontium-90	Beta activity			Alpha activity		
			Susp.	Diss.	Total	Susp.	Diss.	Total
ALSEA RIVER Aalsea, Oreg.	0.1	0	0	0	0	0	0	
ANIMAS RIVER Cedar Hill, N. Mex.	0.5	374	6	380	150	6	156	
ARKANSAS RIVER Coolidge, Kans.	1.2	0	0	0	0	56	56	
Ponca City, Okla.	0.9	54	28	82	1	0	1	
Pendleton Ferry, Ark.	0.8	0	0	0	3	2	5	
CHATTAHOOCHEE RIVER Columbus, Ga.	0.5	<1	2	2	0	0	0	
COLORADO RIVER Loma, Colo.	0.1	86	71	157	17	14	31	
Page, Ariz.	0.2	4	6	10	14	12	26	
Hoover Dam, Ariz.-Nev.	0.7	0	0	0	0	8	8	
Parker Dam, Ariz.-Calif.	0.3	4	5	9	0	6	6	
Yuma, Ariz.	0.3	3	0	3	0	6	6	
COLUMBIA RIVER Wenatchee, Wash.	0.4	0	0	0	0	0	0	
Pasco, Wash.	0.6	58	523	581	0	0	0	
Bonneville Dam, Oreg.	0.3	35	246	281	<1	1	2	
Clatskanie, Oreg.	0.1	18	107	125	<1	<1	1	
CONNECTICUT RIVER Northfield, Mass.		5	1	6	-	-	-	
DELAWARE RIVER Martin's Creek, Pa.	0.6	0	<1	<1	0	0	0	
Philadelphia, Pa.	0.9	0	3	3	0	0	0	
GREAT LAKES Gary, Ind.	0.5	0	0	0	-	-	-	
Duluth, Minn.	0.2	0	1	1	0	0	0	
Detroit, Mich.	0.3	0	3	3	0	0	0	
Buffalo, N. Y.	0.9	0	1	1	0	1	1	
Hudson River Poughkeepsie, N. Y.	1.7	0	0	0	0	1	1	
ILLINOIS RIVER Peoria, Ill.	-	0	0	0	1	3	4	
KANAWHA RIVER Winfield Dam, W. Va.	0.2	4	2	6	2	<1	2	
MERRIMACK RIVER Lowell, Mass.	0.5	-	-	-	-	-	-	
MISSISSIPPI RIVER Red Wing, Minn.	0.7	0	4	4	0	0	0	
Rockwell, Iowa	1.4	0	0	0	0	0	0	
Wilton, Iowa	1.0	0	0	0	0	1	1	
East St. Louis, Ill.	0.5	0	0	0	0	0	0	

TABLE IX.—RADIOACTIVITY IN RAW SURFACE WATERS—Con.  
 Public Health Service National Water Quality Network  
 (Micromicrocuries per liter)

Station	Quarter ending 3/31/60	Month of March 1960						
		Strontium-90	Beta activity			Alpha activity		
			Susp.	Diss.	Total	Susp.	Diss.	Total
MISSISSIPPI RIVER—Con.								
Cape Girardeau, Mo.	0.4	0	0	0	1	2	3	
W. Memphis, Ark.	1.3	5	5	10	2	1	3	
Delta, La.	1.0	9	7	16	2	1	3	
New Orleans, La.	0.9	10	18	28	3	0	3	
MISSOURI RIVER								
Bismarck, N. Dak.	0.5	6	13	19	0	4	4	
Yankton, S. Dak.	1.7	3	4	7	0	2	2	
Omaha, Nebr.	0.4	0	6	6	0	3	3	
St. Joseph, Mo.	0.9	48	5	53	41	4	45	
Kansas City, Kans.	0.5	22	<1	22	15	3	18	
St. Louis, Mo.	0.9	10	5	15	0	1	1	
OHIO RIVER								
East Liverpool, Ohio	0.5	0	2	2	0	1	1	
Huntington, W. Va.	0.2	0	2	2	1	0	1	
Cincinnati, Ohio	0.4	4	0	4	3	0	3	
Evansville, Ind.	0.7	-	-	-	-	-	-	
Cairo, Ill.	0.6	2	3	5	2	0	2	
POTOMAC RIVER								
Williamsport, Md.	0.3	0	0	0	0	0	0	
Great Falls, Md.	0.6	34	1	35	0	0	0	
RED RIVER								
Denison, Tex.	1.4	0	1	1	0	0	0	
Index, Ark.	0.7	<1	6	6	3	2	5	
Alexandria, La.	1.3	0	3	3	-	-	-	
RIO GRANDE RIVER								
Laredo, Tex.	0.1	3	1	4	0	5	5	
Brownsville, Tex.	0.6	0	0	0	-	-	-	
ST. MARY'S RIVER								
Sault Ste. Marie, Mich.	0.3	0	5	5	0	0	0	
SCHUYLKILL RIVER								
Philadelphia, Pa.	0.5	0	0	0	0	0	0	
SAVANNAH RIVER								
Port Wentworth, Ga.	0.2	2	4	6	0	0	0	
SNAKE RIVER								
Wawawai, Wash.	0.3	0	<1	<1	1	0	1	
Weiser, Idaho	-	0	0	0	1	1	2	
SUSQUEHANNA RIVER								
Sayre, Pa.	-	0	0	0	0	0	0	
TENNESSEE RIVER								
Chattanooga, Tenn.	0.4	4	70	74	0	0	0	
YELLOWSTONE RIVER								
Sidney, Mont.	1.2	20	0	20	17	4	21	

No. 9

PB 161371-9

# RADIOLOGICAL HEALTH DATA

*MONTHLY REPORT*

December 1960



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

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TABLE I. -RADIOACTIVITY IN RAW SURFACE WATERS  
Public Health Service National Water Quality Network  
(Micromicrocuries per liter)

Station	Quarter ending 6/30/60	June, 1960						
		Strontium-90	Beta activity			Alpha activity		
			Susp.	Diss.	Total	Susp.	Diss.	Total
ANIMAS RIVER Cedar Hill, N. Mex.	0.3	10	2	12	6	2	8	
ARKANSAS RIVER Coolidge, Kans.	1.1	-	-	-	-	-	-	
Ponca City, Okla.	1.3	6	0	6	11	2	13	
Fort Smith, Ark.	1.1	41	4	45	11	2	13	
Pendleton Ferry, Ark.	1.2	21	0	21	14	0	14	
CHATTAHOOCHEE RIVER Atlanta, Ga.	(*)	0	0	0	0	0	0	
Columbia, Ga.	0.5	0	1	1	0	0	0	
COLORADO RIVER Loma, Colo.	0.3	8	0	8	5	3	8	
Page, Ariz.	0.9	18	0	18	10	3	13	
Hoover Dam, Ariz.-Nev.	1.3	0	0	0	0	4	4	
Imperial Dam, Ariz.-Calif.	0.4	0	0	0	<1	5	6	
Yuma, Ariz.	1.0	0	0	0	2	2	4	
COLUMBIA RIVER Pasco, Wash.	0.3	22	156	178	0	0	0	
Wenatchee, Wash.	0.3	0	0	0	0	0	0	
Bonneville Dam, Ore.	(*)	8	69	77	-	-	-	
Clatskanie, Ore.	0.3	-	-	-	-	-	-	
CONNECTICUT RIVER Northfield, Mass.	(*)	0	0	0	0	0	0	
DELAWARE RIVER Martin's Creek, Pa.	0.4	0	3	3	0	0	0	
Philadelphia, Pa.	0.3	1	0	1	6	0	6	
GREAT LAKES Duluth, Minn.	0.3	0	0	0	0	0	0	
Detroit, Mich.	0.6	0	0	0	0	1	1	
Buffalo, N. Y.	0.7	0	2	2	0	0	0	
HUDSON RIVER Poughkeepsie, N. Y.	0.7	<1	1	2	1	0	1	
ILLINOIS RIVER Peoria, Ill.	0.8	0	0	0	<1	1	2	
KANAWHA RIVER Winfield Dam, W. Va.	0.3	0	0	0	0	<1	<1	
MISSISSIPPI RIVER Red Wing, Minn.	1.5	1	0	1	0	1	1	
St. Louis, Iowa	(*)	0	6	6	0	0	0	

TABLE I.—RADIOACTIVITY IN RAW SURFACE WATERS—Con.  
Public Health Service National Water Quality Network  
(Micromicrocuries per liter)

Station	Quarter ending 6/30/60	June 1960						
		Strontium-90	Beta activity			Alpha activity		
			Susp.	Diss.	Total	Susp.	Diss.	Total
ST. MARY'S RIVER Sault Ste. Marie, Mich.	1.	0	<1	<1	0	0	0	
SCHUYLKILL RIVER Philadelphia, Pa.	0.7	0	0	0	<1	0	<1	
SAVANNAH RIVER Port Wentworth, Ga.	0.8	<1	2	3	-	-	-	
SNAKE RIVER Wawawai, Wash.	0.3	0	2	2	0	0	0	
	0.5	0	0	0	-	-	-	
SUSQUEHANNA RIVER Sayre, Pa.	0.4	0	8	8	0	<1	<1	
	0.2	1	1	2	<1	0	<1	
TELESCOPE RIVER Chattanooga, Tenn.	1.3	0	16	16	0	0	0	
YELLOWSTONE RIVER Sidney, Mont.	0.3	18	2	20	5	3	8	

\*Insufficient sample for analysis.

#### STRONTIUM-90 IN TAP WATER

The Atomic Energy Commission's Health and Safety Laboratory monitors the tap water for Richmond, California and New York City for strontium-90 on a monthly basis. The data for the second quarter are presented below. Data for the first quarter were given in the August 1960 issue of Radiological Health Data.

TABLE 2.—STRONTIUM-90 IN TAP WATER  
Second Quarter 1960

Location	Month	Activity $\mu\text{c/liter}$	$\text{Sr}^{89}/\text{Sr}^{90}$ at midpoint of sampling month
Richmond, California (40 liters per sample)	April	0.264	0.3
	May	0.253	0.4
	June	0.265	0.1
New York City (100-200 liters per sample)	April	0.27	-
	May	0.59	-
	June	0.42	-

No. 3

*Health & Safety - SPB*  
PB 161371-12

# RADIOLOGICAL HEALTH DATA

*MONTHLY REPORT*

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Public Health Service

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TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

Public Health Service National Water Quality Network

(Average concentrations in  $\mu\text{uc/liter}$ )

Station	Quarter ending Sept. 30, 1960	September 1960						
		Strontium-90	Beta activity			Alpha activity		
			Susp.	Diss.	Total	Susp.	Diss.	Total
ANIMAS RIVER Cedar Hill, N. Mex.	0.4	0	24	24	2	22	24	
APALACHICOLA RIVER Chattahoochie, Fla.	0.5	0	0	0	0	0	0	
ARKANSAS RIVER Coolidge, Kans.	0.8	-	-	-	-	-	-	
CHATTAHOOCHE RIVER Atlanta, Ga.	-	0	0	0	0	0	0	
		0	0	0	0	0	0	
COLORADO RIVER Loma, Colo.	-	0	8	8	1	20	21	
		47	34	81	25	40	65	
	1.0	1	16	17	0	0	0	
		0	7	7	1	7	8	
COLUMBIA RIVER Pasco, Wash.	-	35	513	548	-	-	-	
		0	0	0	-	-	-	
		2	291	293	-	-	-	
	0.3	-	-	-	-	-	-	
DELAWARE RIVER Martin's Creek, Pa.	-	2	0	2	-	-	-	
		0	0	0	3	1	4	
ESCAMBIA RIVER Century, Fla.	-	16	0	16	3	1	4	
GREAT LAKES Gary, Ind.	0.5	0	0	0	1	0	1	
		0	0	0	0	1	1	
		0	2	2	0	1	1	
		0	0	0	-	-	-	
		< 1	5	5	0	1	1	
HUDSON RIVER Poughkeepsie, N. Y.	0.1	0	0	0	0	1	1	
ILLINOIS RIVER Peoria, Ill.	0.3	0	2	2	1	3	4	
KANAWHA RIVER Harpersfield Dam, W. Va.	-	0	3	3	0	0	0	

SP12 - Health & Safety



# Radiological Health Data

VOLUME II, NUMBER 6  
JUNE 1961

Monthly Report

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

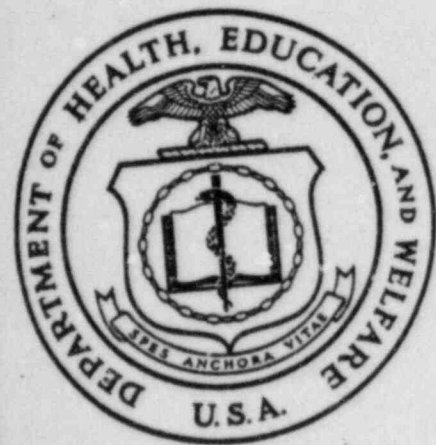
TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

National Water Quality Network, Public Health Service

[Concentrations in  $\mu\mu\text{Ci/liter}$ ]

Station	Quarter ending Dec. 31, 1960	December 1960					
		Strontium-90	Beta activity			Alpha activity	
			Suspended	Dissolved	Total	Suspended	Dissolved
Animas River: Cedar Hill, N. Mex.		111	35	146	29	25	
Chattahoochee River:							
Atlanta, Ga.	0.3	0	0	0			
Columbus, Ga.		0	<1	<1	0	2	
Colorado River:							
Loma, Colo.		0	0	0	0	11	
Page, Ariz.	.4	0	20	20	<1	17	
Hoover Dam, Ariz.-Nev.		0	10	10	0	13	
Parker Dam, Ariz.-Calif.	1.2	0	10	10	0	15	
Yuma, Ariz.		0	0	0	0	5	
Columbia River:							
Pasco, Wash.		54	724	778			
Bonneville Dam, Oreg.	.5	27	461	428	1	2	
Clatskanie, Oreg.		3	137	140			
Delaware:							
Martin's Creek, Pa.		0	0	0			
Philadelphia, Pa.		3	3	6			
Escambia River: Century, Fla.	(1)	0	0	0	0	9	
Great Lakes:							
Gary, Ind.		0	0	0	0	0	
Detroit, Mich.		0	0	0	0	1	
Milwaukee, Wis.	.2	0	1	1	0	0	
Hudson River: Poughkeepsie, N. Y.	.4	0	0	0			
Illinois River: Peoria, Ill.	.5	0	0	0	1	2	
Kanawha River: Winfield Dam, W. Va.		0	0	0	0	1	
Klamath River: Copco, Oreg.		0	4	4	<1	1	
Little Miami River: Cincinnati, Ohio	(1)	0	0	0	0	2	
Mississippi River:							
East St. Louis, Ill.		0	0	0	0	2	
Cape Girardeau, Mo.		0	9	9	2	2	
West Memphis, Ark.	1.0	0	4	4	1	2	
Missouri River:							
Yankton, S. Dak.		0	1	1	0	13	
St. Joseph, Mo.	.5	0	5	5	1	6	
Kansas City, Kans.		0	5	5	3	2	
St. Louis, Mo.		0	0	0			
Ohio River:							
East Liverpool, Ohio		0	3	3		1	
Wheeling, W. Va.	.6						
Huntington, W. Va.	.4	0	0	0	0	1	
Evansville, Ind.	.8	0	<1	<1	0	<1	
Cairo, Ill.		2	9	11			
Potomac River: Williamsport, Md.		0	0	0	0	0	
Red River, North: Grand Forks, N. Dak.		0	7	7	1	7	
Red River, South:							
Denison, Tex.	.7	0	0	0	0	10	
Index, Ark.		11	3	14	7	4	
Rio Grande River:							
Alamosa, Colo.		0	0	0	<1	2	
El Paso, Tex.		0	0	0			
Laredo, Tex.		0	5	5	9	5	
Brownsville, Tex.		2	0	2	0	10	
Sabine River: Rulliff, Tex.		0	4	4	<1	0	
St. Clair River: Port Huron, Mich.		0	0	0	9	<1	
St. Lawrence River: Massena, N. Y.	.6	0	1	1	0	<1	
St. Mary's River: Sault Ste. Marie, Mich.		0	2	2	0	1	
Savannah River:							
Port Wentworth, Ga.	.5	0	16	16			
North Augusta, S.C.		0	0	0	0	9	
Snake River:							
Wawawai, Wash.		0	0	0	0	6	
Weiser, Idaho	.2	0	0	0	0	6	
Susquehanna River:							
Sayre, Pa.		0	0	0	0	0	
Conowingo, Md.	.4	0	5	5	0	1	
Tennessee River:							
Chattanooga, Tenn.	.9	0	47	47			
Bridgeport, Ala.		0	99	99	0	1	
Yellowstone River: Sidney, Mont.		0	0	0	4	10	

1 Insufficient sample for analysis.



# Radiological Health Data

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VOLUME II, NUMBER 10  
OCTOBER 1961

Quarterly Report

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

[Concentrations in  $\mu\mu\text{c/liter}$ ]

Station	Quarter ending March 31, 1961	April 1961						
		Strontium-90	Beta activity			Alpha activity		
			Suspended	Dissolved	Total	Suspended	Dissolved	Total
gheny River: Pittsburgh, Pa.	—	0	0	0	<1	1	<1	
mas River: Cedar Hill, N. Mex.	—	33	5	38	17	10	27	
achicola River: Chattahoochie, Fla.	—	0	0	0	0	0	0	
ansas River:								
oolidge, Kans.	—	0	3	3	8	80	88	
onca City, Okla.	—	0	0	0	10	2	12	
ndleton Ferry, Ark.	—	0	0	0	1	0	1	
ttahoochie River:								
lanta, Ga.	—	0	2	2	0	0	0	
olumbus, Ga.	—	0.3	0	0	1	<1	1	
orado River:								
oma, Colo.	—	0.4	0	0	4	9	13	
age, Ariz.	—	109	9	118	53	10	63	
oulder City, Nev.	—	1	0	1	0	6	6	
arker Dam, Ariz-Calif.	—	0	16	16	0	10	10	
uma, Ariz.	—	1.2	0	<1	0	5	5	
umbia River:								
enatchee, Wash.	—	0.7	0	5	0	1	1	
asco, Wash.	—	1.0	96	420	—	—	—	
oneville Dam, Oreg.	—	44	183	227	0	0	0	
astkanie, Oreg.	—	28	93	121	—	—	—	
McNary Dam, Oreg.	—	56	205	261	0	0	0	
aware River:								
artins Creek, Pa.	—	0	0	0	1	0	1	
hiladelphia, Pa.	—	0.6	1	0	1	0	1	
at Lakes:								
uffalo, N. Y.	—	0.6	0	0	0	1	1	
ort Huron, Mich.	—	0	1	1	0	0	0	
etroit, Mich.	—	0	0	0	0	1	1	
ary, Ind.	—	0	0	0	0	0	0	
uith, Minn.	—	0.4	0	0	0	0	0	
ilwaukee, Wis.	—	3	4	7	0	0	0	
ault St. Marie, Mich.	—	0	1	1	0	0	0	
udson River: Poughkeepsie, N. Y.	—	0.4	0	0	1	0	1	
ois:								
ois: Peoria, Ill.	—	0	0	0	0	2	2	
re Girardeau, Mo.	—	0.2	0	0	0	0	0	
est Memphis, Ark.	—	0	1	1	0	0	0	
elta, La.	—	(b)	2	2	3	1	4	
ew Orleans, La.	—	22	0	22	13	0	13	
ouri River:								
illiston, N. Dak.	—	0.8	0	0	2	5	7	
ismarck, N. Dak.	—	0	0	0	0	0	0	
ankton, S. Dak.	—	0	0	0	1	3	4	
amaha, Nebr.	—	17	3	20	6	5	11	
Joseph, Mo.	—	19	8	27	8	3	11	
ansas City, Kans.	—	1.4	0	0	9	5	14	
t. Louis, Mo.	—	1.1	26	28	33	2	35	
o River:								
ast Liverpool, Ohio.	—	0	0	0	1	0	1	
untington, W. Va.	—	0	0	0	1	1	2	
incinnati, Ohio.	—	0.3	2	2	2	0	2	
ransville, Ind.	—	0	0	0	2	0	2	
airo, Ill.	—	6	1	7	1	0	1	
omac River:								
agerstown, Md.	—	0	7	7	0	0	0	
reat Falls, Md.	—	1.3	0	0	1	0	1	
l River, North: Grand Forks, N. D.	—	1	2	3	<1	1	1	
l River, South:								
dex, Ark.	—	0.4	0	0	9	0	9	
lexandria, La.	—	55	0	56	28	0	28	
enison, Tex.	—	0	0	0	0	2	2	
Grande River:								
lamosa, Colo.	—	0	0	0	0	0	0	
l Paso, Tex.	—	0.4	0	9	0	4	4	
aredo, Tex.	—	0.4	0	0	1	6	7	
rownsville, Tex.	—	0	0	0	5	4	9	
ine River: Ruliff, Tex.	—	<1	4	4	1	<1	1	
Lawrence River: Massena, N. Y.	—	0	0	0	0	0	0	
uykill River: Philadelphia, Pa.	—	0	0	0	1	0	1	
annah River:								
ort Wentworth, Ga.	—	0.4	<1	3	1	0	1	
orth Augusta, S. C.	—	0	0	0	0	0	0	
ke River:								
awawai, Wash.	—	0	3	3	0	1	1	
iser, Idaho.	—	0	0	0	0	6	6	
uehanna River:								
yre, Pa.	—	0	0	0	1	0	1	
ones, Md.	—	<1	2	2	0	0	0	
ones, Tenn.	—	0.8	1	54	—	—	—	
ridger, Ala.	—	1.5	0	31	0	0	0	
ims River: Richland, Wash.	—	0	0	0	0	0	0	
owstone River: Sidney Mont.	—	0	0	0	1	3	4	

Dash denotes no sample received or no determinations made.  
Insufficient volume for Sr<sup>90</sup> analysis.





# Radiological Health Data

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VOLUME II, NUMBER 12

DECEMBER 1961

Monthly Report

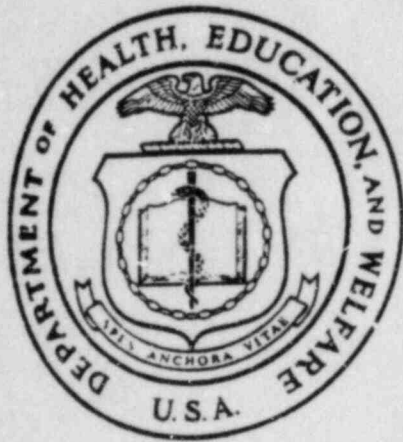
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

[Concentrations in  $\mu\mu\text{c/liter}$ ]

Station	Quarter ending June 30, 1961	June 1961						
		Strontium-90	Beta activity			Alpha activity		
			Suspended	Dissolved	Total	Suspended	Dissolved	Total
Allegheny River: Pittsburgh, Pa.	0.2	0	0	0	0	<1	<1	
Aspen River: Cedar Hill, N. Mex.	2	2	6	8	<1	4	4	
Arkansas River:								
Bridge, Kansas	—	17	3	20	0	46	46	
Casper City, Okla.	0.7	0	12	12	5	4	9	
Cedar River: Sioux Falls, S. Dak.	—	0	4	4	1	3	4	
Cherokee River: Atlanta, Ga.	0.3	<1	<1	1	<1	2	3	
Colorado River:								
La. Col.	—	7	3	10	3	4	7	
Ariz.	2.3	25	<1	26	20	4	24	
Nevada City, Nev.	—	0	0	0	0	11	11	
Cedar Dam, Ariz.-Calif.	—	3	1	4	0	8	8	
Gila, Ariz.	—	0	0	0	<1	9	10	
Columbia River:								
Columbia, Wash.	—	0	0	0	0	0	0	
Columbia, Wash.	—	41	7	48	0	0	0	
Columbia Dam, Oreg.	—	24	19	43	0	0	0	
Columbia, Oreg.	1.1	12	15	27	0	0	0	
Columbia Dam, Oreg.	—	12	42	54	0	0	0	
Columbia River: Northfield, Mass.	—	0	0	0	0	0	0	
Columbia River:								
Columbia, Pa.	0.4	0	0	0	0	0	0	
Columbia, Pa.	—	0	0	0	0	0	0	
Columbia, Pa.	—	0	0	0	1	0	1	
Columbia River: Century, Fla.	—							
Lakes:								
Columbia, N. Y.	—	0	0	0	0	0	0	
Columbia, Mich.	—	0	0	0	0	0	0	
Columbia, Mich.	—	0	0	0	0	0	0	
Columbia, Ind.	—	0	0	0	0	0	0	
Columbia, Wis.	0.3	0	0	0	<1	<1	<1	
Columbia, Mich.	—	0	0	0	0	0	0	
Columbia, Minn.	—	0	0	0	0	0	0	
Columbia, N. Y.	0.5	1	2	3	0	0	1	
Columbia, Ill.	—	0	12	12	<1	<1	0	
Columbia, W. Va.	—	0	0	0	0	0	0	
Columbia, W. Va.	0.3	<1	<1	1	0	0	0	
Columbia, Mo.	—	0	<1	<1	<1	<1	<1	
Columbia, Ohio.	—	0	0	0	0	0	0	
Columbia, Mass.	—	0	0	0	0	0	0	
Columbia River:								
Columbia, Minn.	—	0	0	0	0	0	0	
Columbia, Iowa.	—	0	0	0	1	1	2	
Columbia, Iowa.	—	0	0	0	0	0	0	
Columbia, Ill.	0.5	6	0	6	0	0	0	
Columbia, Mo.	—	0	0	0	8	1	9	
Columbia, Mo.	—	7	1	8	3	4	11	
Columbia, Ark.	—	1	2	3	9	12	14	
Columbia, La.	0.6	6	2	8	4	<1	4	
Columbia River:								
Columbia, N. Dak.	—	19	4	23	13	3	16	
Columbia, N. Dak.	0.6	0	0	0	0	2	3	
Columbia, S. Dak.	—	0	8	8	0	4	4	
Columbia, Nebr.	0.7	5	12	17	3	4	7	
Columbia, Mo.	—	20	0	20	2	0	22	
Columbia, Kans.	—	22	0	22	18	4	22	
Columbia, Mo.	—	24	3	27	29	4	33	
Columbia River: Pittsburgh, Pa.	—	0	0	0	0	0	0	
Columbia River:								
Columbia, Ohio.	—	0	0	0	1	0	1	
Columbia, W. Va.	—	0	0	0	0	0	0	
Columbia, Ky.	—	1	<1	2	2	0	2	
Columbia, Ind.	—	0	0	0	1	2	3	
Columbia, Ill.	—	0	0	0	10	3	13	
Columbia River:								
Columbia, Md.	0.8	0	0	0	0	0	0	
Columbia River North: Grand Forks, N. Dak.	1.5	0	0	0	0	2	2	
Columbia River, South:								
Columbia, Ark.	—	0	0	0	2	0	2	
Columbia, Tex.	—	0	0	0	0	6	6	
Columbia, La.	—	0	0	0	1	5	6	
Columbia River:								
Columbia, Colo.	—	0	6	6	0	1	13	
Columbia, Tex.	—	10	11	21	1	12	13	
Columbia, Tex.	—	14	0	14	23	3	26	
Columbia, Tex.	0.3	3	0	3	1	4	5	
Columbia River: Ruliff, Tex.	0.8	0	0	0	1	0	1	
Columbia River: Massena, N. Y.	—	0	0	0	<1	<1	<1	
Columbia River: Philadelphia, Pa.	—	0	0	0	0	0	0	
Columbia River:								
Columbia, Ga.	0.5	<1	73	74	0	0	0	
Columbia, S. C.	0.5	0	0	0	0	0	0	
Columbia River: Wawawai, Wash.	—	0	3	3	0	1	24	
Columbia River: Julesburg, Colo.	—	0	30	30	2	22	24	
Columbia River:								
Columbia, Pa.	—	0	0	0	0	0	0	
Columbia, Pa.	—	0	3	3	0	1	1	



# Radiological Health Data

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VOLUME III, NUMBER 3

MARCH 1962

MONTHLY REPORT

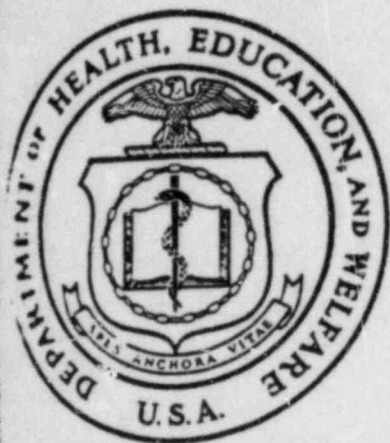
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS—Continued  
(Concentrations in  $\mu\text{mc/liter}$ )

Station	Quarter ending Sept. 30, 1961	September 1961						
		Strontium-90	Beta activity			Alpha activity		
			Suspended	Dissolved	Total	Suspended	Dissolved	Total
... River: ... Wash	—	—	—	—	—	—	—	
... Wash	1.1	1	2	3	0	0	0	
... Dam, Oreg.	b 0.6	46	390	436	0	0	0	
... Oreg.	—	12	143	155	0	0	0	
... Dam, Oreg.	—	10	82	92	0	0	0	
... Northfield, Mass.	1.2	16	114	130	0	0	0	
... River: Clarksville, Tenn.	0.4	2	6	8	0	<1	<1	
... River:	0.4	6	9	15	0	1	1	
... Creek, Pa.	—	—	—	—	—	—	—	
... Pa.	—	8	2	10	0	0	0	
... River: Century, Fla.	b 0.9	1	3	4	—	—	—	
... Lake:	—	—	—	—	—	—	—	
... N. Y.	—	—	—	—	—	—	—	
... Mich.	b 0.6	2	5	7	0	0	0	
... Mich.	0.4	4	14	18	0	0	0	
... Wis.	—	4	3	7	0	0	0	
... Mich.	—	1	2	3	0	0	0	
... Mich.	—	1	1	2	0	0	0	
... Minn.	0.2	<1	<1	0	0	0	0	
... River: Poughkeepsie, N. Y.	—	0	0	0	0	0	0	
... River: Peoria, Ill.	0.2	<1	5	5	0	0	0	
... River: Winfield Dam, W. Va.	0.4	4	10	14	—	—	—	
... River: Copco, Oreg.	—	0	8	8	0	0	0	
... River: Cincinnati, Ohio	—	6	10	16	0	0	0	
... River: Lowell, Mass.	1.1	2	5	7	0	0	0	
... River:	b 0.7	1	6	7	<1	1	1	
... River:	—	0	11	11	—	—	—	
... Minn.	—	—	—	—	—	—	—	
... Iowa	0.9	2	10	12	0	—	—	
... Iowa	—	2	14	16	0	1	1	
... Ill.	0.6	6	8	14	0	1	1	
... Mo.	—	45	17	62	—	—	—	
... Ark.	0.8	22	6	28	—	—	—	
... La.	b 0.4	6	9	15	3	3	6	
... La.	—	10	18	28	—	—	—	
... N. Dak.	—	—	—	—	—	—	—	
... N. Dak.	—	34	13	47	—	—	—	
... N. Dak.	—	4	13	17	—	—	—	
... N. Dak.	0.6	4	21	27	0	5	5	
... Mo.	—	28	28	56	4	6	10	
... Kans.	—	75	22	97	16	5	21	
... Mo.	—	61	30	91	6	0	6	
... River: Pittsburgh, Pa.	1.4	41	18	64	21	1	22	
... River: Henry, Nebr.	0.4	1	8	9	0	0	0	
... Ohio	—	10	32	42	1	24	25	
... W. Va.	0.4	<1	4	4	—	—	—	
... Ohio	—	1	8	9	0	0	0	
... Ky.	0.4	8	7	15	0	<1	<1	
... Ind.	1.1	—	—	—	—	<1	<1	
... Ind.	—	0	8	8	0	<1	<1	
... Md.	—	3	8	11	0	0	0	
... Md.	—	2	4	6	—	—	—	
... Plattsmouth, Nebr.	—	105	16	121	29	2	31	
... Baudette, Minn.	—	14	32	46	0	0	0	
... North: Grand Forks, N. Dak.	—	5	10	15	—	—	—	
... South:	—	—	—	—	—	—	—	
... La.	—	21	6	27	2	2	4	
... La.	—	8	19	27	0	0	0	
... River:	1.0	6	17	23	—	—	—	
... Tex.	b 0.4	2	12	14	0	3	3	
... Tex.	—	5	5	10	—	—	—	
... John H. Kerr Reservoir and Dam, Va.	—	11	5	16	5	3	8	
... Balford, Tex.	—	1	8	9	0	0	0	
... Shiprock, N. Mex.	—	1	2	3	<1	0	<1	
... River: Massena, N. Y.	—	94	18	112	18	0	18	
... Philadelphia, Pa.	—	<1	4	4	0	—	—	
... Ga.	—	5	6	11	—	—	—	
... S. C.	0.4	10	8	18	—	—	—	
... River: Berryville, Va.	—	2	4	6	0	0	0	
... Kawawai, Wash.	—	4	10	14	<1	<1	<1	
... River: Julesburg, Co.	0.3	1	7	8	0	3	3	
... River:	0.7	16	73	89	2	36	38	
... Tenn.	0.3	10	2	12	—	—	—	
... Tenn.	0.3	1	4	5	—	—	—	
... Calif.	0.6	1	16	17	0	1	1	
... Farad, Calif.	0.7	2	41	43	0	1	1	
... Richland, Wash.	—	6	0	6	0	0	0	
... River: Sidney, Mont.	0.4	2	11	13	0	2	2	
...	—	420	25	445	124	3	127	

... no sample received or no determinations made.  
... August 1961.  
... issue: The August 1961 water data, which appeared in the February 1962 issue of RHD, was inadvertently labeled "July 1961." July data published in the January 1962 issue.



# Radiological Health Data

VOLUME III, NUMBER 8  
AUGUST 1962

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

BIOGRAPHY

National Water Quality Network Annual Compilation of Data, PHS Publication No. 663, Water Years 1957-58, 1958-59, 1959-60. Public Health Service, Division of Water Supply and Pollution Control, Washington 25, D.C.  
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 Straub, C. P., L. R. Setter, A. Goldin, and P. F. Hallbach, "Strontium-90 in Surface Waters," *Journal of the American Water Works Association*, 52: 756 (1960).  
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TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

[Average concentrations in  $\mu\text{C}/\text{liter}$ ]

Station	Quarter ending Dec. 31, 1961	February 1962						
		Strontium-90	Beta activity			Alpha activity		
			Total	Suspended	Dissolved	Total	Suspended	Dissolved
Allegheny River: Pittsburgh, Pa.	0.3	3	16	19	0	0	0	
Arroyo River: Cedar Hill, N. Mex.	0.3	11	32	43	2	4	6	
Chattahoochee River: Chattahoochee, Fla.	0.4	28	24	52	7	0	1	
Colorado River:								
near Kans.	—	18	149	167	0	45	45	
near City, Okla.	—	87	58	145	0	2	2	
near Cotton Ferry, Ark.	—	107	37	144	—	—	—	
near Horn River: Hardin, Mont.	—	64	46	110	5	4	9	
near Sioux Falls River: Sioux Falls, S. Dak.	0.4	56	174	230	0	3	3	
Chattahoochee River:								
near Macon, Ga.	—	10	12	22	1	0	1	
near Columbus, Ga.	—	34	16	50	1	1	2	
near East Lewiston, Idaho.	—	22	20	42	1	1	2	
Colorado River:								
near Colo.	—	58	44	102	2	9	11	
near Ariz.	—	98	54	122	21	8	29	
near Denver City, Nev.	1.0	5	25	30	<1	8	8	
near Parker Dam, Calif.	—	26	39	65	0	9	9	
Colorado River:								
near Bunchberry, Wash.	—	4	8	12	0	1	1	
near near Wash.	1.1	61	48	544	—	—	—	
near McDeville Dam, Oreg.	0.6	30	265	295	0	0	0	
near Madras, Oreg.	—	27	137	164	0	0	0	
near Mary Dam, Oreg.	1.2	79	300	429	0	1	1	
near Connecticut River:								
near Springfield, Mass.	0.4	15	16	31	0	0	0	
near near Vt.	—	6	12	18	0	0	0	
near Clarksville River: Clarksville, Tenn.	0.4	5	17	22	—	—	—	
near near River: near Pa.	—	10	18	28	0	0	0	
near near N. J.	—	21	23	44	0	1	1	
near Century River: Century, Fla.	0.9	37	21	58	1	0	1	
near Lakes:								
near near N. Y.	—	2	8	10	—	—	—	
near near Mich.	0.6	7	10	17	0	0	0	
near near Huron, Mich.	0.4	4	10	14	0	0	0	
near near Waukegan, Wis.	—	5	9	14	1	1	2	
near near Marie, Mich.	—	5	5	10	0	0	0	
near near Ind.	0.2	8	7	15	0	0	0	
near near Minn.	—	1	3	4	0	0	0	
near near Poughkeepsie, N. Y.	0.2	14	38	52	0	0	0	
near near River:								
near near Ill.	0.4	25	43	68	1	0	1	
near near Winfield Dam, W. Va.	—	60	47	107	4	1	5	
near near River: Copco, Oreg.	—	11	14	25	—	—	—	
near near Miami River: Cincinnati, Ohio.	—	12	18	30	—	—	—	
near near Lowell, Mass.	1.1	21	32	53	0	0	0	
near near River:								
near near Minn.	0.9	2	11	13	0	2	2	
near near Iowa:								
near near near Iowa.	—	7	17	24	0	1	1	
near near near Louisa, Ill.	0.6	20	19	39	1	1	2	
near near near Maudslayi, Mo.	—	24	78	102	2	0	2	
near near near Memphis, Ark.	0.8	54	31	85	1	2	3	
near near near La.	—	55	30	85	4	1	5	
near near near Swans, La.	0.4	54	29	83	2	1	3	
near near near Miss.	—	30	102	132	8	0	8	
near near near River:								
near near near N. Dak.	—	55	103	158	2	<1	2	
near near near S. Dak.	—	19	25	44	1	2	3	
near near near near S. Dak.	—	4	16	20	0	4	4	
near near near near Nebr.	0.6	24	20	44	4	3	7	
near near near near Mo.	—	19	39	58	1	3	4	
near near near near Mo.	—	80	28	108	0	0	0	
near near near near City, Kans.	2.3	94	30	124	—	—	—	
near near near near Mo.	1.4	45	32	77	—	—	—	

TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS—Continued

[Average concentrations in  $\mu\text{c}/\text{liter}$ ]

Station	Quarter ending Dec. 31, 1961	February 1962					
	Strontium-90	Beta activity			Alpha activity		
		Total	Suspended	Dissolved	Total	Suspended	Dissolved
Monongahela River: Pittsburgh, Pa.....	0.4	9	17	26	0	0	
North Platte River: Henry, Nebr.....	—	9	63	72	0	24	
Ohio River:							
East Liverpool, Ohio.....	0.4	13	20	33	9	1	
Huntington, W. Va.....	—	18	14	32	0	0	
Cincinnati, Ohio.....	—	21	11	32	1	0	
Louisville, Ky.....	0.4	24	16	40	1	<1	
Evansville, Ind.....	—	38	20	58	2	0	
Cairo, Ill.....	1.1	59	30	89	2	0	
Platte River: Plattsmouth, Nebr.....	—	30	46	76	1	7	
Potomac River:							
Williamsport, Md.....	—	40	26	66	0	0	
Great Falls, Md.....	—	17	11	28	0	0	
Rainy River:							
Baudette, Minn.....	—	15	9	24	1	0	
International Fla, Minn.....	—	1	9	10	0	<1	
Red River, South:							
Index, Ark.....	—	33	46	79	—	—	
Alexandria, La.....	1.0	70	38	108	6	0	
Denison, Tex.....	—	10	61	71	0	1	
Rio Grande River:							
Alamosa, Colo.....	0.4	17	24	41	0	1	
El Paso, Tex.....	—	4	20	24	0	3	
Laredo, Tex.....	—	7	21	28	0	0	
Brownsville, Tex.....	—	9	24	33	2	1	
Roanoke River: John H. Kerr Res. & Dam, Va.....	—	35	20	55	1	<1	
Sabine River: Ruliff, Tex.....	—	48	48	96	—	—	
San Juan River: Shiprock, N. Mex.....	—	20	26	46	1	14	
St. Lawrence R'vr: Massena, N. Y.....	—	4	9	13	0	0	
Schuylkill River: Philadelphia, Pa.....	—	16	26	42	0	0	
Savannah River:							
North Augusta, S. C.....	—	17	10	27	—	—	
Port Wentworth, Ga.....	0.4	21	39	60	0	9	
Shenandoah River: Berryville, Va.....	—	11	18	29	<1	1	
Snake River:							
Wawawai, Wash.....	0.3	12	14	26	0	2	
Payette, Idaho.....	—	29	31	60	1	4	
South Platte River: Julesburg, Colo.....	0.7	27	38	65	3	38	
Susquehanna River:							
Sayre, Pa.....	0.3	6	20	26	0	0	
Conowingo, Md.....	0.3	5	18	23	0	0	
Tennessee River:							
Lenoir City, Tenn.....	—	28	21	49	<1	0	
Chattanooga, Tenn.....	0.6	28	48	76	1	0	
Bridgeport, Ala.....	0.7	—	—	—	—	—	
Pickwick Landing, Tenn.....	—	61	45	106	<1	0	
Tombigbee River: Columbus, Miss.....	—	57	30	87	1	0	
Truckee River: Farad, Calif.....	—	45	42	87	<1	<1	
Wabash River: New Harmony, Ind.....	—	144	64	208	3	1	
Yakima River: Richland, Wash.....	0.4	10	11	21	0	1	
Yellowstone River: Sidney, Mont.....	—	25	58	83	1	7	

\* April-September Strontium-90 data.

## Radioactivity in Drinking Water

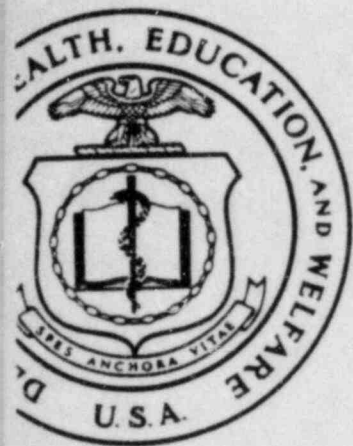
### DRINKING WATER ANALYSIS PROGRAM 1961

*Division of Environmental Engineering and Food Protection,  
Public Health Service*

The Water Supply Section of the Interstate Carrier Branch, Division of Environmental Engineering and Food Protection, PHS, has gathered extensive data on the radioactivity content of water supplies used on interstate carriers such as trains, airplanes, ships, and other conveyances operating in interstate com-

merce. This work has several objectives among which are:

1. to determine radioactivity content of interstate carrier water supplies for comparison with the revised Public Health Service Drinking Water Standards;



# Radiological Health Data

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AUGUST 1964

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

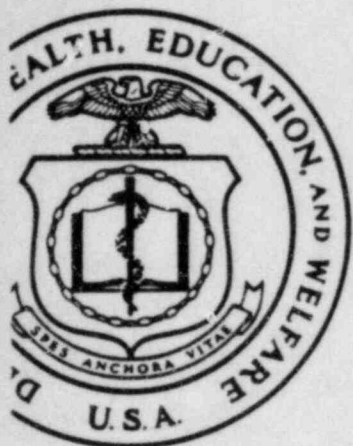
Public Health Service



TABLE 1.—QUARTERLY AVERAGE STRONTIUM-90 CONCENTRATIONS IN SURFACE WATERS,  
OCTOBER 1962-DECEMBER 1963  
[Concentrations in pc/liter]

Station	Oct.- Dec. 1962	Jan.- Mar. 1963	Apr.- June 1963	July- Sept. 1963	Oct.- Dec. 1963	Station	Oct.- Dec. 1962	Jan.- Mar. 1963	Apr.- June 1963	July- Sept. 1963	Oct.- Dec. 1963
Chesley River:						Missouri City, Mo.	2.6		4.1		4.1
Hillsborough, Pa.	1.8	—	1.8	—	2.8	St. Louis, Mo.	2.7		—	6.2	—
Delaware River:						Monongahela River:					
Edlar Hill, N. Mex.	0.9	—	—	1.8	—	Pittsburgh, Pa.	1.5	—	2.7	3.3	3.3
Alachua River:						North Platte River:					
Hattahoochee, Fla.	0.9	—	—	2.9	—	Henry, Nebr.	0.6	1.1	2.5	—	0.7
Kansas River:						Ohio River:					
Goodridge, Kans.	1.0	1.0	—	6.6	—	Addison, Ohio	2.1	—	—	4.0	—
Ponca City, Okla.	2.2	—	5.9	6.5	4.4	Huntington, W. Va.	1.6	—	1.9	—	3.0
Fort Smith, Ark.	—	—	—	6.7	—	Cincinnati, Ohio	1.6	—	—	3.7	—
Little Rock, Ark.	—	—	—	4.8	4.4	Louisville, Ky.	1.4	—	2.3	3.6	4.0
Pendleton Ferry, Ark.	—	—	5.5	—	4.3	Evansville, Ind.	1.6	—	—	4.2	—
War River:						Cairo, Ill.	1.7	—	2.9	—	2.8
Preston, Idaho	0.9	—	—	3.7	—	Toronto, Ohio	—	—	—	4.9	2.8
Big Horn River:						Ouachita River:					
Hardin, Mont.	1.3	—	5.8	—	2.3	Bastrop, La.	1.6	—	—	4.5	—
Sioux River:						Pend Oreille River:					
Sioux Falls, S. Dak.	2.5	—	—	9.5	5.0	Albeni Falls Dam, Idaho	0.7	—	0.9	—	1.3
Hattahoochee River:						Platte River:					
Atlanta, Ga.	1.0	3.6	1.6	—	1.7	Plattsmouth, Nebr.	2.3	—	—	5.2	—
Columbus, Ga.	1.1	—	1.5	—	1.7	Potomac River:					
Lanett, Ala.	0.8	—	—	2.0	—	Williamsport, Md.	1.6	—	1.4	—	—
Kenai Slough:						Great Falls, Md.	1.0	—	—	2.5	—
Fairbanks, Alaska	0.3	—	0.7	—	0.2	Washington, D. C.	—	—	—	3.4	—
Tea-water River:						Rainy River:					
Lewiston, Idaho	0.4	—	—	1.2	—	Baudette, Minn.	2.2	—	2.5	4.7	4.1
Lehigh River:						International Falls, Minn.	1.8	—	2.9	4.2	3.8
Clinton, Tenn.	1.0	—	—	1.4	—	Raritan River:					
Kingston, Tenn.	—	6.3	5.6	9.4	6.5	Perth Amboy, N. J.	—	—	—	—	—
Colorado River:						(5-ft. Below Surface)	—	—	—	—	—
Loma, Colo.	0.5	—	2.5	—	1.4	Perth Amboy, N. J.	—	—	—	—	—
Page, Ariz.	6.9	1.5	—	4.2	1.5	(5-ft. Above Bottom)	—	—	—	—	—
Boulder City, Nev.	1.5	—	1.8	—	1.0	Red River, North:					
Parker Dam, Calif.-Ariz.	1.3	—	0.9	—	1.1	Grand Forks, N. Dak.	—	—	—	11.3	7.1
Yuma, Ariz.	0.9	—	—	—	—	Red River, South:					
Columbia River:						Denison, Tex.	5.0	—	—	5.6	—
Northport, Wash.	0.9	—	—	3.4	—	Index, Ark.	3.3	—	5.3	4.9	4.3
Wenatchee, Wash.	1.6	—	1.1	2.7	2.8	Boasier City, La.	2.0	—	—	5.0	4.1
Pasco, Wash.	1.5	2.3	2.4	2.7	3.4	Alexandria, La.	3.9	—	4.0	—	—
McNary Dam, Ore.	1.0	1.4	1.1	2.6	2.5	Rio Grande River:					
Bonneville, Ore.	1.2	—	1.3	2.5	1.6	Alamosa, Colo.	0.5	—	1.1	—	0.8
Clatskanie, Ore.	0.9	—	—	—	—	El Paso, Tex.	0.7	—	—	1.9	2.4
Connecticut River:						Laredo, Tex.	1.8	—	3.7	—	—
Windsor, Vt.	0.9	—	—	2.6	—	Brownsville, Tex.	1.3	—	—	2.3	—
Northfield, Mass.	1.0	—	1.4	3.1	1.8	Roanoke River:					
Enfield Dam, Conn.	1.0	—	—	2.3	—	John H. Kerr Res./Dam, Va.	1.1	—	1.3	—	2.6
Cummins River:						Sabine River:					
Clyde, Tenn.	—	—	—	2.0	—	Ruliff, Tex.	1.4	—	—	3.2	—
Cuyahoga River:						Sacramento River:					
Cleveland, Ohio	—	1.4	—	5.3	—	Courtland, Calif.	0.9	—	—	1.4	1.0
Delaware River:						St. Lawrence River:					
Martins Creek, Pa.	1.2	—	1.7	—	1.6	Massena, N. Y.	1.2	—	—	2.3	—
Trenton, N. J.	0.9	—	—	3.1	2.1	San Joaquin River:					
Philadelphia, Pa.	2.4	—	1.1	—	—	Vernalis, Calif.	1.0	—	1.3	—	1.5
Ecumbria River:						San Juan River:					
Century, Fla.	—	—	1.4	—	1.2	Shiprock, N. Mex.	1.7	1.5	1.9	—	2.1
Great Lakes:						Savannah River:					
Duluth, Minn.	0.7	—	0.4	—	0.7	North Augusta, So. Car.	0.6	—	—	2.1	—
Sault Ste. Marie, Mich.	0.8	—	—	1.5	0.8	Port Wentworth, Ga.	1.5	2.4	2.2	3.2	2.4
Milwaukee, Wis.	0.8	—	0.8	—	0.8	Schuylkill River:					
Gary, Ind.	0.7	—	—	1.6	1.2	Philadelphia, Pa.	1.3	—	—	3.7	—
Port Huron, Mich.	0.8	—	1.3	—	1.2	Shenandoah River:					
Buffalo, Mich.	1.1	—	—	2.4	2.5	Berryville, Va.	0.8	—	1.2	—	1.0
Green River:						Ship Creek:					
Dutch John, Utah	1.2	—	—	2.7	—	Anchorage, Alaska	0.3	—	—	0.9	—
Hudson River:						Snake River:					
Poughkeepsie, N. Y.	3.0	—	3.8	—	5.0	Ice Harbor Dam, Wash.	1.6	—	—	1.3	—
Illinois River:						Wawawai, Wash.	0.7	—	0.9	—	0.7
Peoria, Ill.	1.7	—	3.5	—	2.3	Payette, Idaho	0.8	—	1.5	—	0.8
Grafton, Ill.	1.8	—	—	4.4	—	South Platte River:					
Kanawha River:						Julesburg, Colo.	0.8	0.8	1.7	—	1.8
Winfield Dam, W. Va.	1.1	—	—	2.9	—	Spokane River:					
Kansas River:						Post Falls, Idaho	0.8	—	—	1.2	—
De Soto, Kans.	—	—	4.9	7.4	5.2	Susquehanna River:					
Klamath River:						Sayre, Pa.	1.0	—	—	2.3	—
Keno, Ore.	0.9	—	1.4	—	1.8	Conowingo, Md.	1.2	—	—	3.0	—
Little Miami River:						Tennessee River:					
Cincinnati, Ohio	1.6	—	—	5.3	1.4	Lenoir City, Tenn.	1.0	—	1.5	—	2.1
Maumee River:						Chattanooga, Tenn.	1.4	2.6	1.7	3.3	2.2
Toledo, Ohio	—	3.6	4.9	—	2.7	Bridgeport, Ala.	1.0	—	1.6	—	2.2
Merrimack River:						Pickwick Landing, Tenn.	1.4	—	—	2.5	—
Lowell, Mass.	0.9	—	—	1.6	—	Tombigbee River:					
Mississippi River:						Columbus, Miss.	0.6	—	—	3.6	—
St. Paul, Minn.	3.4	—	—	7.2	4.3	Truckee River:					
Dubuque, Iowa	2.6	—	—	3.7	3.7	Farad, Calif.	0.9	—	1.0	—	1.0
Burlington, Iowa	2.1	—	—	7.3	4.3	Verdigris River:					
E. St. Louis, Ill.	1.8	—	—	3.8	3.8	Nowata, Okla.	2.5	—	4.2	—	6.0
Cape Girardeau, Mo.	2.7	—	—	5.3	3.6	Wabash River:					
W. Memphis, Ark.	2.0	—	—	4.2	3.4	New Harmony, Ind.	1.4	—	3.1	—	2.5
Vicksburg, Miss.	2.0	—	—	3.4	3.4	Willamette River:					
Delta, La.	2.1	—	—	4.5	—	Portland, Ore.	0.6	—	0.7	—	—
New Orleans, La.	1.9	—	—	—	—	Yakima River:					
Missouri River:						Richland, Wash.	0.4	—	—	1.0	—
Williston, N. Dak.	1.5	—	—	2.5	—	Yellowstone River:					
Pismack, N. Dak.	1.7	—	—	3.5	—	Sinclair, Mont.	2.0	—	—	5.0	—
Yankton, S. Dak.	2.3	—	—	3.3	—	Maximum		6.9	6.3	6.2	11.3
Omaha, Nebr.	2.5	—	—	4.5	—	Minimum		0.3	0.8	0.4	0.9
St. Joseph, Mo.	1.9	—	—	6.2	—						
St. Louis, Mo.	3.4	—	—	5.0	—						
St. Louis City, Kans.	—	—	—	—	—						

dash indicates no sample collected.



# Radiological Health Data

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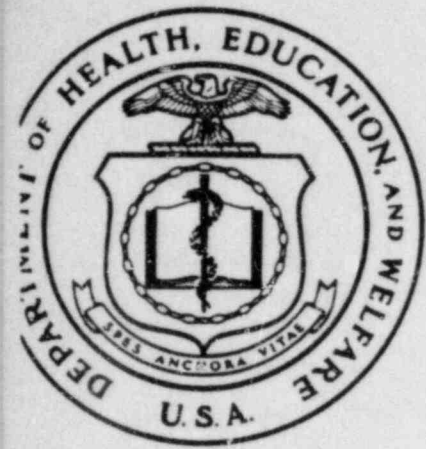
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 2.—QUARTERLY AVERAGE STRONTIUM-90 CONCENTRATIONS IN SURFACE WATERS,  
APRIL 1963-MARCH 1964  
(Concentrations in pc/liter)

Station	Apr.- June 1963	July- Sept. 1963	Oct.- Dec. 1963	Jan.- Mar. 1964	Station	Apr.- June 1963	July- Sept. 1963	Oct.- Dec. 1963	Jan.- Mar. 1964
Allegheny River:					St. Joseph, Mo.	6.2	—	3.4	—
Pittsburgh, Pa.	1.8	—	2.8	—	Kansas City, Kans.	—	5.0	—	2.9
Animas River:					Missouri City, Mo.	4.1	—	4.1	—
Cedar Hill, N. Mex.	—	1.8	—	1.7	St. Louis, Mo.	—	6.2	—	3.1
Apalachicola River:					Monongahela River:				
Chattahoochee, Fla.	—	2.9	—	1.5	Pittsburgh, Pa.	2.7	3.3	3.3	—
Arkansas River:					North Platte River:				
Coolidge, Kans.	—	6.6	—	0.9	Henry, Nebr.	2.5	—	0.7	—
Fort Smith, Ark.	5.9	6.5	4.4	—	Ohio River:				
Little Rock, Ark.	—	6.7	—	3.5	Toronto, Ohio.	—	4.9	2.8	—
Pendleton Ferry, Ark.	5.5	—	4.3	—	Addison, Ohio.	—	4.0	—	2.2
Bear River:					Huntington, W. Va.	1.9	—	3.0	—
Preston, Idaho.	—	3.7	—	1.1	Cincinnati, Ohio.	—	3.7	—	1.6
Big Horn River:					Louisville, Ky.	2.3	3.6	4.0	—
Hardin, Mont.	5.8	—	2.3	—	Evansville, Ind.	—	4.2	—	2.5
Big Sioux River:					Caro, Ill.	2.9	—	2.8	—
Sioux Falls, S. Dak.	—	9.5	5.0	2.8	Ouachita River:				
Chattahoochee River:					Bastrop, La.	—	4.5	—	3.0
Atlanta, Ga.	1.6	—	1.7	—	Pend Oreille River:				
Columbus, Ga.	1.5	—	1.7	—	Albeni Falls Dam, Idaho.	0.9	—	1.3	—
Lanett, Ala.	—	2.0	—	1.7	Platte River:				
Chena Slough:					Plattsmouth, Nebr.	—	5.2	—	2.1
Fairbanks, Alaska.	0.7	—	0.2	—	Potomac River:				
Clearwater River:					Williamsport, Md.	1.4	—	1.7	—
Lewiston, Idaho.	—	1.2	—	0.8	Great Falls, Md.	—	2.5	—	1.4
Clinch River:					Washington, D. C.	—	3.4	—	1.2
Clinton, Tenn.	—	1.4	—	2.0	Rainy River:				
Kingston, Tenn.	5.6	9.4	6.5	7.5	Baudette, Minn.	2.5	4.7	4.1	—
Colorado River:					International Falls, Minn.	2.9	4.3	3.8	—
Loma, Colo.	2.5	—	1.4	—	Red River, North:				
Page, Ariz.	—	4.2	—	3.9	Grand Forks, N. Dak.	—	11.3	7.1	4.9
Boulder City, Nev.	1.8	—	1.5	—	Red River, South:				
Parker Dam, Calif.-Ariz.	—	1.0	—	1.9	Denison, Tex.	—	5.6	—	5.8
Yuma, Ariz.	0.9	—	1.1	—	Index, Ark.	3.3	4.9	4.3	—
Columbia River:					Bossier City, La.	—	5.0	—	4.4
Northport, Wash.	—	3.4	—	1.5	Alexandria, La.	4.0	—	4.1	—
Wenatchee, Wash.	1.1	—	2.8	—	Rio Grande River:				
Pasco, Wash.	2.4	2.7	3.4	3.1	Alamosa, Colo.	1.1	—	0.8	—
McNary Dam, Ore.	1.1	2.6	2.5	2.2	El Paso, Tex.	—	1.9	—	0.6
Bonneville, Ore.	—	1.2	—	2.0	Laredo, Tex.	3.7	—	2.4	—
Clatskanie, Ore.	1.3	2.5	1.6	—	Brownsville, Tex.	—	2.3	—	2.6
Connecticut River:					Roanoke River:				
Wilder, Vt.	—	2.6	—	1.3	John H. Kerr Reser./Dam, Va.	1.3	—	2.6	—
Northfield, Mass.	1.4	3.1	1.8	—	Sabine River:				
Enfield Dam, Conn.	—	2.5	—	1.7	Ruliff, Tex.	—	3.2	—	2.5
Cumberland River:					Sacramento River:				
Clarksville, Tenn.	—	2.0	—	—	Courtland, Calif.	—	1.4	1.0	1.0
Cuyahoga River:					St. Lawrence River:				
Cleveland, Ohio.	—	5.3	—	4.3	Massena, N. Y.	—	2.3	—	1.6
Delaware River:					San Joaquin River:				
Martins Creek, Pa.	1.7	—	1.6	—	Vernalis, Calif.	1.3	—	1.5	—
Trenton, N. J.	—	3.1	—	1.8	San Juan River:				
Philadelphia, Pa.	1.1	—	2.1	—	Shiprock, N. Mex.	1.9	—	2.1	—
Escambia River:					Savannah River:				
Century, Fla.	1.4	—	1.2	—	North Augusta, So. Car.	—	2.1	—	1.7
Great Lakes:					Port Wentworth, Ga.	2.2	3.2	2.4	1.7
Duluth, Minn.	0.4	—	0.7	—	Schuykill River:				
Sault Ste. Marie, Mich.	—	1.5	—	0.8	Philadelphia, Pa.	—	3.7	—	1.4
Milwaukee, Wis.	0.8	—	0.8	—	Shenandoah River:				
Gary, Ind.	—	1.6	—	1.2	Berryville, Va.	1.2	—	1.0	—
Port Huron, Mich.	1.3	—	1.2	—	Ship Creek:				
Detroit, Mich.	—	2.4	—	1.4	Anchorage, Alaska.	—	0.9	—	0.4
Buffalo, N. Y.	2.2	—	2.5	—	Snake River:				
Green River:					Ice Harbor Dam, Wash.	—	1.3	—	1.0
Dutch John, Utah.	—	2.7	—	4.6	Wawawai, Wash.	0.9	—	0.7	—
Hudson River:					Payette, Idaho.	1.5	—	0.8	—
Poughkeepsie, N. Y.	3.8	—	5.0	—	South Platte River:				
Illinois River:					Julesburg, Colo.	1.7	—	1.8	—
Peoria, Ill.	3.5	—	2.3	—	Spokane River:				
Grafton, Ill.	—	4.4	—	3.8	Post Falls, Idaho.	—	1.2	—	1.3
Kanawha River:					Susquehanna River:				
Winfield Dam, W. Va.	—	2.9	—	1.1	Sayre, Pa.	—	2.3	—	1.3
Kansas River:					Conowingo, Md.	1.6	—	3.0	—
De Soto, Kans.	4.0	7.4	5.2	—	Tennessee River:				
Klamath River:					Lenoir City, Tenn.	1.5	—	2.1	—
Keno, Ore.	1.4	—	1.8	—	Chattanooga, Tenn.	1.7	3.3	2.2	2.0
Little Miami River:					Bridgeport, Ala.	1.6	—	2.2	—
Cincinnati, Ohio.	—	5.3	1.4	3.3	Pickwick Landing, Tenn.	—	2.5	—	2.1
Maumee River:					Tombigbee River:				
Toledo, Ohio.	4.9	—	2.7	—	Columbus, Miss.	—	3.6	—	3.1
Merrimack River:					Truckee River:				
Lowell, Mass.	—	1.6	—	1.8	Farad, Calif.	1.0	—	1.0	—
Mississippi River:					Verdigris River:				
St. Paul, Minn.	—	7.2	4.3	3.2	Nowata, Okla.	4.2	—	6.0	—
Dubuque, Iowa.	4.2	—	3.7	—	Wabash River:				
Burlington, Iowa.	—	7.3	4.3	2.8	New Harmony, Ind.	3.1	—	2.5	—
E. St. Louis, Ill.	4.0	—	3.8	—	Willamette River:				
Cape Girardeau, Mo.	—	5.3	—	2.9	Portland, Ore.	0.7	—	0.5	—
W. Memphis, Ark.	3.6	—	3.6	—	Yakima River:				
Vicksburg, Miss.	—	4.2	—	2.7	Richland, Wash.	—	1.0	—	0.3
Delta, La.	3.3	—	3.4	—	Yellowstone River:				
New Orleans, La.	—	4.5	—	2.8	Sinclair, Mont.	—	5.0	—	1.9
Missouri River:					Maximum	6.2	11.3	7.1	7.5
Williston, N. Dak.	2.5	—	2.8	—	Minimum	0.4	0.9	0.2	0.3
Bismarck, N. Dak.	—	3.5	—	3.9					
Yankton, S. Dak.	3.3	—	3.3	—					
Omaha, Nebr.	—	4.3	—	3.3					

\* Dash indicates no sample collected.  
Note: These data are preliminary; reanalysis of some samples may be made and additional analysis not completed at the time of the report may become available. For final data, one should consult the network's Annual Compilation of Data (7).



# Radiological Health Data

VOLUME V, NUMBER 12

DECEMBER 1964

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 2.—QUARTERLY AVERAGE STRONTIUM-90 CONCENTRATIONS IN SURFACE WATERS,  
JULY 1963-JUNE 1964  
[Concentrations in pc/liter]

Station	July- Sept. 1963	Oct.- Dec. 1963	Jan.- Mar. 1964	Apr.- June 1964	Station	July- Sept. 1963	Oct.- Dec. 1963	Jan.- Mar. 1964	Apr.- June 1964
Allegheny River:					Omaha, Nebr.	4.5	—	3.3	—
Pittsburgh, Pa.	—	2.8	—	2.3	St. Joseph, Mo.	—	3.4	—	6.4
Animas River:					Kansas City, Kans.	5.0	—	2.9	—
Cedar Hill, N. Mex.	1.8	—	1.7	—	Missouri City, Mo.	—	4.1	—	9.4
Apalachicola River:					St. Louis, Mo.	6.2	—	3.1	—
Chattahoochee, Fla.	2.9	—	1.5	—	Monongahela River:				
Arkansas River:					Pittsburgh, Pa.	3.3	3.3	—	2.1
Coolidge, Kans.	6.6	—	0.9	—	North Platte River:				
Ponca City, Okla.	6.5	4.4	—	6.0	Henry, Nebr.	—	0.7	—	3.3
Fort Smith, Ark.	6.7	—	3.5	—	Ohio River:				
Little Rock, Ark.	4.8	4.4	—	4.2	Toronto, Ohio	4.9	2.8	—	2.3
Pendleton Ferry, Ark.	—	4.3	—	4.4	Addison, Ohio	4.0	—	2.2	—
Bear River:					Huntington, W. Va.	—	3.0	—	2.2
Preston, Idaho	3.7	—	1.1	—	Cincinnati, Ohio	3.7	—	1.6	—
Big Horn River:					Louisville, Ky.	3.6	4.0	—	2.6
Hardin, Mont.	—	2.3	—	6.4	Evansville, Ind.	4.2	—	2.5	—
Big Sioux River:					Cairo, Ill.	—	2.8	—	3.4
Sioux Falls, S. Dak.	9.5	5.0	2.8	—	Ouachita River:				
Chattahoochee River:					Bastrop, La.	4.5	—	3.0	—
Atlanta, Ga.	—	1.7	—	2.4	Pend Oreille River:				
Columbus, Ga.	—	1.7	—	2.0	Albert Falls Dam, Idaho	—	1.3	—	1.2
Lanett, Ala.	2.0	—	1.7	—	Platte River:				
Chena Slough:					Plattsmouth, Nebr.	5.2	—	2.1	—
Fairbanks, Alaska	—	0.2	—	0.8	Potomac River:				
Clearwater River:					Williamsport, Md.	—	1.7	—	1.3
Lewiston, Idaho	1.2	—	0.8	—	Great Falls, Md.	2.5	—	1.4	—
Clinch River:					Washington, D. C.	3.4	—	1.2	—
Clinton, Tenn.	1.4	—	2.0	—	Rainy River:				
Kingston, Tenn.	9.4	6.5	7.5	4.9	Baudette, Minn.	4.7	4.1	—	4.0
Colorado River:					International Falls, Minn.	4.3	3.8	—	5.0
Loma, Colo.	—	1.4	—	2.5	Red River, North:				
Page, Ariz.	4.2	—	5.9	—	Grand Forks, N. Dak.	11.3	7.1	4.9	9.4
Boulder City, Nev.	—	1.5	—	1.6	Red River, South:				
Parker Dam, Calif.-Ariz.	1.0	—	1.9	—	Denison, Tex.	5.6	—	5.8	—
Yuma, Ariz.	—	1.1	—	1.0	Index, Ark.	4.9	4.3	—	5.4
Columbia River:					Bossier City, La.	5.0	—	4.4	—
Northport, Wash.	3.4	—	1.5	—	Alexandria, La.	—	4.1	—	4.4
Wenatchee, Wash.	—	2.8	—	1.2	Rio Grande River:				
Pasco, Wash.	2.7	3.4	3.1	1.7	Alamosa, Colo.	—	0.8	—	1.9
McNary Dam, Ore.	2.6	2.5	2.2	1.1	El Paso, Tex.	1.9	—	0.6	—
Bonneville, Ore.	1.2	—	2.0	—	Laredo, Tex.	—	2.4	—	5.6
Clatskanie, Ore.	2.5	1.6	—	1.0	Brownsville, Tex.	2.3	—	2.6	—
Connecticut River:					Roanoke River:				
Wilder, Vt.	2.6	—	1.3	—	John H. Kerr Resr/Dam, Va.	—	2.6	—	1.5
Northfield, Mass.	3.1	1.8	—	1.5	Sabine River:				
Enfield Dam, Conn.	2.5	—	1.7	—	Ruliff, Tex.	3.2	—	2.5	—
Cumberland River:					Sacramento River:				
Clarksville, Tenn.	2.0	—	—	—	Courtland, Calif.	1.4	1.0	1.0	—
Cuyahoga River:					St. Lawrence River:				
Cleveland, Ohio	5.3	—	4.3	—	Massena, N. Y.	2.3	—	1.6	—
Delaware River:					San Joaquin River:				
Martins Creek, Pa.	—	1.6	—	1.5	Vernalis, Calif.	—	1.5	—	1.0
Trenton, N. J.	3.1	—	1.8	—	San Juan River:				
Philadelphia, Pa.	—	2.1	—	2.0	Shiprock, N. Mex.	—	2.1	—	2.9
Escambia River:					Savannah River:				
Century Fla.	—	1.2	—	1.8	North Augusta, So. Car.	2.1	—	1.7	—
Great Lakes:					Port Wentworth, Ga.	3.2	2.4	1.7	2.3
Duluth, Minn.	—	0.7	—	0.7	Schuylkill River:				
Sault Ste. Marie, Mich.	1.5	—	0.8	—	Philadelphia, Pa.	3.7	—	1.4	—
Milwaukee, Wis.	—	0.8	—	1.2	Shenandoah River:				
Gary, Ind.	1.6	—	1.2	—	Berryville, Va.	—	1.0	—	1.1
Port Huron, Mich.	—	1.2	—	1.5	Ship Creek:				
Detroit, Mich.	2.4	—	1.4	—	Anchorage, Alaska	0.9	—	0.4	—
Buffalo, N. Y.	—	2.5	—	2.7	Snake River:				
Green River:					Ice Harbor Dam, Wash.	1.3	—	1.0	—
Dutch John, Utah	2.7	—	4.6	—	Wawawai, Wash.	—	0.7	—	1.0
Hudson River:					Payette, Idaho	—	0.8	—	0.9
Poughkeepsie, N. Y.	—	5.0	—	2.1	South Platte River:				
Illinois River:					Julesburg, Colo.	—	1.8	—	1.6
Peoria, Ill.	—	2.3	—	3.8	Spokane River:				
Grafton, Ill.	4.4	—	3.8	—	Post Falls, Idaho	1.2	—	1.3	—
Kanawha River:					Susquehanna River:				
Winfield Dam, W. Va.	2.9	—	1.1	—	Sayre, Pa.	2.3	—	1.3	—
Kansas River:					Conowingo, Md.	—	3.0	—	1.3
De Soto, Kans.	7.4	5.2	—	5.9	Tennessee River:				
Klamath River:					Lenoir City, Tenn.	—	2.1	—	1.6
Keno, Ore.	—	1.8	—	1.7	Chattanooga, Tenn.	3.3	2.2	2.0	2.3
Little Miami River:					Bridgeport, Ala.	—	2.2	—	1.5
Cincinnati, Ohio	5.3	1.4	3.3	—	Pickwick Landing, Tenn.	2.5	—	2.1	—
Maumee River:					Tombigbee River:				
Toledo, Ohio	—	2.7	—	4.2	Columbus, Miss.	3.6	—	3.1	—
Merrimack River:					Truckee River:				
Lowell, Mass.	1.6	—	1.8	—	Farad, Calif.	—	1.0	—	1.2
Mississippi River:					Verdigris River:				
St. Paul, Minn.	7.2	4.3	3.2	—	Nowata, Okla.	—	6.0	—	6.6
Dubuque, Iowa	—	3.7	—	5.2	Wabash River:				
Burlington, Iowa	7.3	4.3	2.8	—	New Harmony, Ind.	—	2.5	—	4.2
E. St. Louis, Ill.	—	3.8	—	4.9	Willamette River:				
Cape Girardeau, Mo.	5.3	—	2.9	—	Portland, Ore.	—	0.5	—	0.3
W. Memphis, Ark.	—	3.6	—	4.3	Yakima River:				
Vicksburg, Miss.	4.2	—	2.7	—	Richland, Wash.	1.0	—	0.3	—
Delta, La.	—	3.4	3.6	—	Yellowstone River:				
New Roads, La.	—	—	—	3.6	Sindey, Mont.	5.0	—	1.9	—
New Orleans, La.	4.5	—	2.8	—	Maximum	11.3	7.1	7.5	9.4
Missouri River:					Minimum	0.9	0.2	0.8	0.3
Williston, N. Dak.	—	2.8	—	3.1					
Bismarck, N. Dak.	3.5	—	3.9	—					
Yankton, S. Dak.	—	3.3	—	4.3					

\* No sample reported.

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# Radiological Health Data

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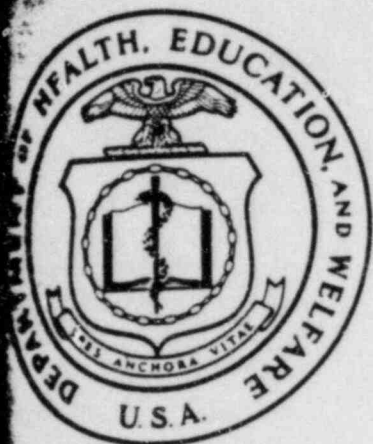
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 2.—QUARTERLY AVERAGE STRONTIUM-90 CONCENTRATIONS IN SURFACE WATERS,  
OCTOBER 1963-SEPTEMBER 1964  
(Concentrations in  $\mu\text{Ci/liter}$ )

Station	Oct.- Dec. 1963	Jan.- Mar. 1964	Apr.- June 1964	July- Sept. 1964	Station	Oct.- Dec. 1963	Jan.- Mar. 1964	Apr.- June 1964	July- Sept. 1964
Allegheny River:					Omaha, Nebr.		3.3		4.4
Pittsburgh, Pa.	2.8		2.3		St. Joseph, Mo.	3.4	2.9	6.4	5.8
Animas River:		1.7		1.5	Kansas City, Kans.			9.4	5.0
Cedar Hill, N. Mex.		1.5		1.6	Missouri City, Mo.	4.1	3.1		
Apalachicola River:					St. Louis, Mo.			2.1	
Chattahoochee, Fla.					Monongahela River:				
Arkansas River:		0.9		2.5	Pittsburgh, Pa.	3.3			
Coolidge, Kans.			6.0		North Platte River:			3.3	
Ponca City, Okla.	4.4			4.8	Henry, Nebr.	0.7			
Fort Smith, Ark.		3.5	4.2		Ohio River:			2.3	
Little Rock, Ark.	4.4		4.4		Toronto, Ohio	2.8	2.2	2.2	3.4
Pendleton Ferry, Ark.	4.3				Addison, Ohio			2.2	
Atchafalaya River:				4.0	Huntington, W. Va.	3.0	1.6	2.6	3.2
Morgan City, La.*					Cincinnati, Ohio			2.6	3.0
Bear River:		1.1		2.5	Louisville, Ky.	4.0	2.5	3.4	3.0
Preston, Idaho					Evansville, Ind.	2.8			
Big Horn River:			6.4		Cairo, Ill.				2.5
Hardin, Mont.	2.3				Ouachita River:		3.0		
Big Sioux River:		2.8		4.6	Bastrop, La.				
Sioux Falls, S. Dak.	5.0				Pond Oreille River:	1.3		1.2	
Chattahoochee River:			2.4		Albani Falls Dam, Idaho				4.8
Atlanta, Ga.	1.7		2.0	1.8	Platte River:		2.1		
Columbus, Ga.	1.7	1.7			Plattsmouth, Nebr.				
Lanett, Ala.					Potomac River:		1.7	1.3	
Chena River:			0.8		Williamsport, Md.				1.7
Fairbanks, Alaska	0.2			1.0	Great Falls, Md.		1.2		1.9
Clearwater River:		0.8			Washington, D. C.				
Lewiston, Idaho					Rainy River:			4.0	
Clineb River:		2.0		1.3	Baudette, Minn.	4.1		5.0	
Clinton, Tenn.	6.5	7.5	4.9	3.2	International Falls, Minn.	3.8			
Kingston, Tenn.					Raritan River:				
Colorado River:			2.5	4.9	Perth Amboy, New Jersey				
Louis, Colo.	1.4	5.9	1.6	2.2	(5-ft. Below Surface)				
Page, Ariz.		1.9	1.0		Perth Amboy, New Jersey				
Boulder City, Nev.	1.5				(5-ft. Above Bottom)				
Parker Dam, Calif.-Ariz.	1.1			2.1	Red River, North:		7.1	4.9	9.4
Yuma, Ariz.					Grand Forks, N. Dak.				8.2
Columbia River:		1.5		2.5	Red River, South:			5.8	6.4
Northport, Wash.	2.8		1.2	2.5	Denison, Tex.		4.3	5.4	5.9
Wenatchee, Wash.	3.4	3.1	1.7	1.6	Index, Ark.		4.4	4.4	
Pasco, Wash.	2.5	2.2	1.1	1.6	Bossier City, La.		4.1		4.4
McNary Dam, Ore.		2.0			Alexandria, La.				1.9
Bonneville, Ore.	1.6		1.0		Rio Grande River:		0.8	0.6	2.7
Clatskanie, Ore.					Alamosa, Colo.				5.6
Connecticut River:		1.3		1.4	El Paso, Tex.	2.4		2.6	2.6
Wilder, Vt.	1.8		1.5	1.9	Laredo, Tex.				
Northfield, Mass.		1.7			Brownsville, Tex.				
Enfield Dam, Conn.				1.7	Roanoke River:		2.6		1.5
Cosa River:					John H. Kerr Res./Dam, Va.				2.7
Rome, Ga.*					Sabine River:			2.5	
Cumberland River:				1.7	Ruliff, Tex.				1.0
Clarksville, Tenn.*					Sacramento River:	1.0	1.0		0.9
Cheatham Lock, Tenn.*				4.5	Courtland, Calif.				1.6
Cuyaboga River:		4.3			St. Lawrence River:				
Cleveland, Ohio					Massena, N. Y.				
Delaware River:			1.5	1.7	San Joaquin River:		1.5		1.0
Martins Creek, Pa.	1.6				Vernalis, Calif.				2.9
Trenton, N. J.	2.1		2.0		San Juan River:		2.1		
Philadelphia, Pa.				1.8	Shiprock, N. Mex.			1.7	2.1
Escombis River:	1.2				Savannah River:			1.7	2.6
Century, Fla.			0.7	0.8	North Augusta, So. Car.	2.4		1.7	2.3
Great Lakes:				0.8	Port Wentworth, Ga.				1.6
Duluth, Minn.	0.7				Schuylkill River:			1.4	
Sault Ste. Marie, Mich.	0.8	1.2	1.2	1.0	Philadelphia, Pa.				1.1
Milwaukee, Wis.				1.6	Shenandoah River:	1.0			
Gary, Ind.	1.2	1.4	2.7		Berryville, Va.			0.4	0.2
Port Huron, Mich.				4.4	Ship Creek:			1.0	1.1
Detroit, Mich.	5.0				Anchorage, Alaska				0.9
Buffalo, N. Y.		4.6			Snake River:		0.7		
Green River:				2.1	Ice Harbor Dam, Wash.		0.3		
Dutch John, Utah	5.0				Wawawai, Wash.				1.6
Hudson River:			3.8	3.4	Payette, Idaho				
Poughkeepsie, N. Y.	2.3			1.8	South Platte River:				
Illinois River:					Julesburg, Colo.				
Peoria, Ill.		3.8			Spokane River:			1.3	0.9
Grafton, Ill.			1.1		Post Falls, Idaho				1.7
Kanawha River:					Susquehanna River:		5.0		1.3
Winfield Dam, W. Va.				5.9	Sayre, Pa.				
Kansas River:	5.2		1.7		Conowingo, Md.				1.6
De Soto, Kans.				2.4	Tennessee River:		2.1	2.0	2.3
Klamath River:	1.8				Lenoir City, Tenn.		2.2	2.1	1.5
Keno, Ore.		3.3			Chattanooga, Tenn.		2.2		2.4
Little Miami River:					Bridgeport, Ala.				
Cincinnati, Ohio	2.7		4.2		Pickwick Landing, Tenn.				2.0
Maumee River:				2.6	Tombigbee River:			3.1	
Toledo, Ohio					Columbus, Miss.				1.2
Merrimack River:		1.8		5.3	Truckee River:		1.0		
Lowell, Mass.					Farad, Calif.				6.6
Mississippi River:		3.2		4.4	Verdigris River:		6.0		
St. Paul, Minn.	4.3		5.2		Nowata, Okla.				4.2
Dubuque, Iowa	3.7	2.8	4.9	4.2	Wabash River:		2.5		
Burlington, Iowa	4.3				New Harmony, Ind.				0.3
E. St. Louis, Ill.	3.8	2.9	4.3	3.7	Willamette River:		0.5		
Cape Girardeau, Mo.	3.6			3.6	Portland, Ore.				
W. Memphis, Ark.		2.7		3.0	Yakima River:			0.3	
Vicksburg, Miss.	3.4			3.7	Richland, Wash.				3.2
Delta, La.			2.8		Yellowstone River:			1.9	
New Roads, La.*				3.1	Sindey, Mont.				
New Orleans, La.				4.0	Maximum		7.1	7.5	9.4
Missouri River:	2.8				Minimum		0.2	0.3	0.3
Williston, N. Dak.		3.9							
Bismarck, N. Dak.	3.3		4.3						
Yankton, S. Dak.									

\* Activated 5-15-64.  
 † Activated 8-64.  
 ‡ Deactivated 7-22-64.  
 § Relocated  
 ¶ Activated 5-15-64.



# Radiological Health Data

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service



Table 2. Quarterly average strontium-90 concentrations in surface waters, October-December 1964, concentrations in pCi/liter

Station	<sup>90</sup> Sr	Station	<sup>90</sup> Sr
Allegheny River:		Yankton, S. Dak.	2.7
Pittsburgh, Pa.	1.7	St. Joseph, Mo.	2.1
Arkansas River:		Missouri City, Mo.	2.1
Ponca City, Okla.	2.9	Monongahela River:	
Little Rock, Ark.	2.9	Pittsburgh, Pa.	1.8
Pendleton Ferry, Ark.	2.8	North Platte River:	
Big Horn River:		Henry, Nebr.	0.1
Hardin, Mont.	1.7	Ohio River:	
Chattahoochee River:		Toronto, Ohio	2.2
Atlanta, Ga.	1.6	Huntington, W. Va.	1.4
Columbus, Ga.	1.2	Louisville, Ky.	2.2
Chena River:		Cairo, Ill.	2.2
Fairbanks, Alaska	0.1	Pend Oreille River:	
Clinch River:		Albeni Falls Dam, Idaho	1.1
Kington, Tenn.	3.0	Potomac River:	
Colorado River:		Williamsport, Md.	0.8
Loma, Colo.	0.9	Rainy River:	
Boulder City, Nev.	1.7	Baudette, Minn.	2.2
Yuma, Ariz.	1.2	International Falls, Minn.	2.2
Columbia River:		Red River, North:	
Wenatchee, Wash.	1.8	Grand Forks, N. Dak.	1.4
Pasco, Wash.	2.2	Red River, South:	
McNary Dam, Ore.	1.6	Index, Ark.	2.8
Clatskanie, Ore.	1.0	Alexandria, La.	2.2
Connecticut River:		Rio Grande:	
Northfield, Mass.	1.3	Alamosa, Colo.	0.7
Delaware River:		Laredo, Tex.	1.7
Martins Creek, Pa.	1.3	Roanoke River:	
Philadelphia, Pa.	1.2	John H. Kerr Resr/Dam, Va.	1.2
Escambia River:		San Joaquin River:	
Century, Fla.	0.9	Vernalis, Calif.	1.1
Great Lakes:		San Juan River:	
Duluth, Minn.	0.5	Shiprock, N. Mex.	2.2
Milwaukee, Wis.	0.8	Savannah River:	
Port Huron, Mich.	1.2	Port Wentworth, Ga.	1.8
Buffalo, N. Y.	2.3	Shenandoah River:	
Hudson River:		Berryville, Va.	0.2
Poughkeepsie, N. Y.	2.0	Snake River:	
Illinois River:		Wawawai, Wash.	0.6
Peoria, Ill.	1.6	Payette, Idaho	0.7
Kansas River:		South Platte River:	
DeSoto, Kans.	3.3	Julesburg, Colo.	0.7
Klamath River:		Tennessee River:	
Keno, Ore.	1.5	Lenoir City, Tenn.	1.2
Maumee River:		Chattanooga, Tenn.	1.3
Toledo, Ohio	2.1	Bridgeport, Ala.	1.9
Mississippi River:		Truckee River:	
Dubuque, Iowa	2.9	Farad, Calif.	0.8
East St. Louis, Ill.	2.7	Verdigris River:	
West Memphis, Ark.	2.2	Nowata, Okla.	1.8
Delta, La.	2.4	Wabash River:	
New Roads, La.	2.1	New Harmony, Ind.	1.8
Missouri River:		Willamette River:	
Williston, N. Dak.	2.1	Portland, Ore.	0.1

absence of strontium-90 and alpha emitters,<sup>2</sup> a water supply is acceptable when the gross beta concentration does not exceed 1,000 pCi/liter (11).

#### REFERENCES

- (1) DIVISION OF WATER SUPPLY AND POLLUTION CONTROL, PUBLIC HEALTH SERVICE. National water quality network annual compilation of data. PHS Publication No. 663, 1958 Edition, Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Price \$1.50.
- (2) *Ibid.*, 1959 Edition. Price \$1.75.
- (3) *Ibid.*, 1960 Edition.<sup>3</sup>
- (4) *Ibid.*, 1961 Edition.<sup>3</sup>
- (5) *Ibid.*, 1962 Edition.<sup>3</sup>
- (6) DIVISION OF WATER SUPPLY AND POLLUTION CONTROL, PUBLIC HEALTH SERVICE. Water pollution surveillance system, annual compilation of data. PHS Publication No. 663 (Revised)

<sup>2</sup> Absence is taken here to mean a negligibly small fraction of the specific limits of 3 pCi/liter and 10 pCi/liter for unidentified alpha emitters and strontium-90, respectively.

<sup>3</sup> Single free copies of this publication may be obtained from: Public Inquiries Branch, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D.C. 20201.

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# Radiological Health Data and Reports

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

Table 2. Quarterly strontium-90 concentrations in surface waters, April-September 1965

Station	Average concentration (pCi/liter)		Station	Average concentration (pCi/liter)	
	Apr-June 1965	July-Sept 1965		Apr-June 1965	July-Sept 1965
Allegheny River:			Bismarck, N. Dak.		
Pittsburgh, Pa.	1.1		Yankton, S. Dak.	3.0	2.1
Animas River:			Omaha, Nebr.		2.5
Cedar Hill, N. Mex.		1.5	St. Joseph, Mo.	3.0	
Apalachicola River:			Kansas City, Mo.		2.6
Chattahoochee, Fla.		0.4	Missouri City, Mo.	1.9	
Arkansas River:			St. Louis, Mo.		2.7
Coolidge, Kans.		3.3	Monongahela River:		
Ponca City, Okla.	2.2		Pittsburgh, Pa.	0.9	
Fort Smith, Ark.		2.9	North Platte River:		
Little Rock, Ark.	2.0		Henry, Nebr.	2.2	
Pendleton Ferry, Ark.	2.3		Ohio River:		
Atchafalaya River:			Toronto, Ohio	0.8	
Morgan City, La.		2.4	Addison, Ohio		1.3
Bear River:			Huntington, W. Va.	1.8	
Preston, Idaho		0.4	Cincinnati, Ohio		1.1
Big Horn River:			Louisville, Ky.	1.0	
Hardin, Mont.		1.8	Evansville, Ind.		0.8
Big Sioux River:			Cairo, Ill.	1.4	
Sioux Falls, S. Dak.		2.5	Ouachita River:		
Chattahoochee River:			Bastrop, La.		1.3
Atlanta, Ga.	0.7		Pend Oreille River:		
Lanett, Ala.		0.8	Albeni Falls Dam, Idaho	0.4	
Columbus, Ga.	1.1		Platte River:		
Chena River:			Plattsmouth, Nebr.		2.9
Fairbanks, Alaska	0.4		Potomac River:		
Clearwater River:			Williamsport, Md.	0.5	
Lewiston, Idaho		0.4	Great Falls, Md.		0.8
Clinch River:			Washington, D.C.		0.8
Clinton, Tenn.		0.4	Rainy River:		
Fingston, Tenn.	1.6	1.3	International Falls, Minn.	3.9	
Colorado River:			Baudette, Minn.	2.8	
Loma, Colo.	1.9	0.7	Red River, North:		
Page, Ariz.		1.9	Grand Forks, N. Dak.	6.1	5.2
Boulder City, Nev.		2.0	Red River, South:		
Parker Dam, Calif.-Ariz.	0.5	0.9	Denison, Tex.	3.7	4.1
Yuma, Ariz.		1.0	Index, Ark.	3.1	1.3
Columbia River:			Bossier City, La.	2.0	
Northport, Wash.		0.8	Alexandria, La.		
Wenatchee, Wash.	0.9	0.8	Rio Grande:		
Pasco, Wash.	0.7	0.5	Alamosa, Colo.	1.2	
McNary Dam, Ore.		0.6	El Paso, Tex.		1.0
Bonneville, Ore.		0.5	Laredo, Tex.	1.4	
Clatskanie, Ore.		0.5	Brownsville, Tex.		1.3
Connecticut River:			Roanoke River:		
Wilder, Vt.		0.5	John H. Kerr Resr. & Dam, Va.	1.1	
Seld, Mass.	1.1	1.0	Sabine River:		
Dam, Conn.		0.1	Ruliff, Tex.		1.9
Cumberland River:			Sacramento River:		
Cheatham Lock, Tenn.		0.8	Greens Landing, Calif.		0.1
Cuyahoga River:			St. Lawrence River:		
Cleveland, Ohio		2.2	Massena, N.Y.		1.0
Delaware River:			San Joaquin River:		
Martins Creek, Pa.	0.6		Vernalis, Calif.	0.8	
Trenton, N.J.		0.7	San Juan River:		
Philadelphia, Pa.	1.1		Shiprock, N. Mex.	2.0	
Esambia River:			Savannah River:		
Century, Fla.	0.8		North Augusta, S.C.		0.4
Great Lakes:			Port Wentworth, Ga.	1.6	1.2
Duluth, Minn.	0.7		Schuykill River:		
Sault Ste. Marie, Mich.		0.4	Philadelphia, Pa.		0.9
Milwaukee, Wis.	0.6		Shenandoah River:		
Gary, Ind.		0.7	Berryville, Va.	0.6	
Port Huron, Mich.	1.0		Ship Creek:		
Detroit, Mich.		1.2	Anchorage, Alaska		0.1
Buffalo, N.Y.	2.0		Snake River:		
Green River:			Payette, Idaho	0.7	
Dutch John, Utah		1.6	Wawawai, Wash.	0.4	
Hudson River:			Ice Harbor Dam, Wash.		
Toughkeepsie, N.Y.	1.1		South Platte River:		0.1
Illinois River:			Julesburg, Colo.	1.8	
Peoria, Ill.	1.6		Spokane River:		
Kanawha River:			Post Falls Dam, Idaho		0.3
Winfield Dam, W. Va.		0.3	Susquehanna River:		
Kansas River:			Sayre, Pa.		0.4
De Soto, Kans.	1.9		Conowingo, Md.	1.0	
Klamath River:			Tennessee River:		
Keno, Ore.	1.7		Lenoir City, Tenn.	0.6	
Little Miami River:			Chattanooga, Tenn.	1.0	0.6
Cincinnati, Ohio		1.1	Bridgeport, Ala.	1.0	
Maumee River:			Pickwick Landing, Tenn.		0.7
Toledo, Ohio	1.7		Tombigbee River:		
Merrimack River:			Columbus, Miss.		0.6
Lowell, Mass.		0.7	Truckee River:		
Mississippi River:			Farad, Calif.	0.6	
St. Paul, Minn.		3.6	Verdigris River:		
Dubuque, Iowa	4.0		Nowata, Okla.	2.7	
Burlington, Iowa		2.9	Wabash River:		
E. St. Louis, Ill.	2.7		New Harmony, Ind.	1.2	
Cape Girardeau, Mo.		2.1	Willamette River:		
W. Memphis, Ark.	2.3		Portland, Ore.	0.2	
Vicksburg, Miss.		1.7	Yakima River:		
Delta, La.	2.2		Richland, Wash.		0.1
New Roads, La.	2.3		Yellowstone River:		
New Orleans, La.		1.8	Sidney, Mont.		1.5
Missouri River:			Maximum	6.1	5.2
W. N. Dak.	1.6		Minimum	0.2	0.1

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
Public Health Service

Table 2. Quarterly strontium-90 concentrations in surface waters, October-December 1965 and January-June 1966

Station	Average concentration (pCi/liter)			Station	Average concentration (pCi/liter)		
	Oct-Dec 1965	Jan-Mar 1966	Apr-June 1966		Oct-Dec 1965	Jan-Mar 1966	Apr-June 1966
Allegheny River:				Mississippi River:			
Pittsburgh, Pa.	1.0		1.0	St. Paul, Minn.			.2
Animas River:		0.8		Dubuque, Iowa	2.4		2.1
Cedar Hill, N. Mex.				Burlington, Iowa			
Apalachicola River:		.9		E. St. Louis, Ill.	1.9		1.5
Chattahoochee, Fla.				Cape Girardeau, Mo.	2.0		1.3
Arkansas River:		1.5		W. Memphis, Ark.	2.1		2.0
Coolidge, Kans.				Vicksburg, Miss.	2.1		2.5
Ponca City, Okla.	2.2		2.4	Delta, La.	2.1		
Fort Smith, Ark.		3.1	2.5	New Roads, La.	1.8		
Little Rock, Ark.	2.7			New Orleans, La.			2.0
Pendleton Ferry, Ark.	3.1		2.5	Missouri River:			
Atchafalaya River:				Williston, N. Dak.	2.1		
Morgan City, La.		1.6		Bismarek, N. Dak.			1.9
Bear River:		1.6		Yankton, S. Dak.	2.8		
Preston, Idaho				Omaha, Nebr.			2.8
Big Horn River:				St. Joseph, Mo.	2.5		
Hardin, Mont.	1.1		1.7	Kansas City, Kans.			2.4
Big Sioux River:				Missouri City, Mo.	2.7		
Sioux Falls, S. Dak.		2.3		St. Louis, Mo.			2.5
Chattahoochee River:				Monongahela River:			
Atlanta, Ga.	1.6		1.1	Pittsburgh, Pa.	1.3		
Lanett, Ala.		1.2		North Platte River:			
Columbus, Ga.	1.0		1.0	Henry, Nebr.	.5		
Chena River:				Ohio River:			
Fairbanks, Alaska	0.2		0.4	Toronto, Ohio	3.5		
Clearwater River:				Addison, Ohio			1.3
Lewiston, Idaho		.2		Huntington, W. Va.			
Clinch River:				Cincinnati, Ohio			1.1
Clinton, Tenn.		.6		Louisville, Ky.	1.5		1.1
Kingston, Tenn.	1.2	7.3	4.3	Evansville, Ind.			1.2
Colorado River:				Cairo, Ill.	1.2		
Loma, Colo.	.8		1.2	Ouachita River:			
Page, Ariz.		3.2		Bastrop, La.			1.9
Boulder City, Nev.	2.7		2.5	Pend Oreille River:			
Parker Dam, Calif-Ariz.				Albeni Falls Dam, Idaho	.7		
Yuma, Ariz.	1.5		2.1	Platte River:			
Columbia River:				Plattsmouth, Nebr.			1.6
Northport, Wash.		1.0		Potomac River:			
Wenatchee, Wash.	1.4		.3	Williamsport, Md.	.7		
Pasco, Wash.	1.2		1.2	Great Falls, Md.			1.1
McNary Dam, Ore.	1.1		2.4	Washington, D.C.			.5
Bonneville, Ore.		.8		Rainy River:			
Clatskanie, Ore.	.9		.4	International Falls, Minn.	3.2		
Connecticut River:				Baudette, Minn.	3.2		
Wilder, Vt.		.9		Raritan River:			
Northfield, Mass.	1.0		1.0	Perth Amboy, N.J.			
Enfield Dam, Conn.		1.0		(5 feet below surface)			
Coosa River:				(5 feet above bottom)			
Rome, Ga.				Red River, North:			
Cumberland River:				Grand Forks, N. Dak.	5.8		5.6
Cheatham Lock, Tenn.		1.0		Red River, South:			
Cuyahoga River:				Denison, Tex.			4.6
Cleveland, Ohio		1.9		Index, Ark.	4.0		
Delaware River:				Bossier City, La.			
Martins Creek, Pa.	.8		1.0	Alexandria, La.	2.9		
Trenton, N. J.		1.1		Rio Grande:			
Philadelphia, Pa.	.9		1.0	Alamosa, Colo.	.5		
Escambia River:				El Paso, Tex.			
Century, Fla.	1.0		.6	Laredo, Tex.	1.3		
Great Lakes:				Brownsville, Tex.			1.6
Duluth, Minn.	.8		.7	Roanoke River:			
Sault Ste. Marie, Mich.		.8		John H. Kerr Reser. Dam, Va.	1.5		
Milwaukee, Wis.	.7		1.0	Sabine River:			
Gary, Ind.		1.7		Ruliff, Tex.			1.4
Port Huron, Mich.	1.1		1.4	Sacramento River:			
Detroit, Mich.		.6		Greens Landing, Calif.			.5
Buffalo, N.Y.	2.3		2.3	St. Lawrence River:			
Green River:				Massena, N. Y.			1.7
Dutch John, Utah		2.3		San Joaquin River:			
Hudson River:				Vernalis, Calif.	.6		
Poughkeepsie, N.Y.	1.8		1.8	San Juan River:			
Illinois River:				Shiprock, N. Mex.	1.5		
Peoria, Ill.	1.3		1.7	Savannah River:			
Grafton, Ill.		2.0		North Augusta, S.C.	.9		
Kanawha River:				Port Wentworth, Ga.	1.4		1.2
Winfield Dam, W. Va.		.7		Schuylkill River:			
Kansas River:				Philadelphia, Pa.			.9
DeSoto, Kans.	2.2		2.6	Shenandoah River:			
Klamath River:				Berryville, Va.	.4		
Keno, Ore.	1.0		1.3	Ship Creek:			
Little Miami River:				Anchorage, Alaska			.1
Cincinnati, Ohio		2.1		Snake River:			
Maumee River:				Payette, Idaho	.5		
Toledo, Ohio	1.8		1.6	Wawawai, Wash.	.4		
Merrimack River:				Ice Harbor Dam, Wash.			.5
Lowell, Mass.		1.9		South Platte River:			
				Julesburg, Colo.	1.6		

Fig. 2. Quarterly strontium-90 concentrations in surface waters, October-December 1965 and January-June 1966—Continued

Station	Average concentration (pCi/liter)			Station	Average concentration (pCi/liter)		
	Oct-Dec 1965	Jan-Mar 1966	Apr-June 1966		Oct-Dec 1965	Jan-Mar 1966	Apr-June 1966
Truckee River: Farad, Calif.		.6		Truckee River: Farad, Calif.	.9		.8
Verdigris River: Nowata, Okla.		.9	1.0	Verdigris River: Nowata, Okla.	3.8		
Wabash River: New Harmony, Ind.				Wabash River: New Harmony, Ind.	.9		1.7
Willamette River: Portland, Ore.	.8	.9	1.0	Willamette River: Portland, Ore.	.2		.1
Yakima River: Richland, Wash.	1.0	1.0	.7	Yakima River: Richland, Wash.		.3	
Yellowstone River: Sidney, Mont.		1.4		Yellowstone River: Sidney, Mont.		1.3	

During the fourth quarter of 1965 and the first and second quarters of 1966, this standard was not exceeded. Comparison between the quarters is not feasible at all sampling locations because of fluctuations in sampling frequencies. Comparison with results prior to October 1964 would take into consideration an instrument recalibration which resulted in a lowering of strontium-90 values by 15 percent (11).

ing to the Atomic Energy Commission, these high values were the result of a temporary low flow caused by a reservoir cleaning operation.

Table 3. Summary of strontium-90 in surface waters October-December 1965 and January-June 1966

Period	Total number of samples	Concentration (pCi/liter)			
		Maximum	Minimum	Median	Average
October-December 1965	69	5.8 ± 0.4	0.2 ± 0.1	1.2	1.6
January-March 1966	62	7.3 ± .4	1 ± .1	1.2	1.3
April-June 1966	66	6.0 ± .6	1 ± .1	1.5	1.6

\* Two standard deviations counting error.

The highest result for the fourth quarter 1965 and the second quarter 1966 and the second highest result for the first quarter 1966 occurred at Grand Forks, N. Dak., on the Red River, North. The highest result for the first quarter was at Kingston, Tenn., on the Clinch River. This result (7.3 pCi/liter) is a weighted average of three results (31.8, 15.0, and 3.4 pCi/liter). The reason for these three determinations was the occurrence of an unusually high gross beta radioactivity (12) during this quarter. This value was very unusual for this station. The effectiveness and importance of monitoring the gross radioactivities are illustrated since there was no other indication of elevated strontium-90 concentrations. Accord-

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Public Health Service

Table 2. Quarterly strontium-90 concentrations in surface waters, July-December 1966 and January-September 1967

Station	Average concentrations (pCi/liter)					Station	Average concentrations (pCi/liter)				
	July-Sept 1966	Oct-Dec 1966	Jan-Mar 1967	Apr-June 1967	July-Sept 1967		July-Sept 1966	Oct-Dec 1966	Jan-Mar 1967	Apr-June 1967	July-Sept 1967
Argheny River:						Little Miami River:					
Pittsburgh, Pa.			0.8		1.2	Cincinnati, Ohio	1.6	1.8		1.3	
Comas River:						Maumee River:					
Cedar Hill, N. Mex.	1.4	2.0		1.1	1.0	Toledo, Ohio			1.3	1.6	
Chattahoochee River:						Merrimack River:					
Chattahoochee, Fla.	1.1	1.5		0.8		Lowell, Mass.	2.0	2.2	1.8	1.6	
Cherokee River:						Mississippi River:					
Colo, Kans.	3.6	4.3		3.2	6.1	St. Paul, Minn.	4.5			3.3	
Ponca City, Okla.			1.1		2.7	Dubuque, Iowa			2.6	3.1	
Fort Smith, Ark.	2.8	3.7		3.0	2.4	Burlington, Iowa	3.2	2.9	2.0	2.0	
Little Rock, Ark.					2.4	E. St. Louis, Ill.			1.6	2.1	
Pendleton Ferry, Ark.					1.7	Cape Girardeau, Mo.		3.4		2.3	
Chalapa River:						W. Memphis, Ark.			1.1	1.9	
Morgan City, La.	2.7	3.6		2.0		Vicksburg, Miss.	2.0	2.6	1.7	2.6	
Cherokee River:						Delta, La.				2.2	
Preston, Idaho	2.2	1.0	1.1	1.1		New Roads, La.			0.9	0.9	
Horn River:						New Orleans, La.	2.5	2.3		1.4	
Hardin, Mont.					1.6	Missouri River:					
Sioux River:					2.7	Williston, N. Dak.			2.2	2.6	
Souix Falls, S. Dak.	3.2	2.4		3.3	3.2	Bismarck, N. Dak.	2.9	3.3	2.5	2.5	
Arroyo River:					3.2	Yankton, S. Dak.			2.5	3.1	
Arroyo, Tex.				2.6	3.2	Omaha, Nebr.	3.6	5.0	2.1	3.7	
Chattahoochee River:						St. Joseph, Mo.				3.2	
Atlanta, Ga.					1.3	Kansas City, Kans.	4.5	4.2	2.1	3.1	
Columbus, Ga.			0.7		1.4	Missouri City, Mo.				3.0	
Lanett, Ala.	1.4	1.4		0.9		St. Louis, Mo.	3.9	3.5		2.4	
Chukchev River:						Monongahela River:					
Fairbanks, Alaska			1.0			Pittsburgh, Pa.			1.1	1.5	
Chukwater River:						North Platte River:					
Lewiston, Idaho	0.7	0.6		0.5		Henry, Nebr.			0.5	2.4	
Chick River:						Ohio River:					
Clinton, Tenn.	0.9	0.9	0.7		0.5	Toronto, Ohio			2.9		
Kingston, Tenn.	3.6	2.3		5.1	2.2	Addison, Ohio	1.8	2.2		1.5	
Colorado River:						Huntington, W. Va.			1.1	1.4	
Loma, Colo.			0.8		1.8	Cincinnati, Ohio	2.0	1.2		1.2	
El Paso, Tex.	3.0	5.8		3.8	3.0	Louisville, Ky.			1.5	1.0	
El Paso City, Nev.			2.9		3.0	Evansville, Ind.	1.5	2.1		1.3	
El Paso, Calif.	4.0	2.6		4.5	2.3	Cairo, Ill.			1.1	1.8	
Yuma, Ariz.		2.5			2.3	Ouachita River:					
Columbia River:						Bastrap, La.	2.6	2.5		2.0	
Northport, Wash.	1.5	1.4		0.8		Pend Oreille River:					
Wenatchee, Wash.			1.0		2.5	Aibeni Falls Dam,					
Pasco, Wash.		1.8	1.4		2.0	Idaho			1.2		
McNary Dam, Ore.	1.3	1.4	1.0		1.8	Platte River:					
Bonneville, Ore.	1.7	1.9		1.9		Plattsmouth, Nebr.	2.8	2.4		2.6	
Clatskanie, Ore.				0.6		Potomac River:					
Connecticut River:						Williamsport, Md.			0.4	0.9	
Ryder, Vt.	1.5	1.2		1.0		Great Falls, Md.	1.1	2.3		1.1	
Northfield, Mass.				0.8	1.1	Washington, D.C.	1.4	1.3		0.6	
Eatfield Dam, Conn.	1.3	2.6		1.0	1.0	Rainy River:					
Chesapeake River:					0.7	Baudette, Minn.			1.2	4.1	
Rome, Ga.			1.0			International Falls,			3.8	3.0	
Cherokee River:						Minn.					
Northham Lock, Tenn.	2.1			0.8		Red River, North:					
Chattahoochee River:						Grand Forks, N. Dak.	8.6		3.7	4.1	
Cleveland, Ohio	4.5	1.2		2.0		Red River, South:					
Chattahoochee River:						Denison, Tex.	6.7	3.7	3.9	4.1	
Chattahoochee River:						Index, Ark.				2.8	
Chattahoochee River:						Bossier City, La.		2.5	1.1	1.2	
Chattahoochee River:						Alexandria, La.			2.6	3.4	
Chattahoochee River:						Rio Grande:					
Chattahoochee River:						Alamosa, Colo.			1.3	0.6	
Chattahoochee River:						El Paso, Tex.	3.3	0.4		0.2	
Chattahoochee River:						Laredo, Tex.			0.6	6.0	
Chattahoochee River:						Brownsville, Tex.		0.4	1.9		
Chattahoochee River:						Roanoke River:					
Chattahoochee River:						John H. Kerr Reser/					
Chattahoochee River:						Dam, Va.			0.4	1.3	
Chattahoochee River:						Sabine River:					
Chattahoochee River:						Ruliff, Tex.	3.1		1.9		
Chattahoochee River:						Sacramento River:					
Chattahoochee River:						Greens Landing, Calif.	0.9		0.6	0.7	
Chattahoochee River:						St. Lawrence River:					
Chattahoochee River:						Massena, N.Y.	2.1		1.6	1.8	
Chattahoochee River:						San Juan River:					
Chattahoochee River:						Shiprock, N. Mex.				3.2	
Chattahoochee River:						Savannah River:					
Chattahoochee River:						North Augusta, S. C.	1.4	2.1		1.1	
Chattahoochee River:						Port Wentworth, Ga.	1.9	2.5		1.5	
Chattahoochee River:						Schuylkill River:					
Chattahoochee River:						Philadelphia, Pa.	1.3	1.3		1.4	
Chattahoochee River:						Shenandoah River:					
Chattahoochee River:						Berryville, Va.			0.4	0.4	
Chattahoochee River:						Ship Creek:					
Chattahoochee River:						Anchorage, Alaska	0.5			0.4	



Table 2. Quarterly strontium-90 concentrations in surface waters, July-December 1966 and January-September 1967—Continued

Station	Average concentrations (pCi/liter)					Station	Average concentrations (pCi/liter)				
	July-Sept 1966	Oct-Dec 1966	Jan-Mar 1967	Apr-June 1967	July-Sept 1967		July-Sept 1966	Oct-Dec 1966	Jan-Mar 1967	Apr-June 1967	July-Sept 1967
Snake River:						Truckee River:					
Ire Harbor Dam, Wash.	0.8	1.0		0.6		Farad, Calif.					0.9
Wawawai, Wash.			0.5		1.3	Wabash River:					
Payette, Idaho			0.4			New Harmony, Ind.					1.8
South Platte River:						Willamette River:					
Julesburg, Colo.			1.4		1.7	Portland, Ore.					0.3
Spokane River:						Yakima River:					
Post Falls Dam, Idaho	0.7					Richland, Wash.	0.6	0.3			0.4
Susquehanna River:						Yellowstone River:					
Sayre, Pa.	2.0	1.2		0.9		Sidney, Mont.	3.7	1.7			2.1
Conowingo, Md.			1.1		1.2	Maximum	8.6	5.8			1.0
Tennessee River:						Minimum	0.5	0.3			0.3
Lenoir City, Tenn.	1.2		0.7			Median	1.85	2.10			1.0
Chattanooga, Tenn.			1.1			Average	2.30	2.12			1.47
Pickwick Landing, Tenn.	1.4	1.3		0.8	1.2						
Tombigbee River:											
Columbus, Miss.	1.7	1.3		1.3							

During July-December 1966 and January-September 1967, this standard was not reached. Comparison between the quarters is not feasible at all sampling locations due to fluctuations in sampling frequencies. Comparisons with results prior to October 1964 should take into consideration an instrument recalibration which resulted in a lowering of strontium-90 values by 15 percent (11).

Although Grand Forks, N. Dak., on the Red River has shown maximum quarterly values of strontium-90 in past years, the current quarterly levels for 1967 have shown a decline. On the other hand, the levels at Kingston, Tenn., on the Clinch River below Oak Ridge showed an unusual value in strontium-90 during April-June 1967. An individual strontium-90 determination on a single sample collected May 22, 1967, gave a result of 17.5 pCi/liter. This condition was temporary since the gross beta radioactivity on both the May 22 sample and the following samples contained 70 pCi/liter and 21 pCi/liter, respectively. From June through November of 1967, gross beta radioactivity at this station has been at normally low levels. One value of 44 pCi/liter of gross beta radioactivity was detected in December 1967. Values since that time were low.

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