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THE DEVELOPMENT OF COBALT THERAPY MACHINES IN CANADA

A cobalt beam therapy machine as discussed in this report is a machine designed to safely house a large source of radioactive Cobalt 60 and provide a means of accurately directing its gamma rays on previously chosen parts of the human body. Gamma radiation from Cobalt 60 has a high energy, and consequently it is very penetrating and can, therefore, be used effectively in the treatment of deep seated tumours without undue damage to surface tissue.

The usual source size is around 2,000 curies of Cobalt 60. In the early stages most sources were less than 2,000 curies whereas at present there is a tendency toward higher strength sources. This no doubt is due in part to improved availability, and somewhat higher specific activity of cobalt. A Cobalt 60 source of 2,000 curies provides a dosage which is comparable in total output with a radium source worth about \$50,000,000. The cobalt source sells for about \$12,000. The largest source yet supplied for therapy by Atomic Energy of Canada Limited is about 8,000 curies. It is also the largest in the world in this type of work.

Cobalt 60 therapy machines are particularly advantageous (compared with super voltage X-ray machines) because of the very low incidence of mechanical or electrical failure. They are simple in principle and can be operated by relatively inexperienced personnel. As such they appear to be especially suited to use in underdeveloped countries where skilled technicians and maintenance personnel are scarce.

The choice of patient to treat with cobalt machines is, of course, a clinical matter to be decided by the doctors in charge. Treatments can be directed towards cure, or palliation. Cobalt therapy machines are used primarily in the treatment of cancer.

Cobalt therapy machines were first developed and built in Canada. A machine was designed by Eldorado Mining and Refining, and at about the same time a machine