Montreal Gazette, Friday May 12, 1989.

OTTAWA (CP) - Children born near a nuclear power station on Lake Huron have 3.5 times the normal rate of leukemia, according to figures made public yesterday. The study conducted for the Atomic Energy Control Board, found the higher rate among children born near the Bruce generating station at Douglas Point. But the scientist who headed the research team cautioned that the sample size was so small that that actual result could be much lower - or nearly four times higher.

Dr. Aileen Clarke said that *while the Douglas Point results showed 3.5 cases of leukemia where one would have been normal* **[jh - footnote 1]** *, a larger sample size could place the true figure somewhere in the range from 0.4 cases to 12.6 cases.* **[jh - footnote 2]**

Clarke will do a second study to look at leukemia rates among children aged five to 14. The first study was on children under age 5.

Clarke was asked whether parents should worry about the possibility that childhood leukemia rates could be over 12 times higher than normal around Douglas point. "My personal opinion is, not at this time," she said. She suggested that parents worried by the results should put them in context with other causes of death in children.

"Accidents are by far and away the chief cause of death in children, and what we're talking about is a very much smaller risk than that of death due to accidents," she said.

The results were detailed in a report on a year-long study into leukemia rates among children born within a 25-kilometre radius of five Ontario nuclear facilities. The study was ordered after British scientists reported leukemia rates among children born near nuclear processing plants were nine times higher than was normal. The Ontario study was based on 795 children who died of leukemia between 1950 and 1986 and 951 children who were diagnosed with cancer between 1964 and 1985.

It showed a lower-than-normal rate among children born near the Chalk River research station and only slightly higher than expected rates at Elliot Lake and Port Hope, uranium mining and conversion facilities.

At the Pickering generating station, the *ratio was slightly higher still, at 1.4 - meaning there were **1.4** cases for every expected case. But the confidence interval - the range of reliability - for that figure set the possible range between **0.8** cases and **2.2** cases.* **jh - footnote 3]**

--foot notes by JH ----------

[1] SIR = **3.5** = $\frac{\text{Observed}}{\text{Expected}}$ It is not O=3.5, E=1, since one cannot observe a fractional number of cases): SIR = 3.5; she simply scaled the O and the E so that E (reference "rate") is 1.

[2] CI = $\frac{\text{CI derived from O}}{\text{Expected}}$ = 0.4 to 12.6 (a 31-fold range)

O is an integer . By trial and error, starting with O=1, and "trying all the CI's on for size" until one gets a 31-fold range, one comes to **O=2** (CI 0.242 to 7.22, range 31 fold). Dividing 2 by 3.5 gives an E of 0.57. Check: 95% CI for SIR (0.242 to 7.22) / 0.57 = **0.4 to 12.6.**

[3] SIR = **1.4** = O/E CI = (CI derived from O) /E has 0.8 to 2.2

This 2./0.8= 2.75-fold uncertainty comes from uncertainty generated by O. Examine range of 95% CI associated with each possible value of O, until come to 10.67 to 28.45 when **O=18**. Divide 18 by 1.4 to get E = 12.8. Check 95% CI 10.67 to 28.45)/12.8 = **0.8 to 2.2**.

Comment: It is interesting that it is the more extreme, but much less precise, SIR of 3.5, based on O=2, E =0.57 that made the headline, while the less extreme, but much more precise, SIR of 1.4, based on O=18, E =12.8 was relegated to the last paragraph.