



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
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Evaluatory Surveys of Long-Term Fluoridation
Show Improved Dental Health

The dental benefits from the use of optimally fluoridated water have been reported repeatedly through evaluatory surveys both in the United States and abroad. More than 100 of these studies cover experience ranging from ten to 22 years. These studies have been conducted in 27 States, Washington, D.C., Puerto Rico, Australia, Brazil, Canada, Germany, Great Britain, Japan, the Netherlands, and Switzerland.

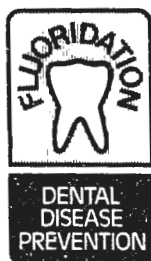
Excerpts and comments based on 23 of these studies which cover a period of 15 years or more are attached. They show a marked decrease in the decayed, missing, filled (DMF) rate in both teeth and surfaces in children of all ages; a large reduction in extracted teeth; a vast increase in the number of children caries-free; a reduction in the size of cavities which occur; topical as well as systemic benefits from community water fluoridation, and benefits to rural children who were exposed to fluoridated water only while attending school in a fluoridated community.

Although results may not be directly comparable from one study to another, results are remarkably consistent. Among major factors contributing to variations and lack of comparability in results are the following:

- (1) Amount of fluoride naturally in the water supply prior to fluoridation.
- (2) Maintenance of the fluoride level below the recommended optimum.
- (3) Intermittent stoppage of fluoridation program.
- (4) Inclusion in a survey of transient personnel with limited exposure to fluoridation.

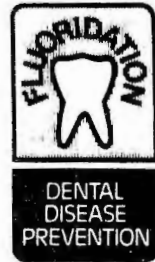
A partial bibliography of evaluatory studies covering 10 or more years is also enclosed. We will welcome copies of additional 10-year or more studies showing dental and cost benefits of fluoridation.

2 Enclosures



Dental Disease Prevention Activity
Bureau of State Services

DENTAL BENEFITS REPORTED IN
EVALUATORY STUDIES IN COMMUNITIES
FLUORIDATED FOR 15 YEARS OR MORE



I. UNITED STATES

CALIFORNIA

"Grow Up Smiling, Health Headlines, Contra County Health Department, February 1968 (Report on 16-year-olds in Antioch, fluoridated since 1952.)

After 15 years of fluoridation, the DMF rate for 16-year-olds had dropped from an average of 1,083 per 100 students to 565 per 100 students. There was an 85% reduction in the number of teeth requiring extraction.

CONNECTICUT

"A 22-Year Follow-Up Study of Fluoridation in New Britain, Connecticut," C.R. Castaldi, D.D.S., M.S.D., and B.A. Pelletier, D.D.S. (Paper presented in April 1975 at the American Association for Dental Research in New York.)

New Britain was the first city to fluoridate in 1951 in Connecticut. The percent of 6-year-olds with caries-free canines and 1st and 2nd molars increased from 14.2% in 1951 to 30.5% in 1973; caries-free 7-year-olds increased from 8.6% in 1951 to 21.6% in 1973. The DMF rate per 100 erupted permanent teeth in 12-year-olds decreased from 31.6% to 14.9%; and the caries-free rate for this age group increased from 18.4% to 45.5%; missing teeth decreased from 10.0% to 1.0%.

Despite these improvements there was a decrease in the percentage of first molars which were filled. This was attributed to three factors: 1) Families were more conscious of dental health when fluoridation was controversial; 2) Population changes have resulted in more immigrant children in lower socio-economic class; and 3) Increases in cost of living have changed priorities in spending.

ILLINOIS

"Fluorine and Dental Caries," J.R. Blayney, D.D.S., M.S., and Iden N. Hill, D.D.S., Special Issue of JADA, January 1967, Vol. 74, No. 2.

Comparison of caries experience rates in permanent teeth (maxillary and mandibular) of 12-, 13-, and 14-year-old children in Evanston, pre-fluoride 1946; Oak Park, non-fluoride 1947 and 1956; and Evanston, after lifetime exposure to fluoridation 1959 and 1961.

ILLINOIS (continued)

<u>Age</u>	<u>DMF/100 Teeth</u>
<u>Evanston</u>	
<u>1946 - Pre-Fluoride</u>	
12	28.74
13	38.44
14	37.95
<u>Oak Park</u>	
<u>1947 - Non-Fluoride</u>	
12	27.72
13	33.11
14	39.04
<u>Oak Park</u>	
<u>1956 - Non-Fluoride</u>	
12	28.87
13	35.12
14	38.33
<u>Evanston</u>	
<u>1959 - Lifetime Exposure to Fluoride</u>	
12	15.10
13	19.00
14	22.47
<u>Evanston</u>	
<u>1961 - Lifetime Exposure to Fluoride</u>	
12	13.75
13	17.49
14	21.64

"Effectiveness of Fluoridation," Harold N. Weinstein, D.D.S., Newsletter,
Chicago Board of Health, December 1972, Vol. 12, No. 4.

Chicago began fluoridating in 1956. After 15 years, the reduction in carious experience for 12-, 13-, and 14-year-olds was close to 50%.

MARYLAND

Research Notes, Arthur J. Bonito, University of Maryland, Baltimore, Maryland. Data collected in 1975 under PHS Contract No. 1 DH 34051.

Data collected in 1975 from Baltimore SMSA were added to a series of studies conducted during 1974-75 by the World Health Organization. The Baltimore area was the only one fluoridated and the caries rate was less than half that in the next lowest study area.

<u>DMF</u>	<u>Caries Prevalence</u>	
	<u>8-9-Year-Olds</u> <u>Mixed Dentition</u>	<u>13-14-Year-Olds</u>
Baltimore	3.0	2.9
Sydney, Australia	6.4	6.7
Trondelag, Norway	10.5	12.6
Canterbury, New Zealand	9.6	10.7
Hannover, Federal Republic of Germany	8.9	8.8
Yamanashi, Japan	10.1	7.5

MICHIGAN

"Fifteenth Year of the Grand Rapids Fluoridation Study," F.A. Arnold, Jr., D.D.S., R.C. Likins, D.D.S., A.L. Russell, D.D.S., and D.B. Scott, D.D.S., JADA, December 1962, Vol. 65, pp. 780-785.

"After 15 years, total caries experience was lowered by 50 to 63% in children aged 12 to 14 years, and by 48 to 50% in children aged 15 to 16."

"Dental Fluorosis in Grand Rapids During the Seventeenth Year of Fluoridation," A.L. Russell, D.D.S., JADA, November 1962, Vol. 65, pp. 608-612.

"In 1961, the seventeenth year of fluoridation in Grand Rapids, Michigan, 822 students in the seventh, eighth and ninth grades in Central High School were surveyed for fluorosis and for idiopathic enamel opacities. The findings indicated that, with 1.0 ppm fluoride in the community water, there is a twofold margin of safety against mottling. Enamel opacities of all types were no more prevalent in these children than in Maryland children who had always imbibed water low in fluoride (0 to 0.2 ppm)."

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"Pigmented enamel blotches due to causes other than fluoride were somewhat less prevalent in children with continuous residence than in children who had spent some part of their lives in some other place."

MINNESOTA

"Eighteen Years of Fluoridated Water as a Caries Inhibitor - Red Lake, Falls," William A. Jordan, D.D.S., M.P.H., Northwest Dentistry, July-August 1970, Vol. 49:231-234.

After 18 years of fluoridation, continuous residence children ages 6-12 showed over a 60% reduction in dental caries. Those who used private wells at home and fluoridated water at school showed a 45% reduction. There was a 94% reduction in the permanent teeth mortality. The rate of filled teeth had been increased by 22%.

MISSOURI

"Communal Fluoridation," Herbert R. Domke, M.D., Dr. P.H., Missouri Division of Health, March 1972.

After 15 years of fluoridation, lifetime resident junior high pupils, ages 12-15, in fluoridated Sikeston averaged 2.28 DMFT per child, more than 60% fewer than the 6.22 DMFT rate of the lifetime residents in the fluoride-deficient Poplar Bluffs sample.

"Among those not lifetime residents, the Sikeston sample showed a rate of 3.85 DMFT per pupil, as compared with 4.75 among Poplar Bluffs youngsters."

NEW YORK

"Comparison of Dental Surveys in Elmira and Corning, New York," Gary S. Leske, D.D.S., M.P.H., Sydney T. Pollard, D.D.S., M.P.H., William L. Shipman, D.D.S., New York State Dental Journal, November 1972, Vol. 38:540-543.

A survey compared Elmira, fluoridated for nearly 20 years, with fluoride-deficient Corning. "It is of interest to note that when total caries experience is considered, the data showed 30% more decayed, missing and filled teeth in Corning than in Elmira. This percentage does not include any interproximal carious lesions which would appear had the examination been supplemented with radiographs."

"Effectiveness of Water Fluoridation," David B. Ast, D.D.S., M.P.H., and Bernadette Fitzgerald, B.S., JADA, November 1962, 65:581-7.

NEW YORK (continued)

	<u>DMF Teeth</u> <u>Per Child</u>	<u>%</u> <u>Difference</u>	<u>Missing</u> <u>Teeth Per Child</u>	<u>%</u> <u>Difference</u>
<u>Grand Rapids (F)</u>				
Ages 12-14, 1944-45	9.58		0.84	
1959	4.26	-55.5	0.29	-65.5

<u>Evanston (F)</u>				
Ages 12-14, 1946	9.03		0.19	
1959	4.66	-48.4	0.06	-68.4

Sarnia (F-deficient)

1959	7.46		0.75	
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Brantford (F)

Ages 12-14, 1954	3.73	-56.7	0.22	-70.7
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Kingston (F-deficient)

1960	12.46		0.92	
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Newburgh (F)

Ages 13-14, 1960	3.73	-70.1	0.10	-89.1
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"The reduction in dental caries during childhood reduces the hazard of premature loss of deciduous posterior teeth."

OREGON

"Salem Dental Health Survey - 1971," The Journal of the Oregon Dental Association, September 1971:16-18.

Comparison of Dental Caries Experience
with State Average and a Natural Fluoride Area
with Salem Children
(Part of Salem fluoridated in 1953; part in 1965)

	<u>7</u>	<u>Age</u> <u>8</u>	<u>11</u>	<u>12</u>
State Average	1.6	2.6	5.3	6.9
Natural F1	0.7	1.0	2.7	2.9

OREGON (continued)

	<u>7</u>	<u>Age</u> <u>8</u>	<u>11</u>	<u>12</u>
Part/Salem Fl 6 yrs.	0.8	1.4	3.8	3.4
Part/Salem Fl 18 yrs.	0.8	1.0	2.5	3.0

"The children 11 years of age who have had fluorides for only six years show a reduction in the number of DMF surfaces of 14.3%, while those children 11 years of age who resided in that area of Salem and have had the benefit of fluorides for 11 years show a benefit of having 50.1% fewer DMFS." The children 12 years of age having fluoridation for six years show a 30% reduction in DMFS as compared to their counterparts who had lifetime fluoridation and showed a 69% reduction."

PENNSYLVANIA

Philadelphia Department of Public Health Report, 1974.

The School Health Act requires that children in grades one, three and seven be examined annually by dentists. Philadelphia fluoridated in 1954. The results after 20 years of fluoridation were as follows:

DMF Rates - Philadelphia Public School Children

<u>Age</u>	<u>1953-4</u>	<u>1973-4</u>
6	0.4	0.13
7	0.7	0.27
8	2.0	0.82
9	2.4	0.96
10	3.5	1.61
11	4.0	2.07
12	5.8	2.71
13	7.5	2.94
14	8.5	3.31
15	9.3	3.64
16	10.6	
17	10.8	
18	11.0	
<u>Mean</u>	4.74	1.24

RHODE ISLAND

"Twenty Years of Community Water Fluoridation: The Prevalence of Dental Caries Among Providence, Rhode Island, School Children," Joseph A. Yacavonne, D.M.D., M.P.H., and Angelo M. Parente, D.M.D., Rhode Island Dental Journal, June 1974:3-7,18.

Caries Prevalence (DMF) in Permanent Teeth
1952 (Before Fluoridation) and 1972
(After 20 Years of Fluoridation) According to Age

<u>DMFT</u>			
<u>Age</u>	<u>1952</u>	<u>1972</u>	<u>% Reduction</u>
4	.00	.18	----
5	.12	.11	8.33
6	.65	.43	33.85
7	1.69	.94	44.38
8	2.59	1.18	54.44
9	3.40	1.51	55.59
10	4.16	1.85	55.53
11	5.23	2.14	59.08
12	7.07	2.62	62.94
13	8.43	3.08	63.46
14	9.55	3.85	59.69
15	10.45	4.28	59.04
16	12.04	6.00	50.17
17	8.50	-----	-----

There was a 90.4% reduction in tooth loss, and an overall reduction in caries prevalence of 68% in lifelong residents of the city of Providence between the ages of 5 and 17 after 20 years of fluoridation. In boys, 89.9% of the teeth examined were found to be sound while in girls, the percentage was 88.7%.

VIRGINIA

"A Twenty-Year Study of the Effectiveness of Fluoride in the Richmond Water Supply," Edwin L.W. Crooks, Jr., and Albert B. Konikoff, Virginia Dental Journal, December 1972, Vol. 49, No. 6:24-26.

There was a 50% decrease in the DMF rate among thirteen-year-old black children. There was also a dramatic decrease in the number of missing teeth and an increase in the number of filled teeth.

WISCONSIN

"After 20 Years, Its Benefits Indisputable...Sheboygan Led Fluoridation," "'War' on Tooth Decay," M.F. Schreiber, published in the Sheboygan Press, February 25, 1966, reprinted in Wisconsin State Board of Health Fluoridation News, April 1966, Vol. 3, No. 2, pp.1-2.

"Dental Surveys after 12 years of fluoridation in Sheboygan showed a 64 percent reduction in dental decay among the kindergarten age group and a 55 and 53 percent reduction in the 4th grade group and the 7th, 8th, and 9th grade respectively." The prevalence of decayed, filled or extracted teeth in the kindergarten group had been reduced by 63%. An "unofficial" survey in 1963 indicated that this 63% reduction had been maintained.

"Oshkosh School Survey Indicates Decay Decline," Wisconsin Department of Health and Social Services, Fluoridation News, January 1977, Vol. 13, No. 1. Report covered school year 1975-76.

Oshkosh fluoridated in 1950. The 533 ninth-graders examined in 1948 averaged 9.13 DMF teeth with 2% of the group having no decay. The 741 ninth-graders examined in 1975 who had received the benefits of fluoridation from birth averaged 4.53 DMF teeth with 15% of the students having no decay. Thus there was an average 50% fewer DMF teeth and a 13% increase in the number with no decay.

II. FOREIGN

AUSTRALIA

"The Dramatic Improvement in Dental Health of School Children in the Northern Metropolitan Region of New South Wales," James S. Lawson, M.D., M.H.A., John H. Brown, B.D.S., and Timothy I. Oliver, M. Soc. Sci., M. Phil., Medical Journal of Australia, February 11, 1978, Vol. 1:124-125.

"There has been a dramatic improvement in the dental health of school children in the past 15 years. (Sidney fluoridated its water supply in 1961.) The proportion of children aged five to 12-years who have never experienced any dental decay increased nearly ten-fold from 3.8% in 1961 to over 35% in 1974. The proportion of children with active decay at routine school examinations has fallen from 92% to 22%."

CANADA

"Brantford-Sarnia-Stratford Fluoridation Caries Study: Final Survey, 1963," H.K. Brown, D.D.S., D.D.P.H., and Myron Poplove, B.Sc., M.Sc., D.D.S., Journal Canadian Dental Association, 1965, 31(8):505-511.

There has been a continuing reduction in caries experience in 16- and 17-year-old Brantford children during the 17½ years since fluoridation started, and this benefit extends at least until the 18th year. There was essentially no difference in benefits from adjusted or naturally fluoridated water supplies.

16- and 17-Year-Olds, 1963

	<u>Caries-Free</u>	<u>Tooth Mortality</u> <u>Rate/100</u>	<u>Mean</u> <u>DMF</u>
<u>Sarnia</u> Fluoride-deficient	0.41%	131.33	10.44
<u>Brantford</u> Adjusted	11.80%	37.92	4.74
<u>Stratford</u> Natural	12.78%	41.85	4.19

GERMANY (East)

"Results of Sixteen Years of Water Fluoridation in the DDR," W. Kunzel, Rev. Odontostomatol (Paris), September-October 1977, 4(5): 415-19; also Oral Research Abstracts, December 1978, 13(12):1074.

After 16 years of fluoridation, there was a 34% caries reduction in 16-18-year-olds. The number of children caries-free has doubled. Carious lesions are superficial and easily treated and recur less frequently than in a fluoride-deficient community. Only half the number of dentists are needed to treat children in Karl-Marx-Stadt.

NETHERLANDS

"Artificial Fluoridation of Drinking Water in the Netherlands, Results of the Tiel-Culemborg Experiment After 16½ Years," G.W. Kwant, B. Houwink, O. Backer-Dirks, A. Groenvell, and T.J. Pot, Ned Tijdschr Tandheelkd, 1973, Suppl. 9, 1973, 80:6-27; also Dental Abstracts, July 1974, pp. 407-8.

Number of Proximal D-Lesions in
Molar and Maxillary Anterior Teeth
Per 100 Children Aged 11-15

<u>Year of Survey</u>	<u>1952</u>	<u>1957</u>	<u>1967</u>	<u>1968</u>
Culemborg	436	533	572	563
Tiel (fluoridated)	409	389	213	140
% Less D-Lesions in Tiel		27%	63%	75%

NEW ZEALAND

"Hastings Fluoridation Project VI - Dental Effects Between 1954 and 1970," T.G. Ludwig, M. Sc., D.D.S., F.A.C.D.S., New Zealand Dental Journal, July 1971, Vol. 67:155-160; also Oral Research Abstracts, April 1972, 7(4):310.

The results of 16 years of fluoridation on 13 - 16-year-old children showed a reduction of caries prevalence rates in permanent teeth of 57%, 52%, 49%, and 42% in ages 13, 14, 15, and 16 respectively. The report indicated that the reduction in DMF teeth does not allow fully for either the size or the number of lesions and presents reductions also by surfaces which shows that for all ages and sex groups a 50% or greater reduction is apparent. The reduction in permanent tooth surface caries were 63%, 60%, 59%, and 55% in ages 13, 14, 15, and 16 respectively.

SWITZERLAND

"Een'dammung der Karies in Basel," Martin Buttner, Schweiz, Monatsche Zahnheilkd, April 1977, 87:298-303; also Dental Abstracts, November 1977, p. 652.

The number of caries-free children has increased after 15 years of fluoridation, and a marked reduction in DMFT and DMFS is apparent in children of all ages through 15 years of age.

PARTIAL BIBLIOGRAPHY OF SURVEYS
IN COMMUNITIES FLUORIDATED FOR TEN YEARS OR MORE



I. UNITED STATES

ALABAMA

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Everette W. Moncrief, Jr., D.M.D., M.P.H., The Journal of the
Alabama Dental Association, January 1970, Vol. 54, No. 1:18-25.

CALIFORNIA

2. "Ten Years of Fluoridation in Antioch," California's Health, June 15,
1964, p. 214.
3. "Grow Up Smiling," Health Headlines, Contra Costa County Health
Department, February 1968. (Report on 16-year-olds in Antioch,
fluoridated since 1952.)

COLORADO

4. "42% Reduction," Colorado's Health, September-October 1968, Vol. 2,
No. 5, and Journal of the Colorado Dental Association, Vol. 47
(2):10, November 1968.
5. "Fluoridation Value Reaffirmed," Colorado State Board of Health,
September-October 1963, No. 9.

CONNECTICUT

6. "Mystic-Stonington Dental Survey," Franklin M. Erlenbach, D.M.D.,
Connecticut Health Bulletin, October 1964, Vol. 78, No. 10.
7. "A 22-Year Follow-Up Study of Fluoridation in New Britain, Connecticut,"
C.R. Castaldi, D.D.S., M.S.D., and B.A. Pelletier, D.D.S., (Paper
presented in April 1975 at the American Association for Dental Research
in New York.)
8. "Tenth Year of New Britain, Connecticut, Fluoride Study," Franklin M.
Erlenbach, D.M.D., and Edwin T. Tracy, B.S., Connecticut Health
Bulletin, December 1961, 75:371-82.

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9. "Ten-Year Fluoridation Report," March 18, 1963, paper by A. Harry
Ostrow, D.D.S., Chief, Bureau of Dental Health, Department of Dental
Health.

GEORGIA

10. "Why Fluoridate Your Community's Water Supply," Georgia's Health, January 1969, Vol. XLIX, No. 1.
11. "Effect of Modifying Sub-Optimal Fluoride Concentration in Public Water Supply," J.E. Chrietberg and J.F. Lewis, Journal of the Georgia Dental Association, July 1962, 36:12-17.

IDAHO

12. "Fluorides and Dental Caries in Idaho; V, Ten Years of Fluoridation in Lewiston," Wesley O. Young, D.M.D., M.P.H., Newsletter, Idaho State Dental Association, February 1958.

ILLINOIS

13. "A Report on Thirteen Years of Water Fluoridation in Evanston, Illinois," J.R. Blayney, D.D.S., JADA, July 1960, Vol. 61, pp. 76-79.
14. "Fluorine and Dental Caries," J.R. Blayney, D.D.S., M.S., and Iden N. Hill, D.D.S., Special Issue of JADA, January 1967, Vol. 74, No. 2.
15. "Deciduous Teeth and Future Caries Experience," Iden N. Hill, D.D.S., J. Roy Blayney, D.D.S., Stuart O. Zimmerman, Ph.D., David E. Johnson, JADA, February 1967, 74:430-8.
16. "Evanston Fluoridation Study: Twelve Years Later," I.N. Hill, J.R. Blayney, and W. Wolf, Dental Progress, January 1961, 1(2)95-99.
17. "Effectiveness of Fluoridation," Harold N. Weinstein, D.D.S., Newsletter, Chicago Board of Health, December 1972, Vol. 12, No. 4.

INDIANA

18. "Benefits of Fluoridation Apparent in Fort Wayne," Jack Mollenkoff, D.D.S., The Monthly Bulletin, Indiana State Board of Health, February 1963.
19. "Fluoridation and Dental Caries in Indiana," Jack P. Mollenkoff, D.D.S., Journal of Indiana State Dental Association, March 1964, 43(3):109.

KANSAS

20. "Effect of Controlled Fluoridated Public Water Supplies on the Dental Caries Experience for Children Ages 9 Through 12 in Three Kansas Cities," Willard Bellinger, D.D.S., M.P.H., and James D. Mankin, B.A., D.D.S., Journal of the Kansas Dental Association, July 1965, 65(3):117-20.

MARYLAND

21. Research Notes, Arthur J. Bonito, University of Maryland, Baltimore, Maryland, Data collected in 1975 under PHS Contract No. 1 DH 34051.
22. "Fluoridation in Maryland," Richard C. Leonard, D.D.S., M.S.P.H., Maryland State Department of Health Monthly Bulletin, May 1963, Vol. 35:1-4.
23. "Dental Health in Baltimore," Robert E. Farber, M.D., Maryland Medical Journal, April 1966, 15:117.

MASSACHUSETTS

24. "Something to Chew On," This Week in Public Health (Mass.), October 14, 1963, 41:403.

MICHIGAN

25. "Effect of Fluoridated Public Water Supplies on Dental Caries Prevalence," (Tenth Year of the Grand Rapids-Muskegon Study), Francis A. Arnold, D.D.S., H. Trendley Dean, D.D.S., Philip Jay, D.D.S., John W. Knutson, D.D.S., Dr. P.H., Public Health Reports, July 1956, Vol. 71, No. 7, pp. 652-658.
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27. "Fifteenth Year of the Grand Rapids Fluoridation Study," F.A. Arnold, Jr., D.D.S., R.C. Likins, D.D.S., A.L. Russell, D.D.S., and D.B. Scott, D.D.S., JADA, December 1962, Vol. 65, pp. 780-785.
28. "Post-eruptive Effects of Fluoridation on First Permanent Molars of Children in Grand Rapids, Michigan, Richard L. Hayes, D.D.S., M.P.H., Norman W. Littleton, D.D.S., and Carl L. White, American Journal of Public Health, February 1957, Vol. 47, No. 2, pp. 192-199.
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MINNESOTA

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31. "Silver Bay Reports, Following Ten Years of Fluoridated Water," William A. Jordan, D.D.S., M.P.H., Vincent A. Pugnier, D.D.S., and Dennis P. Mc Kee, D.D.S., M.P.H., Northwest Dentistry, January-February 1969, 48(1):7-10. (Also paper by William Jordan, D.D.S., M.P.H., June 1964, "Silver Bay Reports Fluoridation of Community Water Reduces Tooth Decay, After 5 Years of Water Fluoridation.")
32. "The Rush City Report - Ten Years of Fluoridated Water," William A. Jordan, D.D.S., M.P.H., a paper from the Minnesota Department of Health, July 1964.
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36. "Eighteen Years of Fluoridated Water as a Caries Inhibitor - Red Lake Falls," William A. Jordan, D.D.S., M.P.H., Northwest Dentistry, July-August 1970, Vol. 49:231-234.

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MISSOURI

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MONTANA

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NEW YORK

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