AbstractID: 8491 Title: Evaluation Of Radiation Exposure To The Personnel Of A Pet Facility.

Our Positron Emission Tomography (PET) has throughput of about 3000 patients per year. The pharmaceuticals are produced in-situ with a CS30 cyclotron. Fluordeoxiglucose (FDG) is produced for clinical studies; ^{15}O-water and ^{11}CO, and ^{13}N ammonia are produced for 250 research studies per year The number of studies performed, plus increasing requests for research studies raises concern about the radiation exposure to the personnel. The personnel can be divided in three distinctive and heterogeneous groups:

The technologists draw, transport, and inject doses, and scan the patients.

The radiopharmacist synthesizes the radiopharmaceuticals and performs their quality control.

The cyclotron group produces the precursor nuclides, operate and repair the accelerator and targets.

The personnel were requested to wear electronic dosimeters, document their activities, the amount and type of radionuclide handled while being monitored.

The technologists injected an average of 370mBq(10mCi) of FDG per patient and received an average dose of 11 to 13 μSv (1.1 to 1.3 mrem). A technologist working in a research study injected bolus of 3700Mbq(100mCi) of H_2 ^{15}O received an average dose of 39μSv(3.9mrem). In a different study a total of 1924MBq (52mCi) of $^{13}NH_4$, were injected resulting in a 790μSv (79mrem) dose to the technologist.

The radiopharmacist preparing seven synthesis sets and doing the quality control of those received 70μSv (7mrem) in a period of a week.

The cyclotron personnel are exposed to high radiation dose rates during cyclotron repairs. Two engineers replacing a part inside the cyclotron received 520μSv(52mrem) in a two hours job.