COLLEGE OF ENGINEERING

Nuclear Science and Engineering

Background

The Gamma Knife Machine is located at the Avera Meckannan Hospital in South Dakota. The machine is used in treating brain tumors, epilepsy and abnormal blood vessel formation. The machine contains 192 Cobalt-60 with an activity of 34 Ci per source when newly refueled. These sources lose activity over time and must be decommissioned and replaced to keep the machine active.

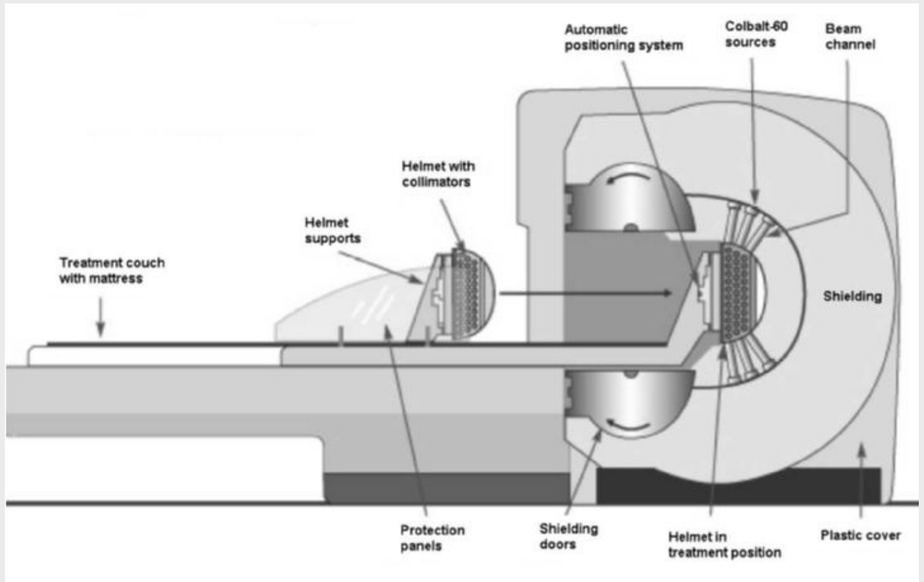
Objectives

- The team shall review exsisting decommissioning procedures and regulations.
- The team will create a comprehensive plan for removing the spent Co-60 sources from the hospital.
- The team will ensure that the decommissioning plan is completed per the reserved budget.
- The Team will ensure the safe transfer and storage of spent cobalt-60 sources.

Oregon State University

The Decommissioning of Nuclear Facilities: The Replacement of Cobalt-60 Sources in Gamma Knife Machines

Amal Kadem, Paul Van Gent, Seth Brannen, Corbyn Herrold
Mentored By: Dr.Alena Paulenova



For more details about the project and a detailed decommissioning procedure, scan the QR code

SCAN ME

Decommissioning Plan:

Hospital Management

The hospital wll be responsible for initiating the decommissioning process by contacting the radiation protection company, reviewing decommissoning regulations and drafting a saftey plan for hospital staff.

Government

The NRC is the only U.S. agency regulating the decommissioning. Most actions are permitted by the license of the facility, but the transfer of sources requires NRC forms 741, 748A, and 748C.

Safety and Protection Agency

We anticipate a Total Effective Dose Equivalent (TEDE) to our workers of *5.5 mrem*. We will be moving the sources by hand out of the machine into a remotely driven cart to move out of the hospital.

Once the used Co-60 has made it safely out of the facility, we will follow NRC regulations and transport it to the Waste Control Specialist Facility in Andrews Texas. The Co-60 will then be stored for about 30 years or until levels of radiation are safe.