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THE PORT HOPE PROJECT - AN ENVIRONMENTAL IMPACT STUDY\*

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Abstract - The "Welcome Residue Area", one of a number of dumpsites maintained by Eldorado Nuclear Limited in the Port Hope area was the subject of this study. Radium and uranium residues had been deposited therein between 1949 and 1954 resulting in exposure rates as high as 40mR/hr within the dump area.

Dry seed and rising one-year-old seedlings for White spruce, White pine and Scotch pine were located in an area where the exposure rate to the seed was 6.8 mR/hr and to the seedling shoot and root 9.1 and 14.1 mR/hr respectively. A comparable control area was selected where exposure rates varied from 0.02 - 0.03 mR/hr.

Seedlings were sampled at 30-day intervals for a period of three months and seed at 60-day intervals with the last sampling period falling in late November of this year. The seeds have been retained for planting in early December at Orono Ontario. Germination of seed and survival studies on seedlings will be conducted.

Various parameters were used to assess the effect(s) of radiation on the species of seedlings employed. Initial results point to a reduction in fresh and dry weight for both root and shoot and a stimulation of new growth in the irradiated population relative to control.

A study of seed cones in a row of Scotch Pine (circa 12 years old) where exposure rates are in the order of 1.02 mR/hr for an estimated total dose of 17.9 R over a two-year developmental period have revealed some startling results. Seed-set in the irradiated averaged 23% as opposed to 85% for the controls.

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