

## C9: Cancer Studies: Baseline Data

### 1. Cohort and Ecological Studies

Study Details	Outcome Details	Inclusion/Exclusion Criteria	Confounding Factors	Baseline Data
<b>Author (year)</b> Chilvers (1985) <b>Country of study</b> UK <b>Geographic location</b> 67 small areas in England <b>Year study started</b> 1969 <b>Study length (years)</b> 4 <b>Study design:</b> Ecological	<b>Outcome:</b> Cancer mortality from oesophagus, lung, ovary, skin, stomach, pancreas, breast, rectum, bladder, buccal cavity, kidney and intestinal cancer and cancer mortality from all causes <b>Method of outcome assessment:</b> Population figures and numbers of deaths provided by OPCS (ONS)	<b>Inclusion criteria</b> None stated <b>Exclusion criteria</b> None stated	<b>Other sources of fluoride:</b> Not stated <b>Social class:</b> Not stated <b>Ethnicity:</b> Not stated <b>Other confounding factors:</b> High fluoride areas matched with low fluoride areas for urban/rural status, and as far as possible for population size, as far as possible areas chosen to be geographically close, furthest apart 85 miles, age.	<b>Exposure:</b> Water fluoride level <i>Group 1:</i> $\geq 1.0$ (Natural) <i>Group 2:</i> 0.5-0.99(Natural) <i>Group 3:</i> $\leq 0.2$ (Natural) <i>Group 4:</i> $\leq 0.1$ (Natural) <b>No of subjects:</b> Not stated <b>Age</b> Not stated
<b>Author (year)</b> Cohn (1992) <b>Country of study</b> USA <b>Geographic location</b> New Jersey <b>Year study started</b> 1979 <b>Study length (years)</b> 8 <b>Study design:</b> Ecological	<b>Outcome:</b> Cases of osteosarcoma <b>Method of outcome assessment:</b> Cases identified from New Jersey Cancer Registry, 1980 census used as source of population data.	<b>Inclusion criteria</b> Not stated <b>Exclusion criteria</b> Not stated	<b>Other sources of fluoride:</b> Not stated <b>Social class:</b> Not stated <b>Ethnicity:</b> Not stated <b>Other confounding factors:</b> Results presented by age and sex	<b>Exposure:</b> Proportion of the population receiving fluoridated water from at least the early 1970s to 1987 <i>Group 1:</i> $>85\%$ <i>Control:</i> $<10\%$ <b>No of subjects:</b> <i>Group1:</i> 218588 <i>Control:</i> 502759 <b>Age</b> $<20$
<b>Author (year)</b> Glatre (1979) <b>Country of study</b> Norway <b>Geographic location</b> 70 Municipalities in Southern Norway <b>Year study started</b> 1971 <b>Study length (years)</b> 4 <b>Study design:</b> Ecological	<b>Outcome:</b> Mortality from oral or pharyngeal cancer (ICD 140-149) <b>Method of outcome assessment:</b> Age-adjusted mortality rate for oral and pharyngeal cancer provided by the Central Bureau of Statistics of Norway	<b>Inclusion criteria</b> Areas where $> 80\%$ of population get water from registered supplies <b>Exclusion criteria</b> None stated	<b>Other sources of fluoride:</b> Not stated <b>Social class:</b> Not stated <b>Ethnicity:</b> Not stated <b>Other confounding factors:</b> Smoking and alcohol consumption, working and consuming water outside the home, urban and rural differences, differences in population size, age.	<b>Exposure:</b> Weighted average fluoride concentration of registered water supplies <i>Group 1:</i> 0.11-0.50(Natural) <i>Group 2:</i> 0.06-.010(Natural) <i>Group 4:</i> 0-0.05(Natural) <b>No of subjects:</b> <i>Group 1:</i> 207300 <i>Group 2:</i> 811600 <i>Group 4:</i> 931800 <b>Age</b> Not stated

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<p><b>Author (year)</b> Hoover (1976)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Texas</p> <p><b>Year study started</b> 1950</p> <p><b>Study length (years)</b> 19</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Mortality from cancer of the nose and nasal sinuses, eye, brain, connective tissue, colon, bladder, oesophagus, skin, uterus, liver and bile duct, rectum, ovary, stomach, nasopharynx, lung, thyroid, cervix, bone, kidney, lip, breast, larynx, leukaemia, pancreas, testis, salivary gland, prostate, mouth and throat, other and unspecified sites, and, all sites. Also mortality from melanoma, lymphoma, Hodgkin's disease, multiple myeloma and cancer of other endocrine organs.</p> <p><b>Method of outcome assessment:</b> Age-race and sex- specific numbers of cancer deaths, coded according to the ICD were provided by the National Center for Health statistics</p>	<p><b>Inclusion criteria</b> White subjects only</p> <p><b>Exclusion criteria</b> Counties with artificially fluoridated water</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Counties subdivided by percent urbanisation and socio-economic categories based on median number of years of school completed by the adult population of each county</p> <p><b>Ethnicity:</b> White subjects only</p> <p><b>Other confounding factors:</b> Age</p>	<p><b>Exposure:</b> Level of fluoride that &gt;2/3 of the population were exposed to</p> <p><i>Group 1:</i> &gt;=2.0 (Natural) <i>Group 2:</i> 1.3-1.9 (Natural) <i>Group 3:</i> 0.7-1.2 (Natural) <i>Group 4:</i> &lt;0.7 (Natural)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> All ages</p>
<p><b>Author (year)</b> Hrudey (1990)</p> <p><b>Country of study</b> Canada</p> <p><b>Geographic location</b> Calgary (non F) and Edmonton (F), Alberta</p> <p><b>Year study started</b> 1970</p> <p><b>Study length (years)</b> 18</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Osteosarcoma incidence</p> <p><b>Method of outcome assessment:</b> Cases identified through Alberta Cancer Board cancer registry</p>	<p><b>Inclusion criteria</b> None stated</p> <p><b>Exclusion criteria</b> None stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Age</p>	<p><b>Exposure:</b> Water fluoride content</p> <p><i>Group 1:</i> 1(Artificial) <i>Group 4:</i> 0.3(Natural)</p> <p><b>Year of fluoridation:</b> 1967</p> <p><b>No of subjects:</b> <i>Group 1:</i> 9629630 <i>Group 4:</i> 10000000</p> <p><b>Age</b> All ages</p>
<p><b>Author (year)</b> Kinlen (1975)</p> <p><b>Country of study</b> UK</p> <p><b>Geographic location</b> England and Wales</p> <p><b>Year study started</b> 1961</p> <p><b>Study length (years)</b> 7</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Kidney, stomach, oesophagus, bone, colon, bladder, thyroid, breast and rectum cancer</p> <p><b>Method of outcome assessment:</b> Cancer incidence data supplied by OPCS from National cancer registration scheme</p>	<p><b>Inclusion criteria</b> Local authority districts with water fluoride &gt; 1ppm Group 4 areas for each high fluoride area, with water fluoride &lt;0.2 ppm Group 4 area, area nearest of similar size Similar procedure for areas of high/medium (0.5-0.99), with matched Group 4 areas &lt;0.1ppm</p> <p><b>Exclusion criteria</b> None stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Areas matched on urban/rural, age standardised, presented by sex.</p>	<p><b>Exposure:</b> Water fluoride level</p> <p><i>Group 1:</i> 1 <i>Group 2:</i> 0.5-0.99 <i>Group 3:</i> &lt;0.2 (Natural) <i>Group 4:</i> &lt;0.1(Natural)</p> <p><b>No of subjects:</b> <i>Group 1:</i> 482398 <i>Group 2:</i> 779054 <i>Group 3:</i> 510045 <i>Group 4:</i> 896625</p> <p><b>Age</b> All ages</p>

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<p><b>Author (year)</b> Lynch (1985)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Iowa</p> <p><b>Year study started</b> 1969</p> <p><b>Study length (years)</b> 12</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Incidence of breast cancer, bladder cancer, prostate cancer, colon cancer, lung cancer, rectum cancer, cancer of all other sites and cancer of all sites combined</p> <p><b>Method of outcome assessment:</b> Cases of cancer identified through the Iowa Cancer Information System, population data provided by the census bureau for 1970 &amp; 1980, Rushton's estimates for inter-census years used for other years. Address algorithm used to classify cancer case exposure</p>	<p><b>Inclusion criteria</b> Areas with 1970 pop &gt;1000 Fluoride concentration maintained at 0.9-1.2 ppm from time of initiation of fluoridation Divided into 2 groups: 1970 pops &gt; and &lt; 10 000</p> <p><b>Exclusion criteria</b> Areas that failed to maintain fluoridation programmes for any period of &gt; 6 months</p>	<p><b>Other sources of fluoride:</b> Education, marital status, occupation, foreign born, family income</p> <p><b>Social class:</b> Education, marital status, occupation, foreign born, family income</p> <p><b>Ethnicity:</b> 98.5% of Iowa's 1970 population was white, so no race adjustment performed</p> <p><b>Other confounding factors:</b> Initiation of water treatment processes, water samples analysed for several volatile organics, trace elements and heavy metals, primary source of drinking water, distance to nearest city with pop. &gt; 25 00, % change in pop between 1980 and 1970</p>	<p><b>Exposure:</b> <b>Study 1:</b> Length of time from initiation of artificial water fluoridation until 1981</p> <p><b>Low population (&lt;10 000) group:</b> <i>Group 1:</i> 0-9(Artificial) <i>Group 2:</i> 10-19(Artificial) <i>Group 3:</i> 20+ (Artificial)</p> <p><b>High population group:</b> <i>Group 1:</i> &lt;20(Artificial) <i>Group 2:</i> &gt;20(Artificial)</p> <p><b>Study 2:</b> Natural water fluoride level, and minimum length of exposure to this fluoride level <i>Group 1:</i> &lt;=0.5, exp. 1968-81(Natural) <i>Group 2:</i> &gt;=1.0, exp. 1968-81(Natural) <i>Group 3:</i> &lt;=0.5, exp. 1950-81 (Natural) <i>Group 4:</i> &gt;=1.0, exp. 1950-81(Natural)</p> <p><b>Age:</b> All ages</p>
<p><b>Author (year)</b> Mahoney (1991)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> New York state, exclusive of New York City</p> <p><b>Year study started</b> 1975</p> <p><b>Study length (years)</b> 12</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Bone cancer incidence Osteosarcoma incidence</p> <p><b>Method of outcome assessment:</b> United States census data used to provide population denominator figures, cases of bone cancer identified through New York State Cancer Registry</p>	<p><b>Inclusion criteria</b> None stated</p> <p><b>Exclusion criteria</b> None stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Not stated</p>	<p><b>Exposure:</b> Fluoridated water <i>Group 1:</i> High(Artificial) <i>Group 2:</i> Low(Natural) <i>Group 3:</i> High(Artificial) <i>Group 4:</i> Low(Natural)</p> <p><b>Year of fluoridation:</b></p> <p><b>No of subjects:</b> <i>Group 1:</i> 17600000 <i>Group 2:</i> 7500000 <i>Group 3:</i> 17403846 <i>Group 4:</i> 9142857</p> <p><b>Age</b> &lt;30 given in exposed 1 &amp; 2, 30 + given in exposed 3 &amp; 4</p>

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<p><b>Author (year)</b> Richards (1979)</p> <p><b>Country of study</b> Australia</p> <p><b>Geographic location</b> 10 fluoridated and 10 non-fluoridated areas in New South Wales</p> <p><b>Year study started</b> 1970</p> <p><b>Study length (years)</b> 2</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Deaths from Malignant neoplasms</p> <p><b>Method of outcome assessment:</b> Deaths from malignant neoplasms obtained from Australian Bureau of Statistics. Annual average number of deaths used as numerator, population at 1971 census used as denominator.</p>	<p><b>Inclusion criteria</b> None stated</p> <p><b>Exclusion criteria</b> Areas which had been fluoridated for &lt;5 years Areas with naturally fluoridated water supplies</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Areas matched on population size where possible, age and sex.</p>	<p><b>Exposure:</b> Water fluoride level <i>Group 1:</i> High(Artificial) <i>Group 4:</i> Low(Natural)</p> <p><b>No of subjects:</b> <i>Group 1:</i> 163616 <i>Group 4:</i> 192322</p> <p><b>Age</b> Not stated</p>
<p><b>Author (year)</b> *Smith (1980)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> 20 US cities, 10 F, 10 non-F</p> <p><b>Year study started</b> 1950</p> <p><b>Study length (years)</b> 20</p> <p><b>Study design:</b> Ecological</p>	<p><b>Outcome:</b> Deaths from cancer</p> <p><b>Method of outcome assessment:</b> Not stated</p>	<p><b>Inclusion criteria</b> 10 largest fluoridated cities in US 10 largest non-fluoridated cities in US, with death rates &gt;155 per 100 000</p> <p><b>Exclusion criteria</b> None stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Group 4 led for using indirect standardisation</p> <p><b>Other confounding factors:</b> Age, sex</p>	<p><b>Exposure:</b> Water fluoride level, exposed 1 &amp; 2 used for 1950 data, exposed 3 &amp; 4 for 1970 data (study before after not traditional cohort)</p> <p><i>Group 1:</i> Low(Natural) <i>Group 2:</i> Low(Natural) <i>Group 3:</i> High (Artificial) <i>Group 4:</i> Low(Natural)</p> <p><b>Year of fluoridation:</b></p> <p><b>No of subjects:</b> <i>Group 1:</i> 11885800 <i>Group 2:</i> 6290100 <i>Group 3:</i> 10766600 <i>Group 4:</i> 7347700</p> <p><b>Age</b> All ages</p>

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### 2. Before-After Studies

Study Details	Outcome Details	Inclusion/ Exclusion Criteria	Confounding Factors	Baseline Group Characteristics	Final Group Characteristics
<b>Author (year)</b> *Chilvers (1983) <b>Country of study</b> USA <b>Geographic location</b> 35 US cities <b>Year study started</b> 1950 <b>Year study ended:</b> 1970	<b>Outcome:</b> Death from cancer <b>Method of outcome assessment:</b> Numbers of deaths from cancer abstracted from successive volumes of Vital Statistics in the United States	<b>Inclusion criteria</b> 10 largest fluoridated cities in US 10 largest non-fluoridated cities in US, with death rates >155 per 100 000 10 additional fluoridated and 5 additional non-fluoridated areas 5 additional Group 4 areas <b>Exclusion criteria</b> None stated 10 additional fluoridated and 5 additional non-fluoridated areas	<b>Other sources of fluoride:</b> Not stated <b>Social class:</b> Not stated <b>Ethnicity:</b> Standardised for ethnic group <b>Other confounding factors:</b> Rates also standardised for age and sex	<b>Fluoride level (ppm):</b> <i>Group 1:Low (Natural)</i> <i>Group 4: Low (Natural)</i> <b>Year fluoridation initiated:</b> 1951-1964 <b>No of subjects:</b> Not stated <b>Age</b> Not stated	<b>Fluoride level (ppm):</b> <i>Group 1:High (Artificial)</i> <i>Group 4: Low(Natural)</i> <b>No of subjects:</b> Not stated <b>Age</b> Not stated
<b>Author (year)</b> *Chilvers (1982) <b>Country of study</b> USA <b>Geographic location</b> 20 US cities 10 F, 10 non-F <b>Year study started</b> 1958 <b>Year study ended:</b> 1972	<b>Outcome:</b> Mortality from cancer of the digestive organs, respiratory system, breast, genital organs, urinary organs, leukaemia and aleukaemia, other malignant neoplasms and all malignant neoplasms <b>Method of outcome assessment:</b> Deaths from cancer by site, obtained from: Vital statistics of the United States, deaths from 1958-62 related to 1960 pop data and from 1968-72 related to 1970 pop data.	<b>Inclusion criteria</b> 10 largest fluoridated cities in US 10 largest non-fluoridated cities in US, with death rates >155 per 100 000 <b>Exclusion criteria</b> None stated	<b>Other sources of fluoride:</b> Not stated <b>Social class:</b> Not stated <b>Ethnicity:</b> Results standardised for ethnic group <b>Other confounding factors:</b> Standardised for age and sex	<b>Fluoride level (ppm):</b> <i>Group 1:Low</i> <i>Group 4: Low</i> <b>No of subjects:</b> Not stated <b>Age</b> Not stated	<b>Fluoride level (ppm):</b> <i>Group 1:High</i> <i>Group 4: Low</i> <b>No of subjects:</b> Not stated <b>Age</b> Not stated
<b>Author (year)</b> Cook-Mozaffari (1981) <b>Country of study</b> England <b>Geographic location</b> Birmingham (F), London, Bristol, Liverpool, Manchester, Leeds, Sheffield (Non-F) <b>Year study started</b> 1959 <b>Year study ended:</b> 1978	<b>Outcome:</b> Age adjusted cancer deaths males and females, 1959-63 & 1969-73 and for 1969-73 & 1974-78 <b>Method of outcome assessment:</b> Cancer data taken from Registrar General' area mortality tables & from volumes of Statistical Review of England and Wales. Pop. Data by age & sex obtained from 1961 & 1971 national censuses & estimates for individual years from OPCS	<b>Inclusion criteria</b> Cities with populations > 400 000 <b>Exclusion criteria</b> None stated	<b>Other sources of fluoride:</b> Not stated <b>Social class:</b> Not stated <b>Ethnicity:</b> Not stated <b>Other confounding factors:</b> Age standardised and sex stratified	<b>Fluoride level (ppm):</b> <i>Group 1:Low (Natural)</i> <i>Group 4: Low (Natural)</i> <b>Year fluoridation initiated:</b> 1964 <b>No of subjects:</b> Not stated <b>Age</b> Not stated	<b>Fluoride level (ppm):</b> <i>Group 1:High (Artificial)</i> <i>Group 4: Low(Natural)</i> <b>No of subjects:</b> Not stated <b>Age</b> Not stated :

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Study Details	Outcome Details	Inclusion/ Exclusion Criteria	Confounding Factors	Baseline Group Characteristics	Final Group Characteristics
<p><b>Author (year)</b> *Doll (1977)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Twenty cities in America, 10 of which had fluoridated water</p> <p><b>Year study started</b> 1950</p> <p><b>Year study ended:</b> 1970</p>	<p><b>Outcome:</b> Deaths from cancer</p> <p><b>Method of outcome assessment:</b> Not stated</p>	<p><b>Inclusion criteria</b> 10 largest fluoridated cities in US</p> <p>10 largest non-fluoridated cities in US, with death rates &gt;155 per 100 000</p> <p><b>Exclusion criteria</b> None stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Raw data presented separately for whites and non-whites</p> <p><b>Other confounding factors:</b> Age, sex</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i>Low <i>Group 4:</i> low</p> <p><b>No of subjects:</b> <i>Group 1:</i> 11885800 <i>Group 4:</i> 6290000</p> <p><b>Age</b> Not stated</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i>High <i>Group 4:</i> Low</p> <p><b>No of subjects:</b> <i>Group 1:</i> 10767000 <i>Group 4:</i> 7348000</p> <p><b>Age</b> Not stated</p>
<p><b>Author (year)</b> Goodall (1980)</p> <p><b>Country of study</b> New Zealand</p> <p><b>Geographic location</b> Auckland, Manukau, Hamilton, Wellington, Waimairi County, Dunedin (F), Whangarei, Wanganui, Nelson and Christchurch city (Non-F)</p> <p><b>Year study started</b> 1961</p> <p><b>Year study ended:</b> 1976</p>	<p><b>Outcome:</b> Cancer mortality</p> <p><b>Method of outcome assessment:</b> Registered cancer deaths</p>	<p><b>Inclusion criteria</b> Aged 45 or more</p> <p><b>Exclusion criteria</b> Not stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Rates standardised for age and sex</p>	<p><b>Exposure:</b> Water fluoride level <i>Group 1:</i> low (natural) <i>Control:</i> low (natural)</p> <p><b>No of subjects:</b> <i>Group 1:</i>1470791 <i>Control:</i>73 228</p> <p><b>Age</b> 45+</p>	<p><b>Exposure:</b> Water fluoride level <i>Group 1:</i> high (artificial) <i>Control:</i> low (natural)</p> <p><b>No of subjects:</b> <i>Group 1:</i>180 855 <i>Control:</i> 7 901</p> <p><b>Age</b> 45+</p>
<p><b>Author (year)</b> Hoover (1991)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Areas in US covered by the SEER programme with known water fluoride concentrations</p> <p><b>Year study started</b> 1973</p> <p><b>Year study ended:</b> 1987</p>	<p><b>Outcome:</b> Incidence of osteosarcoma (males only) and bone and joint cancers (both sexes)</p> <p><b>Method of outcome assessment:</b> Cases reported to to Surveillance, Epidemiology and End Results (SEER) program of the National Cancer Institute (NCI)</p>	<p><b>Inclusion criteria</b> Cases of bone and joint cancers and osteosarcoma reported to the SEER programme of the National Cancer Institute</p> <p><b>Exclusion criteria</b> Not stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Not stated</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i>&lt;10% pop, &lt;0.3 (Natural) <i>Group 3:</i>&gt;60% pop, F&lt;1955 (Artificial) <i>Group 4:</i> &gt;60% pop, F&gt;=1966 (Artificial)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> All ages</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i>&lt;10% pop, &lt;0.3 (Natural) <i>Group 3:</i>&gt;60% pop, F&lt;1955(Artificial) <i>Group 4:</i> &gt;60% pop, F&gt;=1966(Artificial)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> All ages</p>

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<p><b>Author (year)</b> Schlesinger (1956)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Newburgh &amp; Kingston, New York State</p> <p><b>Year study started</b> 1944</p> <p><b>Year study ended:</b> 1954</p>	<p><b>Outcome:</b> Deaths from cancer</p> <p><b>Method of outcome assessment:</b> Not stated</p>	<p><b>Inclusion criteria</b> Not stated</p> <p><b>Exclusion criteria</b> Not stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Not stated</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i> <i>Group 4:</i></p> <p><b>Year fluoridation initiated:</b> 1945</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> All</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i> 1-1.2 (Artificial) <i>Group 4:</i> &lt;0.2(Natural)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> All</p>
<p><b>Author (year)</b> Raman (1977)</p> <p><b>Country of study</b> Canada</p> <p><b>Geographic location</b> Areas in Canada, selected as outlined in inclusion criteria (pop. &gt;25 000)</p> <p><b>Year study started</b> 1954</p> <p><b>Year study ended:</b> 1973</p>	<p><b>Outcome:</b> Mortality from cancer (all malignant neoplasms)</p> <p><b>Method of outcome assessment:</b> Cases identified through Heath Division of Statistics, Candad, data, population data provided from census data</p>	<p><b>Inclusion criteria</b> Urbanised core of each Census Metropolitan area Sections of fringe (area outside core) also included if a municipality of &gt;25000 was in this area or a portion of a municipality listed as urbanised core lay in the fringe</p> <p><b>Exclusion criteria</b> Not stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Age and sex</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i> fluoridated &lt;1959 (Artificial) <i>Group 2:</i> Fluoridated 1959-63(Artificial) <i>Group 3:</i> Fluoridated 1964-67 (Artificial) <i>Group 4:</i> Not fluoridated (Natural)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> Not stated</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i> fluoridated &lt;1959 (Artificial) <i>Group 2:</i> Fluoridated 1959-63(Artificial) <i>Group 3:</i> Fluoridated 1964- 67(Artificial) <i>Group 4:</i> Not fluoridated(Natural)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> Not stated</p>
<p><b>Author (year)</b> *Yiamouyiannis (1977)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> 20 Cities in US, 10 F, 10 non-F</p> <p><b>Year study started</b> 1952</p> <p><b>Year study ended:</b> 1969</p>	<p><b>Outcome:</b> Death from cancer ages 0-24, 25-44, 45-64 and 65+</p> <p><b>Method of outcome assessment:</b> State/county/city health departments provided annual cancer deaths, missing data supplied by linear extrapolation/interpolation. Age, race &amp; sex specific pops obtained by linear interpolation of census figures obtained from US Census Bureau</p>	<p><b>Inclusion criteria</b> 10 largest fluoridated cities in US 10 largest non-fluoridated cities in US, with death rates &gt;155 per 100 000</p> <p><b>Exclusion criteria</b> None stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Author shows that % non- white increased in fluoridated areas over study period, states that regression analysis performed of increase in age- adjusted cancer rate against increase in % white population, found no correlation</p> <p><b>Other confounding factors:</b> Not stated</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i> Low (Natural) <i>Group 4:</i> Low (Natural)</p> <p><b>Year fluoridation initiated:</b> 1952-56</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> 0-24, 25-44, 45-64, 65+</p>	<p><b>Fluoride level (ppm):</b> <i>Group 1:</i> High (Artificial) <i>Group 4:</i> Low(Natural)</p> <p><b>No of subjects:</b> Not stated</p> <p><b>Age</b> 0-24, 25-44, 45-64, 65+</p>

## C9: Cancer Studies: Baseline Data

### 3. Case-Control Studies

Study Details	Case and Group 4 selection	Inclusion/Exclusion Criteria	Confounding Factors	Baseline Data	
<p><b>Author (year)</b> Gelberg (1995)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> New York State</p> <p><b>Year study started</b> 1978</p> <p><b>Year study ended</b> 1988</p>	<p><b>Case-definition:</b> Cases of osteosarcoma newly diagnosed from January 1978 to December 1988 identified from the New York Cancer Registry. Results presented separately for questionnaires completed by subjects and parents.</p> <p><b>Method of Group 4 selection:</b> Group 4s were randomly selected from live birth records maintained by the New York State Department of Health, had to survive until matched pairs subject's age at diagnosis</p> <p><b>Matching:</b> Matched by year of birth and sex</p> <p><b>Ratios of cases to Group 4s:</b> 1:1</p>	<p><b>Inclusion criteria</b> Newly diagnosed cases of osteosarcoma Aged less than 24 years at time of diagnosis Resident in New York state excluding New York City</p> <p><b>Exclusion criteria</b> Subjects with pre-existing cancers Resident in New York state excluding New York City</p>	<p><b>Other sources of fluoride:</b> Lifetime exposure to fluoride from tablets, mouthrinses, toothpaste, dental treatments and total fluoride measured in cases and Group 4s</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Not stated</p>	<p><b>Number of subjects</b> <i>Cases:</i> 55 <i>Group 4s 1:</i> 56</p> <p><b>Age:</b> &lt;24</p>	<p><b>Exposure 1:</b> Lifetime exposure to water fluoride of 0mg</p> <p><b>Exposure 2:</b> Lifetime exposure to water fluoride of 1-1850mg</p> <p><b>Exposure 3:</b> Lifetime exposure to water fluoride of 1851-3385mg</p>
<p><b>Author (year)</b> McGuire (1991)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Iowa and Nebraska</p> <p><b>Year study started</b> 1980</p> <p><b>Year study ended</b> 1990</p>	<p><b>Case-definition:</b> Patients diagnosed with osteosarcoma between 1980 and 1990. Cases identified through University of Iowa cancer registry and medical records of division of orthopaedics, St. Joseph's Hospital, Omaha, Nebraska</p> <p><b>Method of Group 4 selection:</b> Patients of appropriate orthopaedic department</p> <p><b>Matching:</b> Age, gender and county of residence at time of diagnosis</p> <p><b>Ratios of cases to Group 4s:</b> 1:1</p>	<p><b>Inclusion criteria</b> Aged&lt;=40 at diagnosis</p> <p><b>Exclusion criteria</b> Patients with any prediagnosis history of radiation therapy Patients with history of kidney dialysis</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Other confounding factors:</b> Not stated</p>	<p><b>Number of subjects</b> <i>Cases:</i> 22 <i>Group 4s 1:</i> 22</p> <p><b>Age range (mean)</b> 0-40</p>	<p><b>Exposure 1:</b> More than 1/3 of life at &gt;0.7ppm</p> <p><b>Exposure 2:</b> Lifetime exposure greater than 0.7ppm</p> <p><b>Exposure 3:</b> More than 1/3 of childhood at 0.7ppm</p>
<p><b>Author (year)</b> Moss (1995)</p> <p><b>Country of study</b> USA</p> <p><b>Geographic location</b> Wisconsin</p> <p><b>Year study started</b> 1979</p> <p><b>Year study ended</b> 1989</p>	<p><b>Case-definition:</b> Primary osteosarcoma tumours occurring in Wisconsin reported to the Wisconsin Cancer Reporting System between 1979-89</p> <p><b>Method of Group 4 selection:</b> 2 groups of Group 4s: brain and nervous system tumours and digestive system cancers, reported to Wisconsin cancer reporting system during the same period as the cases</p> <p><b>Matching:</b> Match according to age in 0-14 year and then 10 year age-groups, until &gt;84, sex and race</p> <p><b>Ratios of cases to Group 4s:</b> 1:4</p>	<p><b>Inclusion criteria</b> Not stated</p> <p><b>Exclusion criteria</b> Not stated</p>	<p><b>Other sources of fluoride:</b> Not stated</p> <p><b>Social class:</b> Not stated</p> <p><b>Ethnicity:</b> Matched on race</p> <p><b>Other confounding factors:</b> Population size, radiation levels, age, sex</p>	<p><b>Number of subjects</b> <i>Cases:</i> 167 <i>Group 4s 1:</i> 647 <i>Group 4s 2:</i> 342</p> <p><b>Age range (mean)</b> Not stated</p>	<p><b>Exposure 1:</b> Water fluoride level &gt;0.7, estimated according to area of residence</p> <p><b>Exposure 2:</b> Water fluoride level &lt;0.7, estimated according to area of residence</p> <p><b>Exposure 3:</b> Odds ratio adjusted for population, age, radiation and gender</p>