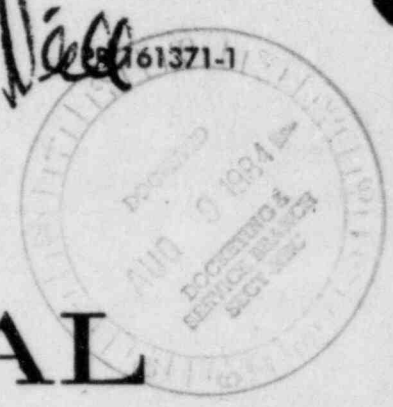


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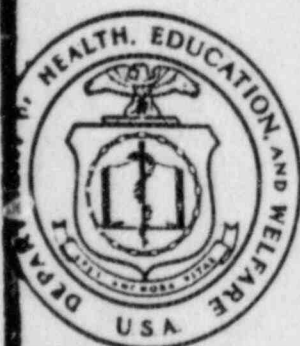
RADIOLOGICAL HEALTH DATA

MONTHLY REPORT

April 1960

NUCLEAR REGULATORY COMMISSION

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



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

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PDR ADOCK 05000352
G PDR

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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 α , 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

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.,
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TABLE VI.—PUBLIC HEALTH SERVICE NATIONAL WATER QUALITY NETWORK
 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	-	-	-	-	-	-	
Pendleton Ferry, Ark.	0.6	2	0	2	-	-	-	
SATTAHOOCHEE 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	
Yuma, 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	
Stanneville 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	-	-	-	
DECAT LAKES Decatur, Ind.	0.4	1	2	3	0	0	0	
St. Paul, 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	
DECAT RIVER Watkinsville, N. Y.	1.3	2	0	2	1	0	1	
DECAT RIVER Wells, Mass.	0.5	2	1	3	1	0	1	
MISSISSIPPI RIVER St. Paul, 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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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 Alsea, 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	
DECAT 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	
KERRIMACK RIVER Lowell, Mass.	0.5	-	-	-	-	-	-	
MISSISSIPPI RIVER Red Wing, Minn.	0.7	0	4	4	0	0	0	
Rock Island, Iowa	1.4	0	0	0	0	0	0	
St. Louis, Mo.	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					
		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

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
(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	
Hoover 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, Mo.	(*)	0	6	6	0	0	0	

TABLE 1.—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. Weiser, Idaho	0.3	0	2	2	0	0	0
	0.5	0	0	0	-	-	-
SUSQUEHANNA RIVER Sayre, Pa. Conowingo, Md.	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

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March 1961



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

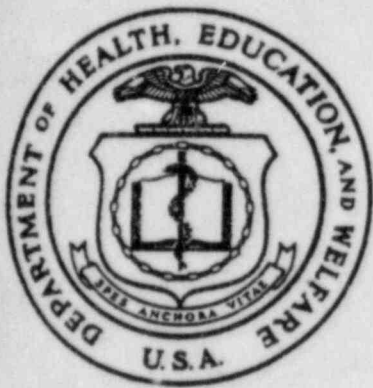
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TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

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	-	-	-	-	-	-	
CHATTAHOOCHEE RIVER Atlanta, Ga.	-	0	0	0	0	0	0	
Columbus, Ga.	-	0	0	0	0	0	0	
COLORADO RIVER Loma, Colo.	-	0	8	8	1	20	21	
Ge Ariz.	-	47	34	81	25	40	65	
Hoover Dam, Ariz.-Nev.	1.0	1	16	17	0	0	0	
Yuma, Ariz.	-	0	7	7	1	7	8	
COLUMBIA RIVER Pasco, Wash.	-	35	513	548	-	-	-	
Wenatchee, Wash.	-	0	0	0	-	-	-	
Bonneville Dam, Ore.	-	2	291	293	-	-	-	
Clatskanie, Ore.	0.3	-	-	-	-	-	-	
DELAWARE RIVER Martin's Creek, Pa.	-	2	0	2	-	-	-	
Philadelphia, Pa.	-	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	
Duluth, Minn.	-	0	0	0	0	1	1	
Detroit, Mich.	-	0	2	2	0	1	1	
Buffalo, N. Y.	-	0	0	0	-	-	-	
Milwaukee, Wisc.	-	< 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 Jefferson Dam, W. Va.	-	0	3	3	0	0	0	



Radiological Health Data

VOLUME II, NUMBER 6

JUNE 1961

Monthly Report

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

Public Health Service

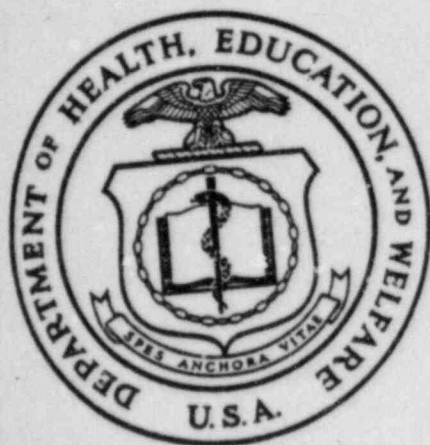
TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

National Water Quality Network, Public Health Service

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

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	1	1
Escombia 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	12
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: Ruliff, Tex.		0	4	4	<1	0
St. Clair River: Port Huron, Mich.		0	0	0	0	<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	69	69	0	1
Yellowstone River: Sidney, Mont.		0	0	0	4	10

1 Insufficient sample for analysis.



Radiological Health Data

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 $\mu\text{mc/liter}$]

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: Chattahoochee, Fla.	—	0	0	0	0	0	0	
ansas River:	—	0	3	3	8	80	88	
oolidge, Kans.	—	0	0	0	10	2	12	
onca City, Okla.	—	0	0	0	1	0	1	
ndleton Ferry, Ark.	—	0	0	0	0	0	0	
ttahoochie River:	—	0	2	2	0	0	0	
lanta, Ga.	—	0.3	0	0	1	<1	1	
olumbus, Ga.	—	0.4	0	0	4	9	13	
orado River:	—	109	9	118	53	10	63	
oma, Colo.	—	1	0	1	0	6	6	
age, Ariz.	—	0	16	16	0	10	10	
oulder City, Nev.	—	1.2	0	<1	<1	5	5	
arker Dam, Ariz-Calif.	—	0	0	0	0	0	0	
uma, Ariz.	—	0.7	0	5	5	0	1	
umbia River:	—	1.0	96	420	516	—	—	
enatchee, Wash.	—	44	183	227	0	0	0	
asco, Wash.	—	28	93	121	—	—	—	
onneville Dam, Oreg.	—	56	205	261	0	0	0	
latskanie, Oreg.	—	0	0	0	1	0	1	
cNary Dam, Oreg.	—	1	0	1	1	0	1	
aware River:	—	0.6	0	0	0	0	0	
artins Creek, Pa.	—	0	0	0	0	1	1	
hiladelphia, Pa.	—	0.6	0	0	0	0	0	
at Lakes:	—	0.6	0	0	0	1	1	
uffalo, N. Y.	—	0	0	0	0	0	0	
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	
uuth, Minn.	—	0.4	0	0	0	0	0	
ilwaukee, Wis.	—	3	4	7	0	0	0	
sult St. Marie, Mich.	—	0	1	1	0	0	0	
son River: Poughkeepsie, N. Y.	—	0.4	0	0	0	1	1	
ois — Peoria, Ill.	—	0	0	0	0	2	2	
awyer — Winfield Dam, W. Va.	—	0.2	0	0	0	0	0	
mat — Copco, Oreg.	—	0	1	1	0	0	0	
le Miami River: Cincinnati, Ohio.	—	1.1	0	0	1	1	2	
issippi River:	—	0	1	1	0	2	2	
linneapolis, Minn.	—	0	0	0	2	0	2	
ubuque, Iowa	—	(b)	0	0	1	0	1	
urlington, Iowa	—	5	3	8	8	2	10	
. St. Louis, Ill.	—	0.7	34	0	34	19	0	
re Girardeau, Mo.	—	0	0	0	1	1	2	
est Memphis, Ark.	—	(b)	2	0	2	3	1	
elta, La.	—	22	0	22	13	0	13	
ew Orleans, La.	—	0.8	0	0	0	5	5	
souri River:	—	0	0	0	0	0	0	
illiston, N. Dak.	—	0	0	0	1	3	4	
ismarck, N. Dak.	—	0	0	0	6	5	11	
ankton, S. Dak.	—	17	3	20	8	3	11	
maha, Nebr.	—	19	8	27	9	5	14	
t. Joseph, Mo.	—	1.4	0	0	33	2	35	
ansas City, Kans.	—	1.1	26	2	28	0	28	
t. Louis, Mo.	—	0	0	0	1	0	1	
o River:	—	0.3	0	0	0	2	2	
ast Liverpool, Ohio.	—	0	0	0	2	0	2	
untington, W. Va.	—	0	0	0	2	0	2	
incinnati, Ohio.	—	0	0	0	2	0	2	
ansville, Ind.	—	0	0	0	1	0	1	
airo, Ill.	—	0	1	1	0	0	0	
omac River:	—	0	7	7	0	0	0	
agerstown, Md.	—	1.3	0	0	0	0	0	
reat Falls, Md.	—	1	2	3	<1	1	1	
l River, North: Grand Forks, N. D.	—	0.4	0	0	0	9	9	
l River, South:	—	55	0	55	28	0	28	
dex, Ark.	—	0	0	0	0	2	2	
lexandria, La.	—	0	0	0	0	0	0	
enison, Tex.	—	0	0	0	0	0	0	
o Grande River:	—	0.4	0	0	0	0	0	
lamosa, Colo.	—	0	0	0	0	4	4	
l Paso, Tex.	—	0.4	0	0	0	1	6	
aredo, Tex.	—	0	0	0	5	4	9	
ownsville, Tex.	—	<1	4	4	1	<1	1	
ine River: Ruliff, Tex.	—	0	0	0	0	0	0	
Lawrence River: Massena, N. Y.	—	0	0	0	1	0	1	
uykill River: Philadelphia, Pa.	—	0.4	<1	3	3	1	0	
annah River:	—	0	0	0	0	0	0	
ort Wentworth, Ga.	—	0	0	0	0	0	0	
orth Augusta, S. C.	—	0	3	3	0	1	1	
ke River:	—	0	0	0	0	6	6	
awawai, Wash.	—	0	0	0	0	0	0	
iser, Idaho.	—	0	0	0	1	0	1	
quehanna River:	—	0	0	0	0	0	0	
yre, Pa.	—	<1	2	2	0	0	0	
onow, Md.	—	0.8	1	54	35	—	—	
nes — Tenn.	—	1.5	0	31	31	0	0	
rida — Ala.	—	0	0	0	0	0	0	
ima River: Richland, Wash.	—	0	0	0	1	3	4	
owstone River: Sidney Mont.	—	0	0	0	0	0	0	

Dash denotes no sample received or no determinations made.
Insufficient sample for Sr-90 analysis.



Radiological Health Data

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Monthly Report

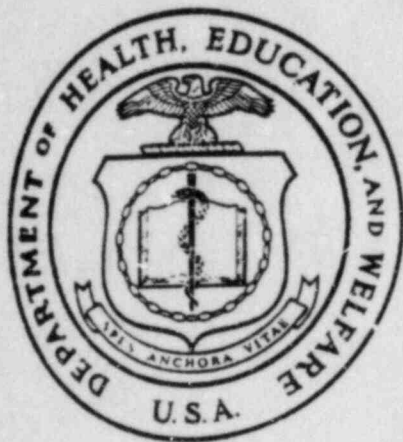
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS

(Concentrations in $\mu\text{mc/liter}$)

Station	Quarter ending June 30, 1961	June 1961						
		Strontium- 90	Beta activity			Alpha activity		
			Suspended	Dissolved	Total	Suspended	Dissolved	Total
eny River: Pittsburgh, Pa.	0.2	0	0	0	0	<1	<1	
sa River: Cedar Hill, N. Mex.	—	2	6	8	<1	4	4	
as River:	—	17	3	20	0	46	46	
idge, Kansas	0.7	0	12	12	5	4	9	
ca City, Okla.	—	0	4	4	1	3	4	
out River: Sioux Falls, S. Dak.	0.3	<1	<1	1	<1	2	3	
hoochie River: Atlanta, Ga.	—	7	3	10	3	4	7	
do River:	—	2.3	<1	26	20	4	24	
ia, Col.	—	0	0	0	0	11	11	
er City, Nev.	—	3	1	4	0	8	8	
er Dam, Ariz-Calif.	—	0	0	0	<1	9	10	
na, Ariz.	—	0	0	0	0	0	0	
ibia River:	—	0	0	0	0	0	0	
atchee, Wash.	—	7	41	48	0	0	0	
o, Wash.	—	24	19	43	0	0	0	
eville Dam, Oreg.	1.1	12	15	27	0	0	0	
skanie, Oreg.	—	12	42	54	0	0	0	
ary Dam, Oreg.	—	0	0	0	0	0	0	
cticut River: Northfield, Mass.	—	0	0	0	0	0	0	
are River:	—	0.4	0	0	0	0	0	
tins Creek, Pa.	—	0	0	0	0	0	0	
adelphia, Pa.	—	0	0	0	1	0	1	
bia River: Century, Fla.	—	—	0	0	—	—	—	
Lakes:	—	—	—	—	—	—	—	
falo, N. Y.	—	0	0	0	0	0	0	
roit, Mich.	—	0	0	0	0	0	0	
t Huron, Mich.	—	0	0	0	0	0	0	
y, Ind.	—	0	0	0	0	0	0	
auke, Wis.	0.3	0	0	0	<1	<1	<1	
it Ste. Marie, Mich.	—	0	0	0	0	0	0	
uth, Minn.	—	0	0	0	0	0	0	
on River:oughkeepsie, N. Y.	0.5	1	2	3	0	0	0	
s River: Winfield Dam, W. Va.	—	0	12	12	<1	<1	1	
what: Winfield Dam, W. Va.	—	0	0	0	0	0	0	
th River: Copco, Oreg.	0.3	<1	<1	1	0	0	0	
Miami River: Cincinnati, Ohio.	—	0	<1	<1	<1	<1	<1	
mac River: Lowell, Mass.	—	0	0	0	0	0	0	
issippi River:	—	—	—	—	—	—	—	
neapolis, Minn.	—	0	0	0	0	0	0	
oque, Iowa	—	0	0	0	0	0	0	
ington, Iowa	—	0	0	0	1	1	2	
St. Louis, Ill.	0.5	6	0	6	0	0	0	
e Girardeau, Mo.	—	0	0	0	8	1	9	
t Memphis, Ark.	—	7	1	8	3	1	4	
ta, La.	—	1	2	3	9	2	11	
v Orleans, La.	0.6	6	2	8	4	<1	4	
uri River:	—	—	—	—	—	—	—	
iston, N. Dak.	—	19	4	23	13	3	16	
marek, N. Dak.	0.6	0	0	0	0	2	3	
ukton, S. Dak.	—	0	8	8	0	4	4	
aba, Nebr.	0.7	5	12	17	3	4	7	
oseph, Mo.	—	20	0	20	2	0	2	
as City, Kans.	—	22	0	22	18	4	22	
Louis, Mo.	—	24	3	27	29	4	33	
rahela River: Pittsburgh, Pa.	—	0	0	0	0	0	0	
iver:	—	—	—	—	—	—	—	
t Liverpool, Ohio	—	0	0	0	1	0	1	
stington, W. Va.	—	0	0	0	0	0	0	
isville, Ky.	—	1	<1	2	2	0	2	
nsville, Ind.	—	0	0	0	1	2	3	
ro, Ill.	—	0	0	0	10	3	13	
ac River:	—	—	—	—	—	—	—	
ackport, Md.	0.8	0	0	0	0	0	0	
iver North: Grand Forks, N. Dak.	1.5	0	0	0	0	2	2	
iver, South:	—	—	—	—	—	—	—	
st, Ark.	—	0	0	0	2	0	2	
ison, Tex.	—	0	0	0	0	6	6	
andria, La.	—	0	0	0	1	5	6	
rande River:	—	—	—	—	—	—	—	
mosa, Colo.	—	0	6	6	0	1	1	
Paso, Tex.	—	10	11	21	1	12	13	
edo, Tex.	—	14	0	14	23	3	26	
nsville, Tex.	0.3	3	0	3	1	4	5	
* River: Ruliff, Tex.	0.8	0	0	0	1	0	1	
Lawrence River: Massena, N. Y.	—	0	0	0	<1	<1	<1	
kill River: Philadelphia, Pa.	—	0	0	0	0	0	0	
nah River:	—	—	—	—	—	—	—	
t Wentworth, Ga.	0.5	<1	73	74	0	0	0	
th Augusta, S. C.	0.5	0	0	0	0	0	0	
iver: Wawawai, Wash.	—	0	3	3	0	1	1	
Platte River: Julesburg, Colo.	—	0	30	30	2	22	24	
ehanna River:	—	—	—	—	—	—	—	
te, Pa.	—	0	0	0	0	0	0	
ow, Tex.	—	0	3	3	0	1	1	



Radiological Health Data

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MARCH 1962

MONTHLY REPORT

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

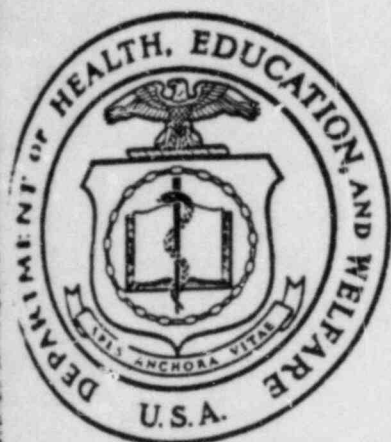
TABLE 1.—RADIOACTIVITY IN RAW SURFACE WATERS—Continued
(Concentrations in $\mu\text{mc/liter}$)

Station	Quarter ending Sept. 30, 1961	September 1961						
		Strontium- 90	Beta activity			Alpha activity		
			Suspended	Dissolved	Total	Suspended	Dissolved	Total
... River:								
... Wash.			1	2	3	0	0	0
... Dam, Oreg.	1.1	46	390	436	0	0	0	0
... Oreg.	0.6	12	143	155	0	0	0	0
... Dam, Oreg.		10	82	92	0	0	0	0
... River: Northfield, Mass.	1.2	16	114	130	0	0	0	0
... River: Clarksville, Tenn.	0.4	2	6	8	0	<1	0	<1
... River:	0.4	6	9	15	0	0	0	0
... Creek, Pa.					0	1	1	1
... Pa.		8	2	10	0	0	0	0
... River: Century, Fla.		1	3	4	0	0	0	0
... N. Y.	0.9	—	—	—	—	—	—	—
... Mich.		2	5	7	—	—	—	—
... Mich.	0.6	2	14	16	0	0	0	0
... Wis.	0.4	4	3	7	0	0	0	0
... Mark, Mich.		1	2	3	0	0	0	0
... Minn.	0.2	<1	<1	1	0	0	0	0
... River: Poughkeepsie, N. Y.		0	0	0	0	0	0	0
... River: Peoria, Ill.	0.2	<1	5	5	0	0	0	0
... River: Winfield Dam, W. Va.	0.4	6	4	10	0	0	0	0
... River: Copco, Oreg.		0	8	8	0	0	0	0
... River: Cincinnati, Ohio		0	6	10	0	0	0	0
... River: Lowell, Mass.	1.1	1	5	7	0	0	0	0
... River:	0.7	0	6	7	<1	0	0	0
... Minn.			11	11	—	1	1	1
... Iowa	0.9	2	10	12	0	—	—	—
... Iowa	0.6	2	14	16	0	1	1	1
... Ill.		6	8	14	0	0	0	0
... Missouri, Mo.	0.8	45	17	62	0	0	0	0
... Memphis, Ark.		22	6	28	3	3	6	6
... La.	0.4	6	9	15	2	1	3	3
... River:		10	18	28	3	2	7	7
... N. Dak.		—	—	—	—	—	—	—
... N. Dak.		34	13	47	—	—	—	—
... N. Dak.		4	13	17	—	—	—	—
... S. Dak.	0.6	6	21	27	0	5	5	5
... Mo.		28	28	56	4	2	2	2
... Kans.		75	22	97	16	6	10	10
... Mo.		61	30	91	6	5	21	21
... River: Pittsburgh, Pa.	1.4	46	18	64	21	1	6	6
... River: Henry, Nebr.	0.4	1	8	9	0	0	0	0
... Ohio		10	32	42	1	24	25	25
... W. Va.	0.4	<1	4	4	—	—	—	—
... Ohio		<1	8	8	0	0	0	0
... Ky.	0.4	1	9	10	0	0	0	0
... Ind.	1.1	8	7	15	0	<1	<1	<1
... Md.		0	8	8	0	<1	<1	<1
... Md.		3	8	11	0	—	—	—
... Plattsmouth, Nebr.		2	4	6	0	0	0	0
... Baudette, Minn.		105	16	121	29	2	31	31
... North: Grand Forks, N. Dak.		14	32	46	0	0	0	0
... South:		5	10	15	—	—	—	—
... La.		21	6	27	2	2	4	4
... River:	1.0	8	19	27	0	0	0	0
... Ohio		6	17	23	—	—	—	—
... Tex.	0.4	2	12	14	0	3	3	3
... Tex.		5	5	10	—	—	—	—
... John H. Kerr Reservoir and Dam, Va.		11	5	16	3	2	7	7
... Bufile, Tex.		1	8	9	0	3	3	3
... Shiprock, N. Mex.		1	2	3	<1	0	0	0
... River: Massena, N. Y.		94	4	5	0	0	0	0
... River: Philadelphia, Pa.	<1	18	112	130	18	2	20	20
... Ga.		4	4	8	0	—	—	—
... S. C.		5	6	11	—	—	—	—
... River: Berryville, Va.	0.4	10	8	18	—	—	—	—
... Wawawai, Wash.		2	4	6	0	0	0	0
... River: Julesburg, Co.	0.3	1	10	14	<1	<1	1	1
... River:	0.7	16	7	8	0	3	3	3
... W. Va.		1	73	89	2	36	38	38
... Tenn.	0.3	10	2	12	—	—	—	—
... Tenn.	0.3	1	4	5	—	—	—	—
... Calif.	0.6	1	16	17	0	1	1	1
... Farad, Calif.	0.7	2	41	43	0	1	1	1
... Richland, Wash.		0	0	0	0	0	0	0
... River: Sidney, Mont.	0.4	2	11	13	0	2	2	2
...		420	25	445	124	3	127	127

... no sample received or no determinations made.

... 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

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AUGUST 1962

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

BIOGRAPHY

National Water Quality Network Annual Compilation
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.
Report on National Water Quality Control Network,
submitted by the Chief, Division of Radiological
Health, PHS, at the Joint Committee on Atomic
Energy Hearings on Fallout from Nuclear Weapons
Tests, 1: 167-169 (May 1959).
Swier, L. R., J. E. Regnier, and A. Diephaus, "Radio-

activity of Surface Waters in the United States,"
Journal of the American Water Works Association,
51: 1377 (1959).
Straub, C. P., L. R. Setter, A. Goldin, and P. F. Hall-
bach, "Strontium-90 in Surface Waters," *Journal of*
the American Water Works Association, 52: 756
(1960).
Setter, L. R., and S. L. Baker, "Radioactivity of Sur-
face Waters in the United States," *Radiological*
Health Data, 1: 20-31 (October 1960).
Straub, C. P., "Significance of Radioactivity Data,"
Journal of the American Water Works Association,
53: 704 (1961).

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
Allegheny River: Pittsburgh, Pa.	0.3	3	16	19	0	0	0
Arkansas 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:	—	—	—	—	—	—	—
Colorado, Kans.	—	18	149	167	0	45	45
Lawrence, Kans.	—	87	58	145	0	2	2
Lawrence, Kans.	—	107	37	144	—	—	—
Lawrence River: Hardin, Mont.	—	64	46	110	5	4	9
Lawrence River: Sioux Falls, S. Dak.	0.4	56	174	230	0	3	3
Lawrence River:	—	—	—	—	—	—	—
Lawrence, Ga.	—	10	12	22	1	0	1
Lawrence, Ga.	—	34	16	50	1	1	2
Lawrence River: East Lewiston, Idaho.	—	22	20	42	1	1	2
Lawrence River:	—	—	—	—	—	—	—
Lawrence, Colo.	—	58	44	102	2	9	11
Lawrence, Ariz.	—	68	54	122	21	8	29
Lawrence City, Nev.	1.0	5	25	30	<1	8	8
Lawrence Dam, Calif.	—	26	39	65	0	9	9
Lawrence River:	—	—	—	—	—	—	—
Lawrence, Wash.	—	4	8	12	0	1	1
Lawrence, Wash.	—	61	48	109	—	—	—
Lawrence Dam, Oreg.	0.6	30	265	295	0	0	0
Lawrence, Oreg.	—	27	137	164	0	0	0
Lawrence Dam, Oreg.	1.2	79	330	409	0	1	1
Lawrence River:	—	—	—	—	—	—	—
Lawrence, Mass.	0.4	15	16	31	0	0	0
Lawrence, Vt.	—	6	12	18	0	0	0
Lawrence River: Clarksville, Tenn.	0.4	5	17	22	—	—	—
Lawrence River:	—	—	—	—	—	—	—
Lawrence Creek, Pa.	—	10	18	28	0	0	0
Lawrence, N. J.	—	21	23	44	0	1	1
Lawrence River: Century, Fla.	0.9	37	21	58	1	0	1
Lawrence Lakes:	—	—	—	—	—	—	—
Lawrence, N. Y.	—	2	8	10	—	—	—
Lawrence, Mich.	0.6	7	10	17	0	0	0
Lawrence, Mich.	0.4	4	10	14	0	0	0
Lawrence, Wis.	—	5	9	14	1	1	2
Lawrence, Mich.	—	5	5	10	0	0	0
Lawrence, Ind.	0.2	8	7	15	0	0	0
Lawrence, Minn.	—	1	3	4	0	0	0
Lawrence River: Poughkeepsie, N. Y.	0.2	14	38	52	0	0	0
Lawrence River:	—	—	—	—	—	—	—
Lawrence, Ill.	0.4	25	43	68	1	0	1
Lawrence River: Winfield Dam, W. Va.	—	60	47	107	4	1	5
Lawrence River: Copco, Oreg.	—	11	14	25	—	—	—
Lawrence River: Cincinnati, Ohio.	—	12	18	30	—	—	—
Lawrence River: Lowell, Mass.	1.1	21	32	53	0	0	0
Lawrence River:	0.7	—	—	—	—	—	—
Lawrence, Minn.	—	—	—	—	—	—	—
Lawrence, Minn.	0.9	2	11	13	0	2	2
Lawrence, Iowa	—	7	17	24	0	1	1
Lawrence, Iowa	0.6	20	19	39	1	1	2
Lawrence, Ill.	—	24	78	102	2	0	2
Lawrence, Mo.	0.8	54	81	135	1	2	3
Lawrence, Ark.	—	55	30	85	4	1	5
Lawrence, La.	—	29	83	112	2	1	3
Lawrence, La.	0.4	30	102	132	8	0	8
Lawrence, Miss.	—	55	103	158	2	<1	2
Lawrence River:	—	—	—	—	—	—	—
Lawrence, N. Dak.	—	19	25	44	1	2	3
Lawrence, N. Dak.	—	4	16	20	0	4	4
Lawrence, S. Dak.	0.6	24	20	44	4	3	7
Lawrence, Nebr.	—	19	39	58	1	3	4
Lawrence, Mo.	—	80	28	108	0	0	0
Lawrence City, Kans.	2.3	94	30	124	—	—	—
Lawrence, 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	
			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	6	
Cincinnati, Ohio	—	21	11	32	1	0	
Louisville, Ky.	0.4	24	16	40	1	<1	
Evansville, Ind.	—	38	20	58	2	0	
Calro, 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	0	
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

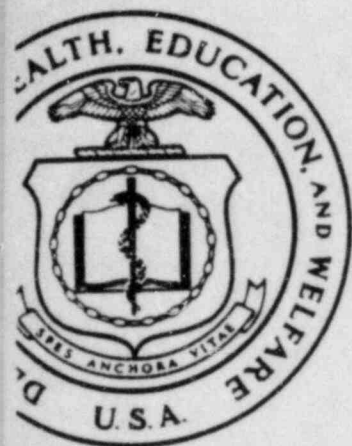
DRINKING WATER ANALYSIS PROGRAM 1961

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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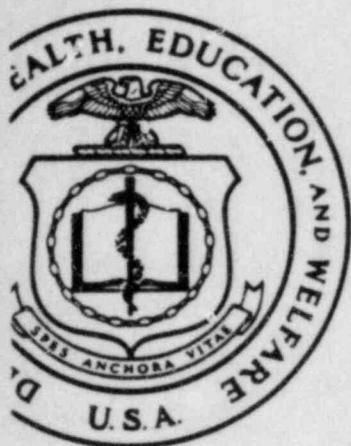
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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
Cheney River:						Missouri City, Mo.	2.6	—	4.1	—	4.1
Hillsburgh, Pa.	1.8	—	1.8	—	2.8	St. Louis, Mo.	2.7	—	—	6.2	—
Indian River:						Monongahela River:					
Indian Hill, N. Mex.	0.9	—	—	1.8	—	Pittsburgh, Pa.	1.5	—	2.7	3.3	3.3
Indianola River:						North Platte River:					
Indianola River, Fla.	0.9	—	—	2.9	—	Henry, Nebr.	0.6	1.1	2.5	—	0.7
Kansas River:						Ohio River:					
Coonbridge, 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.	—	—	5.5	4.8	4.3	Louisville, Ky.	1.4	—	2.3	3.6	4.0
Pendleton Ferry, Ark.	—	—	—	—	—	Evansville, Ind.	1.6	—	—	4.2	—
Per River:						Cairo, Ill.	1.7	—	2.9	—	2.8
Preston, Idaho	0.9	—	—	3.7	—	Toronto, Ohio	—	—	—	4.9	2.8
g Horn River:						Ouachita River:					
Hardin, Mont.	1.3	—	5.8	—	2.3	Bastrop, La.	1.6	—	—	4.5	—
g Sioux River:						Pend Oreille River:					
Sioux Falls, S. Dak.	2.5	—	—	9.5	5.0	Albani 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	—	—
hena River:						Great Falls, Md.	1.0	—	—	2.5	—
Fairbanks, Alaska	0.3	—	0.7	—	0.2	Washington, D. C.	—	—	—	3.4	—
Leawater 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	—	Karlsruhe 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	—	—	Red River, North:	—	—	—	11.3	7.1
Parker Dam, Calif.-Ariz.	1.3	—	—	1.0	—	Grand Forks, N. Dak.	—	—	—	—	—
Yuma, Ariz.	0.9	—	0.9	—	1.1	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	3.4	Boasier City, La.	2.0	—	—	5.0	—
Pasco, Wash.	1.5	2.3	2.4	2.6	2.5	Alexandria, La.	3.9	—	4.0	—	—
McNary Dam, Ore.	1.0	1.4	1.1	1.2	—	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	—
Connecticut River:						Laredo, Tex.	1.8	—	3.7	—	2.4
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	—	—	2.5	—	John H. Kerr Res. Dam, Va.	1.1	—	1.3	—	2.6
Cummins River:						Sabine River:					
Cummins, Tenn.	—	—	—	2.0	—	Ruliff, Tex.	1.4	—	—	3.2	—
Cuyahoga River:						Sacramento River:					
Cleveland, Ohio	—	1.4	—	5.3	—	Courtsland, 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:	1.0	—	1.3	—	1.5
Philadelphia, Pa.	2.4	—	1.1	—	—	Vernalis, Calif.	—	—	—	—	2.1
Eschbach River:						San Juan River:	1.7	1.5	1.9	—	—
Century, Fla.	—	—	1.4	—	1.2	Shiprock, N. Mex.	—	—	—	—	—
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	—	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:					
Detroit, Mich.	1.1	—	—	2.4	2.5	Berryville, Va.	0.8	—	1.2	—	1.0
Buffalo, N. Y.	1.7	—	2.2	—	—	Ship Creek:					
Green River:						Anchorage, Alaska	0.3	—	—	0.9	—
Dutch John, Utah	1.2	—	—	2.7	—	Snake River:					
Hudson River:						Ice Harbor Dam, Wash.	1.6	—	—	1.3	—
Poughkeepsie, N. Y.	3.0	—	3.8	—	5.0	Wawawai, Wash.	0.7	—	0.9	—	0.7
Illinois River:						Payette, Idaho	0.8	—	1.5	—	0.8
Pecora, Ill.	1.7	—	3.5	—	2.3	South Platte River:					
Grafton, Ill.	1.8	—	—	4.4	—	Julesburg, Colo.	0.8	0.8	1.7	—	1.8
Kanawha River:						Spokane River:					
Winfield Dam, W. Va.	1.1	—	—	2.9	—	Post Falls, Idaho	0.8	—	—	1.2	—
Kansas River:						Susquehanna River:					
De Soto, Kans.	—	—	4.9	7.4	5.2	Sayre, Pa.	1.0	—	—	2.3	—
Klamath River:						Conowingo, Md.	1.2	—	1.6	—	3.0
Keno, Ore.	0.9	—	1.4	—	1.8	Tennessee River:					
Little Miami River:						Lenoir City, Tenn.	1.0	—	1.5	—	2.1
Cincinnati, Ohio	1.6	—	—	5.3	1.4	Chattanooga, Tenn.	1.4	2.6	1.7	3.3	2.2
Maumee River:						Bridgeport, Ala.	1.0	—	1.6	—	—
Toledo, Ohio	—	3.6	4.9	—	2.7	Pickwick Landing, Tenn.	1.4	—	—	2.5	—
Merrimack River:						Tombigbee River:					
Lowell, Mass.	0.9	—	—	1.6	—	Columbus, Miss.	0.6	—	—	3.6	—
Mississippi River:						Truckee River:					
St. Paul, Minn.	3.4	—	—	7.2	4.3	Farad, Calif.	0.9	—	1.0	—	1.0
Dubuque, Iowa	2.6	—	—	4.2	3.7	Verdigris River:					
Burlington, Iowa	2.1	—	—	7.3	4.3	Nowata, Okla.	2.5	—	4.2	—	6.0
E. St. Louis, Ill.	1.8	—	—	4.0	3.8	Wabash River:					
Cape Girardeau, Mo.	2.7	—	—	5.3	3.6	New Harmony, Ind.	1.4	—	3.1	—	2.5
W. Memphis, Ark.	2.0	—	—	3.6	3.6	Williamette River:					
Vicksburg, Miss.	2.0	—	—	4.2	3.4	Portland, Ore.	0.6	—	0.7	—	0.5
Delta, La.	2.1	—	—	3.3	—	Yakima River:					
New Orleans, La.	1.9	—	—	4.5	—	Richland, Wash.	0.4	—	—	1.0	—
Missouri River:						Yellowstone River:					
Williston, N. Dak.	1.5	—	—	2.5	2.8	Sinclair, Mont.	2.0	—	—	5.0	—
Pismack, N. Dak.	1.7	—	—	3.5	3.3	Maximum		6.9	6.3	0.2	11.3
Yankton, S. Dak.	2.3	—	—	3.3	—	Minimum		0.3	0.8	0.4	0.9
Omaha, Nebr.	2.5	—	—	4.5	3.4						
St. Joseph, Mo.	1.9	—	—	6.2	—						
St. Louis, Mo.	3.4	—	—	5.0	—						

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.	—	0.2	—	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	—
Ponca City, Okla.	5.9	6.5	4.4	—	Ohio River:				
Fort Smith, Ark.	—	0.7	—	3.5	Toronto, Ohio.	—	4.9	2.8	—
Little Rock, Ark.	—	4.8	4.4	—	Addison, Ohio.	—	4.0	—	2.2
Pendleton Ferry, Ark.	5.5	—	4.3	—	Huntington, W. Va.	1.9	—	3.0	—
Bear River:					Cincinnati, Ohio.	—	3.7	—	1.6
Preston, Idaho.	—	3.7	—	1.1	Louisville, Ky.	2.3	3.6	4.0	—
Big Horn River:					Evansville, Ind.	—	4.2	—	2.5
Hardin, Mont.	5.8	—	2.3	—	Caro, Ill.	2.9	—	2.8	—
Big Sioux River:					Ouchita River:				
Sioux Falls, S. Dak.	—	9.5	5.0	2.8	Bastrop, La.	—	4.5	—	3.0
Chattahoochee River:					Pend Oreille River:				
Atlanta, Ga.	1.6	—	1.7	—	Albion Falls Dam, Idaho.	0.9	—	1.3	—
Columbus, Ga.	1.5	—	1.7	—	Platte River:				
Lanett, Ala.	—	2.0	—	1.7	Plattsmouth, Nebr.	—	5.2	—	2.1
Chena Slough:					Potomac River:				
Fairbanks, Alaska.	0.7	—	0.2	—	Williamsport, Md.	1.4	—	1.7	—
Clearwater River:					Great Falls, Md.	—	2.5	—	1.4
Lewiston, Idaho.	—	1.2	—	0.8	Washington, D. C.	—	3.4	—	1.2
Clinch River:					Rainy River:				
Clinton, Tenn.	—	1.4	—	2.0	Baudette, Minn.	2.5	4.7	4.1	—
Kington, Tenn.	5.6	9.4	6.5	7.5	International Falls, Minn.	2.9	4.3	3.8	—
Colorado River:					Red River, North:				
Loma, Colo.	2.5	—	1.4	—	Grand Forks, N. Dak.	—	11.3	7.1	4.9
Page, Ariz.	—	4.2	—	3.9	Red River, South:				
Boulder City, Nev.	1.8	—	1.5	—	Denison, Tex.	—	5.6	—	5.8
Parker Dam, Calif.-Ariz.	—	1.0	—	1.9	Index, Ark.	5.3	4.9	4.3	—
Yuma, Ariz.	0.9	—	1.1	—	Bossier City, La.	—	5.0	—	4.4
Columbia River:					Alexandria, La.	4.0	—	4.1	—
Northport, Wash.	—	3.4	—	1.5	Rio Grande River:				
Wenatchee, Wash.	1.1	—	2.8	—	Alamosa, Colo.	1.1	—	0.8	—
Pasco, Wash.	2.4	2.7	3.4	3.1	El Paso, Tex.	—	1.9	—	0.6
McNary Dam, Ore.	1.1	2.6	2.5	2.2	Laredo, Tex.	3.7	—	2.4	—
Bonneville, Ore.	—	1.2	—	2.0	Brownsville, Tex.	—	2.3	—	2.6
Clatskanie, Ore.	1.3	2.5	1.6	—	Roanoke River:				
Connecticut River:					John H. Kerr Reservoir, Va.	1.3	—	2.6	—
Wilder, Vt.	—	2.6	—	1.3	Sabine River:				
Northfield, Mass.	1.4	3.1	1.8	—	Ruliff, Tex.	—	3.2	—	2.5
Enfield Dam, Conn.	—	2.5	—	1.7	Sacramento River:				
Cumberland River:					Courtland, Calif.	—	1.4	1.0	1.0
Clarksville, Tenn.	—	2.0	—	—	St. Lawrence River:				
Cuyahoga River:					Massena, N. Y.	—	2.3	—	1.6
Cleveland, Ohio.	—	5.3	—	4.3	San Joaquin River:				
Delaware River:					Vernalis, Calif.	1.3	—	1.5	—
Martins Creek, Pa.	1.7	—	1.6	—	San Juan River:				
Trenton, N. J.	—	3.1	—	1.8	Shiprock, N. Mex.	1.9	—	2.1	—
Philadelphia, Pa.	1.1	—	2.1	—	Savannah River:				
Escambia River:					North Augusta, So. Car.	—	2.1	—	1.7
Century, Fla.	1.4	—	1.2	—	Port Wentworth, Ga.	2.2	3.2	2.4	1.7
Great Lakes:					Schuylkill River:				
Duluth, Minn.	0.4	—	0.7	—	Philadelphia, Pa.	—	3.7	—	1.4
Sault Ste. Marie, Mich.	—	1.5	—	0.8	Shenandoah River:				
Milwaukee, Wisc.	0.8	—	0.8	—	Berryville, Va.	1.2	—	1.0	—
Gary, Ind.	—	1.6	—	1.2	Ship Creek:				
Port Huron, Mich.	1.3	—	1.2	—	Anchorage, Alaska.	—	0.9	—	0.4
Detroit, Mich.	—	2.4	—	1.4	Snake River:				
Buffalo, N. Y.	2.2	—	2.5	—	Ice Harbor Dam, Wash.	—	1.3	—	1.0
Green River:					Wawawai, Wash.	0.9	—	0.7	—
Dutch John, Utah.	—	2.7	—	4.6	Payette, Idaho.	1.5	—	0.8	—
Hudson River:					South Platte River:				
Poughkeepsie, N. Y.	3.8	—	5.0	—	Julesburg, Colo.	1.7	—	1.8	—
Illinois River:					Spokane River:				
Peoria, Ill.	3.5	—	2.3	—	Post Falls, Idaho.	—	1.2	—	1.3
Grafton, Ill.	—	4.4	—	3.8	Susquehanna River:				
Kanawha River:					Sayre, Pa.	—	2.3	—	1.3
Winfield Dam, W. Va.	—	2.9	—	1.1	Conowingo, Md.	1.6	—	3.0	—
Kansas River:					Tennessee River:				
De Soto, Kans.	4.0	7.4	5.2	—	Lenoir City, Tenn.	1.5	—	2.1	—
Klamath River:					Chattanooga, Tenn.	1.7	3.3	2.2	2.0
Keno, Ore.	1.4	—	1.8	—	Bridgeport, Ala.	1.6	—	2.2	—
Little Miami River:					Pickwick Landing, Tenn.	—	2.5	—	2.1
Cincinnati, Ohio.	—	5.3	1.4	3.3	Tombigbee River:				
Maumee River:					Columbus, Miss.	—	3.6	—	3.1
Toledo, Ohio.	4.9	—	2.7	—	Truckee River:				
Merrimack River:					Farad, Calif.	1.0	—	1.0	—
Lowell, Mass.	—	1.6	—	1.8	Verdigris River:				
Mississippi River:					Nowata, Okla.	4.2	—	6.0	—
St. Paul, Minn.	—	7.2	4.3	3.2	Wabash River:				
Dubuque, Iowa.	4.2	—	3.7	—	New Harmony, Ind.	3.1	—	2.5	—
Burlington, Iowa.	—	7.3	4.3	2.8	Willamette River:				
E. St. Louis, Ill.	4.0	—	3.8	—	Portland, Ore.	0.7	—	0.5	—
Cape Girardeau, Mo.	—	5.3	3.6	2.9	Yakima River:				
W. Memphis, Ark.	3.6	—	3.6	—	Richland, Wash.	—	1.0	—	0.3
Vicksburg, Miss.	—	4.2	—	2.7	Yellowstone River:				
Delta, La.	3.3	—	3.4	—	Sindey, Mont.	—	5.0	—	1.9
New Orleans, La.	—	4.5	—	2.8					
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

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DECEMBER 1964

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	Albani 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:	—	2.1	—	2.9
Philadelphia, Pa.	—	2.1	—	2.0	Shiprock, N. Mex.	—	—	—	—
Esacambia 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.



Radiological Health Data

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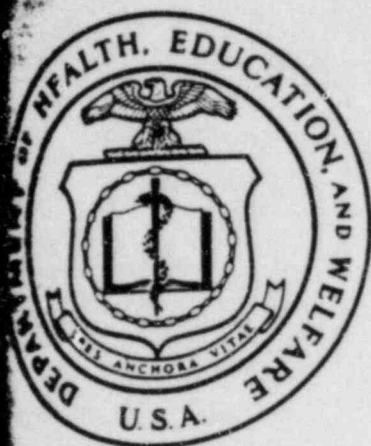
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

TABLE 2.—QUARTERLY AVERAGE STRONTIUM-90 CONCENTRATIONS IN SURFACE WATERS,
OCTOBER 1963-SEPTEMBER 1964
(Concentrations in pCi/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.				
Cedar Hill, N. Mex.					Missouri City, Mo.	4.1	3.1	9.4	5.0
Apalachicola River:		1.5		1.6	St. Louis, Mo.				
Chattahoochee, Fla.					Monongahela River:			2.1	
Arkansas River:		0.9		2.5	Pittsburgh, Pa.	3.3			
Coolidge, Kans.			6.0		North Platte River:	0.7		3.3	
Ponca City, Okla.	4.4	3.5		4.8	Henry, Nebr.				
Fort Smith, Ark.			4.2		Ohio River:			2.3	
Little Rock, Ark.	4.4		4.4		Toronto, Ohio	2.8	2.2		3.4
Pendleton Ferry, Ark.	4.3				Addison, Ohio			2.2	
Atchafalaya River:				4.0	Huntington, W. Va.	3.0	1.6		3.2
Morgan City, La.*					Cincinnati, Ohio			2.6	
Bear River:		1.1		2.5	Louisville, Ky.	4.0	2.5		3.0
Preston, Idaho					Evansville, Ind.	2.8		3.4	
Big Horn River:			6.4		Cairo, Ill.				
Hardin, Mont.	2.3				Ouachita River:		3.0		2.5
Big Sioux River:	5.0	2.8		4.6	Bastrop, La.				
Sioux Falls, S. Dak.					Pond Oreille River:	1.3		1.2	
Chattahoochee River:			2.4		Albion Falls Dam, Idaho		2.1		4.8
Atlanta, Ga.	1.7		2.0		Platte River:				
Columbus, Ga.	1.7	1.7		1.8	Plattsmouth, Nebr.				
Lanett, Ala.					Potomac River:		1.7	1.3	
Chena River:			0.8		Williamsport, Md.		1.4		1.7
Fairbanks, Alaska	0.2				Great Falls, Md.		1.2		1.9
Clearwater River:		0.8		1.0	Washington, D. C.				
Lewiston, Idaho					Rainy River:				
Clineb River:		2.0		1.3	Baudette, Minn.	4.1		4.0	
Clinton, Tenn.	6.5	7.5	4.9	3.3	International Falls, Minn.	3.8		5.0	
Kingston, Tenn.					Raritan River:				
Colorado River:			2.5	4.9	Perth Amboy, New Jersey				
Loma, Colo.	1.4	5.9			(5-ft. Below Surface)				
Page, Ariz.			1.6	2.2	Perth Amboy, New Jersey				
Boulder City, Nev.	1.5	1.9			(5-ft. Above Bottom)				
Parker Dam, Calif.-Ariz.	1.1		1.0		Red River, North:		7.1	4.9	9.4
Yuma, Ariz.				2.1	Grand Forks, N. Dak.				8.2
Columbia River:		1.5			Red River, South:		5.8		6.4
Northport, Wash.	2.8		1.2		Denison, Tex.	4.3		5.4	
Wenatchee, Wash.	3.4	3.1	1.7	2.5	Index, Ark.		4.4		5.9
Pasco, Wash.	2.5	2.2	1.1	1.6	Bossier City, La.	4.1		4.4	
McNary Dam, Ore.		2.0		1.6	Alexandria, La.				
Bonneville, Ore.	1.6		1.0		Rio Grande River:		0.8	1.9	
Clatskanie, Ore.					Alamosa, Colo.		0.6		2.7
Connecticut River:		1.3		1.4	El Paso, Tex.	2.4	2.6	5.6	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	
Coosa River:					John H. Kerr Resr./Dam, Va.				
Rome, Ga.*					Sabine River:		2.5		2.7
Cumberland River:				1.7	Ruliff, Tex.				
Clarksville, Tenn.*					Sacramento River:	1.0	1.0		0.9
Cheatham Lock, Tenn.*					Courtland, Calif.				
Cuyahoga River:		4.3		4.5	St. Lawrence River:		1.8		1.6
Cleveland, Ohio					Massena, N. Y.				
Delaware River:			1.5		San Joaquin River:	1.5		1.0	
Martins Creek, Pa.	1.6	1.8		1.7	Vernalis, Calif.				
Trenton, N. J.	2.1		2.0		San Juan River:		2.1	2.9	
Philadelphia, Pa.					Shiprock, N. Mex.				
Escambia River:	1.2		1.8		Savannah River:			1.7	2.1
Century, Fla.					North Augusta, So. Car.	2.4	1.7	2.3	2.6
Great Lakes:					Port Wentworth, Ga.				
Duluth, Minn.	0.7	0.8		0.8	Schuylkill River:		1.4		1.6
Sault Ste. Marie, Mich.			1.2		Philadelphia, Pa.				
Milwaukee, Wis.	0.8	1.2		1.0	Shenandoah River:	1.0		1.1	
Gary, Ind.	1.2		1.5		Berryville, Va.				
Port Huron, Mich.		1.4		1.6	Ship Creek:		0.4		0.2
Detroit, Mich.	5.0		2.7		Anchorage, Alaska		1.0		1.1
Buffalo, N. Y.					Snake River:				
Green River:		4.6		4.4	Ice Harbor Dam, Wash.	0.7		1.0	
Dutch John, Utah					Wawawai, Wash.	0.3		0.9	
Hudson River:	5.0		2.1		Payette, Idaho				
Poughkeepsie, N. Y.					South Platte River:	1.8		1.6	
Illinois River:	2.3		3.8		Julienburg, Colo.				
Peoria, Ill.		3.8		3.4	Spokane River:		1.3		0.9
Grafton, Ill.				1.8	Post Falls, Idaho				
Kanawha River:		1.1			Susquehanna River:		1.3		1.7
Winfield Dam, W. Va.					Sayre, Pa.	5.0		1.3	
Kansas River:	5.2		5.9		Conowingo, Md.				
De Soto, Kans.	1.8		1.7		Tennessee River:	2.1		1.6	
Klamath River:					Lenoir City, Tenn.	2.2	2.0	2.3	1.9
Keno, Ore.					Chattanooga, Tenn.	2.2		1.5	
Little Miami River:	1.4	3.3		2.4	Bridgeport, Ala.		2.1		2.4
Cincinnati, Ohio					Pickwick Landing, Tenn.				
Maumee River:	2.7		4.2		Tombigbee River:		3.1		2.0
Toledo, Ohio					Columbus, Miss.				
Merrimack River:		1.8		2.6	Truckee River:	1.0		1.2	
Lowell, Mass.					Farad, Calif.				
Mississippi River:	4.3	3.2		5.3	Verdigris River:		6.0		6.6
St. Paul, Minn.	3.7		5.2		Nowata, Okla.				
Dubuque, Iowa	4.3	2.8		4.4	Wabash River:	2.5		4.2	
Burlington, Iowa	3.8		4.9		New Harmony, Ind.				
E. St. Louis, Ill.		2.9		4.2	Willamette River:	0.5		0.3	
Capo Girardeau, Mo.	3.6		4.3		Portland, Ore.				
W. Memphis, Ark.		2.7		3.7	Yakima River:		0.3		0.3
Vicksburg, Miss.	3.4		3.6		Richland, Wash.		1.9		3.2
Delta, La.			3.0		Yellowstone River:				
New Roads, La.		2.8		3.7	Sinclair, Mont.				
New Orleans, La.									
Missouri River:			3.1				7.1	7.5	9.4
Williston, N. Dak.	2.8			4.0					8.2
Bismarck, N. Dak.		3.9					0.2	0.3	0.3
Yankton, S. Dak.	3.3		4.3						

* Activated 5-15-64.
* Activated 8-64.
* Deactivated 7-22-64.
* Relocated
* Activated 5-15-64.



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

absence of strontium-90 and alpha emitters,² 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.³
- (4) *Ibid.*, 1961 Edition.³
- (5) *Ibid.*, 1962 Edition.³
- (6) DIVISION OF WATER SUPPLY AND POLLUTION CONTROL, PUBLIC HEALTH SERVICE. Water pollution surveillance system, annual compilation of data. PHS Publication No. 663 (Revised)

² 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.

³ 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.

1963 Ed., Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

- (7) AMERICAN PUBLIC HEALTH ASSOCIATION; AMERICAN WATER WORKS ASSOCIATION AND WATER POLLUTION CONTROL FEDERATION. Standard methods for the examination of water and wastewater. 11th Edition, New York (1960).
- (8) WEAVER, L., A. W. HOADLEY, and S. BAKER. Radioactivity in surface waters of the United States, 1957-1962. Rad Health Data 4: 306-14 (June 1963).
- (9) HARLEY, J. H., Radiochemical Determinations of Strontium-90, Health and Safety Laboratory Manual of Standard Procedures, August 1962 Revision, Radiochemistry and Environmental Studies Division, HASL, U.S. Atomic Energy Commission, New York Operations Office (1962).
- (10) FLOYD, E. P., and L. WEAVER. Trends of Strontium-90 Levels in Surface Waters of United States, 1959-1963. Rad Health Data 5: 390-394 (August 1964).
- (11) PUBLIC HEALTH SERVICE. Drinking water standards, revised 1962. Public Health Service Publication No. 956, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402 (March 1963), price 30 cents.
- (12) STRAUB, C. P. Significance of radioactivity data. JAWWA 53:704 (June 1961).

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Radiological Health Data and Reports

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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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.			Addison, Ohio.		1.3
Bear River:		2.4	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:		0.4	Williamsport, Md.	0.5	
Lewiston, Idaho.			Great Falls, Md.		0.8
Clinch River:		0.4	Washington, D.C.		0.8
Clinton, Tenn.		1.3	Rainy River:		
Fingston, Tenn.	1.6		International Falls, Minn.	3.9	
Colorado River:			Baudette, Minn.	2.8	
Loma, Colo.	1.9		Red River, North:		
Page, Ariz.		0.7	Grand Forks, N. Dak.	6.1	5.2
Boulder City, Nev.	1.9		Red River, South:		
Parker Dam, Calif.-Ariz.		2.0	Denison, Tex.	3.7	4.1
Yuma, Ariz.	0.5		Index, Ark.	3.1	
Columbia River:			Bossier City, La.		1.3
Northport, Wash.		0.9	Alexandria, La.	2.0	
Wenatchee, Wash.	0.8		Rio Grande:		
Pasco, Wash.	0.9	1.0	Alamosa, Colo.	1.2	
McNary Dam, Ore.	0.7	0.8	El Paso, Tex.		1.0
Bonneville, Ore.		0.5	Laredo, Tex.	1.4	
Clatskanie, Ore.	0.6		Brownsville, Tex.		1.3
Connecticut River:			Roanoke River:		
Wilder, Vt.		0.5	John H. Kerr Resr. & Dam, Va.	1.1	
Walden, Mass.	1.1		Sabine River:		
Dam, Conn.		1.0	Ruliff, Tex.		1.9
Chattahoochee River:			Sacramento River:		
Chatham Lock, Tenn.		0.1	Greens Landing, Calif.		0.1
Cuyahoga River:		0.8	St. Lawrence River:		
Cleveland, Ohio.			Massena, N.Y.		1.0
Delaware River:		2.2	San Joaquin River:		
Martins Creek, Pa.			Vernalis, Calif.	0.8	
Trenton, N.J.	0.6		San Juan River:		
Philadelphia, Pa.	1.1	0.7	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		Schuylkill 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:		1.6	Payette, Idaho.	0.7	
Dutch John, Utah.			Wawawai, Wash.	0.4	
Hudson River:			Ice Harbor Dam, Wash.		0.1
Toughkeepsie, N.Y.	1.1		South Platte River:		
Illinois River:			Julesburg, Colo.	1.8	
Peoria, Ill.	1.6		Spokane River:		
Kanawha River:		0.3	Post Falls Dam, Idaho.		0.3
Winfield Dam, W. Va.			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:		3.6	Farad, Calif.	0.6	
St. Paul, Minn.			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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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		
Cedar Hill, N. Mex.				Burlington, Iowa		2.1	
Apalachicola River:		.9		E. St. Louis, Ill.	1.9		
Chattahoochee, Fla.				Cape Girardeau, Mo.	2.0	1.5	
Arkansas River:		1.5		W. Memphis, Ark.		1.3	
Coolidge, Kans.			2.4	Vicksburg, Miss.	2.1		
Ponca City, Okla.	2.2		2.5	Delta, La.	1.8		
Fort Smith, Ark.		3.1		New Roads, La.		2.0	
Little Rock, Ark.	2.7			New Orleans, La.			
Pendleton Ferry, Ark.	3.1		2.5	Missouri River:			
Atchafalaya River:				Williston, N. Dak.	2.1		
Morgan City, La.		1.6		Bismarck, N. Dak.		1.9	
Bear River:		1.6		Yankton, S. Dak.	2.8		
Preston, Idaho				Omaha, Nebr.		2.8	
Big Horn River:			1.7	St. Joseph, Mo.	2.5		
Hardin, Mont.	1.1			Kansas City, Kans.		2.4	
Big Sioux River:		2.3		Missouri City, Mo.	2.7		
Sioux Falls, S. Dak.				St. Louis, Mo.		2.5	
Chattahoochee River:			1.1	Monongahela River:			
Atlanta, Ga.	1.6	1.2		Pittsburgh, Pa.	1.3		
Lanett, Ala.			1.0	North Platte River:		.5	
Columbus, Ga.	1.0			Henry, Nebr.			
Chena River:		0.2	0.4	Ohio River:		3.5	
Fairbanks, Alaska				Toronto, Ohio			1.3
Clearwater River:		.2		Addison, Ohio			
Lewiston, Idaho				Huntington, W. Va.			1.1
Clinch River:		.6	4.3	Cincinnati, Ohio		1.5	
Clinton, Tenn.		7.3		Louisville, Ky.			1.1
Kingston, Tenn.	1.2			Evansville, Ind.		1.2	
Colorado River:			1.2	Cairo, Ill.			
Loma, Colo.	.8	3.2		Ouachita River:		1.9	
Page, Ariz.			2.5	Bastrop, La.			
Boulder City, Nev.	2.7			Pend Oreille River:		.7	
Parker Dam, Calif.-Ariz.			2.1	Albani Falls Dam, Idaho			
Yuma, Ariz.	1.5			Platte River:		1.6	
Columbia River:		1.0		Plattsmouth, Nebr.			
Northport, Wash.			.3	Potomac River:		.7	
Wenatchee, Wash.	1.4		1.2	Williamsport, Md.			1.1
Pasco, Wash.	1.2		2.4	Great Falls, Md.			.5
McNary Dam, Ore.	1.1	.8		Washington, D.C.			
Bonneville, Ore.			.4	Rainy River:		3.2	
Clatskanie, Ore.	.9			International Falls, Minn.		3.2	
Connecticut River:		.9	1.0	Baudette, Minn.			
Wilder, Vt.				Raritan River:			
Northfield, Mass.	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:		5.8	3.6
Cumberland River:		1.0		Grand Forks, N. Dak.			4.6
Cheatham Lock, Tenn.				Red River, South:			
Cuyahoga River:		1.9		Denison, Tex.		4.0	
Cleveland, Ohio			1.0	Index, Ark.			
Delaware River:		.8	1.0	Bossier City, La.		2.9	
Martins Creek, Pa.			1.0	Alexandria, La.			
Trenton, N. J.		1.1		Rio Grande:		.5	
Philadelphia, Pa.	.9			Alamosa, Colo.			
Escambia River:		1.0	.6	El Paso, Tex.		1.3	1.6
Century, Fla.				Laredo, Tex.			
Great Lakes:		.8	.7	Brownsville, Tex.			
Duluth, Minn.			1.0	Roanoke River:		1.5	
Sault Ste. Marie, Mich.		.8		John H. Kerr Res. Dam, Va.			
Milwaukee, Wis.	.7		1.4	Sabine River:			1.4
Gary, Ind.		1.7		Ruliff, Tex.			
Port Huron, Mich.	1.1	.6	1.4	Sacramento River:			.5
Detroit, Mich.			2.3	Greens Landing, Calif.			
Buffalo, N.Y.	2.3			St. Lawrence River:		1.7	
Green River:		2.3		Massena, N. Y.			
Dutch John, Utah			1.8	San Joaquin River:		.6	
Hudson River:				Vernalis, Calif.			
Poughkeepsie, N.Y.	1.8		1.7	San Juan River:		1.5	
Illinois River:		2.0		Shiprock, N. Mex.			
Peoria, Ill.	1.3			Savannah River:		.9	
Grafton, Ill.				North Augusta, S.C.		1.2	
Kanawha River:		.7		Port Wentworth, Ga.	1.4		
Winfield Dam, W. Va.			2.6	Schuylkill River:			.9
Kansas River:		2.2	1.3	Philadelphia, Pa.			
DeSoto, Kans.				Shenandoah River:		.4	
Klamath River:		1.0		Berryville, Va.			
Keno, Ore.			1.6	Ship Creek:			.1
Little Miami River:		2.1		Anchorage, Alaska			
Cincinnati, Ohio				Snake River:		.5	
Maumee River:		1.8		Payette, Idaho		.4	
Toledo, Ohio				Wawawai, Wash.			.5
Merrimack River:			1.9	Ice Harbor Dam, Wash.			
Lowell, Mass.				South Platte River:		1.6	
				Julesburg, Colo.			

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
Snake River:		.6		Truckee River:	.9		.8
Fort Falls Dam, Idaho:				Farad, Calif.:			
Shanna River:		.9	1.0	Verdigris River:	3.6		
Pa.				Nowata, Okla.:			
Conowingo, Md.:				Wabash River:	.9		1.7
Chesapeake River:				New Harmony, Ind.:			
Memphis, Tenn.:	.8	.9	1.0	Willamette River:	.2		.1
Memphis City, Tenn.:	1.0		.7	Portland, Ore.:			
Chattanooga, Tenn.:		1.0		Yakima River:		.3	
Mobile, Ala.:				Richland, Wash.:			
Mobile Landing, Tenn.:				Yellowstone River:		1.3	
Mobile River:		1.4		Sidney, Mont.:			
Mobile, Miss.:							

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

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-

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

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.
- (2) *Ibid.*, 1959 Edition.
- (3) *Ibid.*, 1960 Edition.
- (4) *Ibid.*, 1961 Edition.
- (5) *Ibid.*, 1962 Edition.
- (6) DIVISION OF WATER SUPPLY AND POLLUTION CONTROL, PUBLIC HEALTH SERVICE. Water pollution surveillance system, annual compilation of data, PHS Publication No. 663 (Revised), 1963 Edition. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
- (7) AMERICAN PUBLIC HEALTH ASSOCIATION: AMERICAN WATER WORKS ASSOCIATION: AND WATER POLLUTION CONTROL FEDERATION. Standard methods for the examination of water and wastewater, 11th Edition. New York, N.Y. (1960).
- (8) HARLEY, J. H. Radiochemical determinations of strontium-90: Health and Safety Laboratory Manual of Standard Procedures (August 1962 Revision). U.S. Atomic Energy Commission, Radiochemistry and Environmental Studies Division, HASL, New York Operations Office (1962).
- (9) STRAUB, C. P. Significance of radioactivity data. JAWWA 53:704 (June 1961).
- (10) PUBLIC HEALTH SERVICE. Drinking water standards, revised 1962, PHS Publication No. 956. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (March 1963).
- (11) PUBLIC HEALTH SERVICE, DIVISION OF WATER SUPPLY AND POLLUTION CONTROL. Gross radioactivity and strontium-90 in surface waters of the United States, January 1965. Radiol Health Data 6:393-396 (July 1965).
- (12) FEDERAL WATER POLLUTION CONTROL ADMINISTRATION. Gross radioactivity in surface waters of the United States, March 1966. Radiol Health Data Rep 7:514-516 (September 1966).

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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	
James River:						Maumee River:			1.3		1.6
Redar Hill, N. Mex.	1.4	2.0		1.1	1.0	Toledo, Ohio					
Missouri River:						Merrimack River:			1.8		
Chattahoochee, Fla.	1.1	1.5		0.8		Lowell, Mass.	2.0	2.2			1.6
Kansas River:						Mississippi River:					
Toledo, 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	
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	
Atchafalaya River:						Delta, La.					2.2
St. Louis River:						New Roads, La.			0.9	0.9	
Preston, Idaho	2.2	1.0	1.1	1.1		New Orleans, La.	2.5	2.3		1.4	
Horn River:						Missouri River:					
Hardin, Mont.					1.6	Williston, N. Dak.			2.2		2.6
St. Louis River:						Bismarck, N. Dak.	2.9	3.3		2.5	
Southern Falls, S. Dak.	3.2	2.4		3.3	2.7	Yankton, S. Dak.			2.5		3.1
Nebraska River:						Omaha, Nebr.	3.6	5.0	2.1	3.7	
Atchafalaya 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
Lawrence, Ala.	1.4	1.4		0.9		St. Louis, Mo.	3.9	3.5		2.4	
Nebraska River:						Monongahela River:			1.1		1.5
Fairbanks, Alaska			1.0			Pittsburgh, Pa.					
Lawrence River:						North Platte River:			0.5		2.4
Lewiston, Idaho	0.7	0.6		0.5		Henry, Nebr.					
Snake River:						Ohio River:					
Canton, Tenn.	0.9	0.9	0.7		0.5	Toronto, Ohio			2.9		
Kingsport, 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
Delta, Colo.			0.8		1.8	Cincinnati, Ohio	2.0	1.2		1.2	
San Francisco, Calif.	3.0	5.8		3.8	3.0	Louisville, Ky.			1.5		1.0
San Francisco, Calif.			2.9			Evansville, Ind.	1.5	2.1		1.3	
San Francisco, Calif.						Cairo, Ill.			1.1		1.8
Yuma, Ariz.	4.0	2.6		4.5		Ouachita River:					
Columbia River:		2.5			2.3	Bastrop, La.	2.6	2.5		2.0	
Northport, Wash.	1.5	1.4		0.8		Pend Oreille River:					
Wenatchee, Wash.			1.0		2.5	Albeni Falls Dam,			1.2		
Pasco, Wash.		1.8	1.4		2.0	Idaho					
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
Rider, 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	
Esfield Dam, Conn.	1.3	2.6			1.0	Rainy River:					
Nebraska River:						Baudette, Minn.			1.2		4.1
Rome, Ga.			1.0		0.7	International Falls,					3.0
Nebraska River:						Minn.			3.8		
Nebraska River:						Red River, North:					
Nebraska River:						Grand Forks, N. Dak.	8.6		3.7	4.1	4.5
Nebraska River:						Red River, South:					
Nebraska River:						Denison, Tex.	6.7	3.7	3.9		4.1
Nebraska River:						Index, Ark.				2.8	
Nebraska River:						Bossier City, La.		2.5	1.1	1.2	2.8
Nebraska River:						Alexandria, La.			2.6		3.4
Nebraska River:						Rio Grande:					
Nebraska River:						Alamosa, Colo.			1.3		0.6
Nebraska River:						El Paso, Tex.	3.3	0.4		0.2	
Nebraska River:						Laredo, Tex.			0.6		6.0
Nebraska River:						Brownsville, Tex.		0.4	1.6		
Nebraska River:						Roanoke River:					
Nebraska River:						John H. Kerr Reser/					
Nebraska River:						Dam, Va.			0.4		1.3
Nebraska River:						Sabine River:					
Nebraska River:						Ruliff, Tex.	3.1		1.9		
Nebraska River:						Sacramento River:					
Nebraska River:						Greens Landing, Calif.	0.9		6.6		0.7
Nebraska River:						St. Lawrence River:					
Nebraska River:						Massena, N.Y.	2.1		1.6	1.8	
Nebraska River:						San Juan River:					3.2
Nebraska River:						Shiprock, N. Mex.					
Nebraska River:						Savannah River:					
Nebraska River:						North Augusta, S. C.	1.4	2.1		1.1	
Nebraska River:						Port Wentworth, Ga.	1.9	2.5	1.0		1.5
Nebraska River:						Schuylkill River:					
Nebraska River:						Philadelphia, Pa.	1.3	1.3		1.4	
Nebraska River:						Shenandoah River:					
Nebraska River:						Berryville, Va.			0.4		0.4
Nebraska River:						Ship Creek:					
Nebraska 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:					
Ice Harbor Dam, Wash.	0.8	1.0		0.6		Farad, Calif.					
Wawawai, Wash.			0.5		1.3	Wabash River:					
Payette, Idaho.			0.4			New Harmony, Ind.					
South Platte River:						Willamette River:					
Julesburg, Colo.			1.4		1.7	Portland, Ore.					
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			2.0
Conowingo, Md.			1.1		1.2	Maximum	8.6	3.8			
Tennessee River:						Minimum	0.5	0.3			
Lenoir City, Tenn.	1.2		0.7			Median	1.85	2.10			
Chattanooga, Tenn.			1.1			Average	2.30	2.12			
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.

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.
- (2) Ibid., 1959 Edition.
- (3) Ibid., 1960 Edition.
- (4) Ibid., 1961 Edition.
- (5) Ibid., 1962 Edition.
- (6) DIVISION OF WATER SUPPLY AND POLLUTION CONTROL, PUBLIC HEALTH SERVICE. Water pollution surveillance system, annual compilation of data. PHS Publication No. 663 (Revised Edition). Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
- (7) AMERICAN PUBLIC HEALTH ASSOCIATION. AMERICAN WATER WORKS ASSOCIATION AND WATER POLLUTION CONTROL FEDERATION. Standard methods for the examination of water and wastewater, 11th Edition. New York (1960).
- (8) HARLEY, J. H. Radiochemical determination of strontium-90, Health and Safety Laboratory Manual of standard procedures, August 1962 Revision. Health and Environmental Studies Division, HASL, U.S. Atomic Energy Commission, New York Operations Office (1962).
- (9) STRAUB, C. P. Significance of radioactivity. JAWWA 53:704 (June 1961).
- (10) PUBLIC HEALTH SERVICE. Drinking water standards, revised 1962, PHS Publication No. 663. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (1963).
- (11) PUBLIC HEALTH SERVICE, DIVISION OF WATER SUPPLY AND POLLUTION CONTROL. Gross radioactivity and strontium-90 in surface waters of the United States, January 1965. Health Data 5:393-396 (July 1965).