# Small-Scale Reactor for the Production of Medical Isotopes

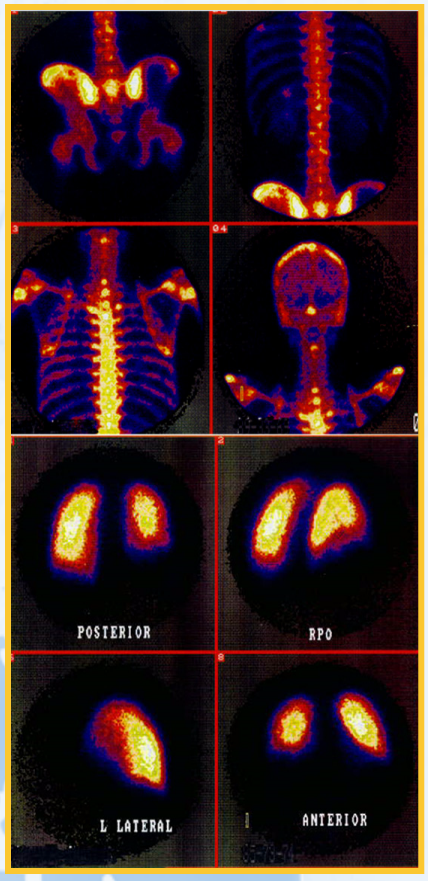
## BENEFITS

- Technology would allow us to exceed US supply demands = worldwide commercial sales
- Low enriched uranium (LEU) fuel minimizes nuclear proliferation risk
- Operational at low power and passively safe
- Commercially available control system results in ease of operation
- Drawing upon proven technology with minimal research effort required

## COMMERCIAL MARKETS & APPLICATIONS

- Radiopharmaceutical companies & distributors
- Medical & healthcare facilities
- Medical diagnostics & cancer treatments

## Immediate & Critical Need




Currently there is a **severe worldwide shortage of medical isotopes**– specifically Molybdenum-99 (Mo-99) which is essential in cancer treatment, diagnostics, and medical imaging. The US is *completely* dependent on foreign sources which means we have no domestic or backup supply. Further contributing to the problem, the current reactors are more than 50 years old which means there is a higher risk for unplanned outages and they are not dedicated to production. In late 2009, the US House of Representatives passed a bill for the production of medical isotopes to help establish a domestic supply using LEU fuel.

## Financial Impacts

Current US demand for Mo-99 is equal to the demand of the entire world at 6,000 curies (Ci) per 6 day week. The pre-shortage rates had a demand growth of approximately 5-10% per year with estimated revenue from US demand yielding approximately **$150 million** per year. Due to the severe shortage, the price per Ci has drastically increased nearly three fold. At the current demand rate, the estimated revenue is **$468 million** per year.

With this technology, we could produce enough Mo-99 to satisfy US demand and have a surplus available to meet world demand needs. Additional isotopes other than Mo-99 are also produced as a result of this process and would be commercially valuable.

## Commercialization Readiness

- Design is created by commercially available components
- Proven to work based on Sandia's Cintichem-based process. Our LEU reactor is ready to construct!
- US government is looking for investors. ***We have this capability!***

National Nuclear Security Administration

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