

SEMINARIO REGIONAL SOBRE APLICACIONES AMBIENTALES  
DE LOS ISOTOPOS Y RADIACIONES PARA PAISES DE  
AMERICA LATINA Y EL CARIBE

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COLEÇÃO PTC  
DEVOLVER AO BALCÃO DE EMPRÉSTIMO

DISEÑO Y CONSTRUCCION DE UNA PLANTA PILOTO PARA  
TRATAMIENTO DE AGUAS SERVIDAS Y EFLUENTES  
INDUSTRIALES, MEDIANTE UN ACELERADOR DE ELECTRONES

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**Abstract**

In order to apply nuclear technology on environmental pollutants degradation and disinfection, IPEN developed a project including a pilot plant to treat wastewater and industrial effluents in the Electron Beam Facility, 1,5 MeV Dynamitron type, beam current variable from 0 to 25 mA to obtain the desired dose. The electron beam is scanned to give an uniform coverage to a 120 cm length and 4 cm width area.

Several experiments using high energy electron beam irradiation were performed in batch system. Samples were placed in Petri dishes and pyrex vessel to obtain different volumes. These results have encouraged the group to construct the plant.

The pilot plant was designed to receive 3 m<sup>3</sup>/h to 5 kGy dose. Calorimetric system to control the dose was developed and the absorbed dose is measured in the stream immediately before and after the beam exposition.

After homogeneization, wastewater is taken from a storage tank (0.5 m<sup>3</sup>) by means of a pump leading through a flow meter, being the flow rate previously determined to submit the wastewater against the electron beam. To obtain a homogeneous dose wastewater is then transported to an irradiation box especially built to this purpose.

Several parameters of the pilot plant and the Electron Beam Facility, such as current, voltage, flow, absorbed dose, are being monitored and recorded to determine the technical and economical evaluation of this methodology to be compared with conventional methods.