

was being designed by the Saskatchewan Cancer Commission. The Eldorado machine was designed and built for sale as part of a general programme. The Saskatchewan machine was designed for use in the clinic at Saskatoon, and not for sale. The Eldorado machine was installed and put into service at the Victoria Hospital in London, Ontario, in the fall of 1951. Although it was technically first in that it was first used in the treatment of patients, the time table on the two machines was such that they may be considered concurrent in development. The balance of this report will be confined to a description of the development insofar as Eldorado Mining and Refining was concerned, since these and later units are the ones which were developed for sale.

The Eldorado Mining and Refining group was composed of a number of physicists and engineers who had been active in the sale of radium and similar products to hospitals. This group subsequently in 1952 transferred to Atomic Energy of Canada Limited and became what is known now as the Commercial Products Division of Atomic Energy of Canada Limited. The Eldorado group had also been active in the sale of radioisotopes, including Cobalt 60 produced at Chalk River.

The specific activity of a material is an indication of the amount of activity which can be enclosed in a given mass, or volume. To produce a cobalt therapy machine one must first have a source of cobalt which is physically small and will, therefore, approximate a point source. For many years doctors throughout the world had used radium teletherapy machines to treat cancer. There was, therefore, a rather obvious suggestion to go from one or two curies of radium to 1 or 2 thousand curies of cobalt by a suitable design of machine. For such quantities radium was first too expensive, and second too bulky.

The mechanical design of the machine and the preparation of cobalt in the NRX reactor were undertaken in early 1950 after many discussions with prominent radiologists in Canada and the United States. A model of the first unit was displayed at the International Congress of Radiology in London, England, in July 1950, and at that time was demonstrated to Her Majesty the Queen (the present Queen Mother). The problem of designing a container for the source which would permit of safe loading and useage, as well as provide a beam defining mechanism to direct the rays, and a shutter system to close off the radiation, was not simple, nor had it been done before. The first such unit was completed during the summer of 1951. It was, and is known as the Eldorado model and is still, with only normal refinements, being sold on the world market.