

BAYER SHIELD PROJECT

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BIOMEDICAL ENGINEERING DESIGN



BACKGROUND

Why?

- To better protect lab technicians from the effects of radioactive contrast during radiology scans
- To improve upon the initial shield design
- To improve workflow during SPECT scans for epilepsy patients

What?

- A tungsten shield for the Bayer MRXperion injector to guard against radiation
- A loading gun to fill syringes faster and safer
- A new proposed procedure for technicians to follow

INITIAL SOLUTION

- Had a tungsten thickness of 9 mm
- Very heavy and difficult to handle
- Not adaptable for different types of radioactive contrast

REDESIGNED SHIELD *(DETAILS ARE CONFIDENTIAL)*

Features:

- Interchangeable shields of different lengths and widths to adapt to different contrast fluids
- A sliding mechanism to hold the shield in place when the injector is flipped upside down
- Weight greatly reduced due to less aluminum being used on the device's base

LOADING GUN *(DETAILS ARE CONFIDENTIAL)*

Features:

- Interlocks with the injector syringe to allow for easy syringe filling
- Has a fine tuning mechanism to ensure accurate filling

NEW PROPOSED PROCEDURE *(DETAILS ARE CONFIDENTIAL)*

- Fill the injector syringe with radioactive contrast in the hospital's "hot room" with the new loading gun, rather than in the patient's room
- Place the appropriate syringe shield on the syringe at this time
- Insert the loaded syringe onto the MRXperion injector
- Lock the shield into place with the U-shaped holding mechanism

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OBSERVATIONS AT CHILDREN'S HOSPITAL

- Worked with technician Michael Czachowski
- There was a huge opportunity to save time in system currently in place
- By using a loading gun with the syringe in the hot room, prep time in the room reduced by 1 minute