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## **The United States Department of Energy Continues to Play a Key Role in Isotope Production by Making Significant Upgrades to its Facilities and Expanding its Collaborations**

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Radionuclides play a major role in research applications, in environmental studies and in industrial applications as sources as well as in nuclear medicine imaging and therapy. The United States Department of Energy (DOE) isotope program has a long history of utilizing its unique national laboratory facilities and expertise to develop and supply radionuclides that are in high demand and commercially unavailable. They were the original inventors of the Mo-99/Tc-99m generator and many other radionuclides including I-131, Sr-90/Y-90, C-14, F-18 FDG, Pb-212/Bi-212 just to name a few. It further has increased and strengthened its ties with Universities to enhance the supply of isotopes to stakeholders and is continuing to develop unique collaborations to increase the library of radionuclides available. It has consistently upgraded facilities and capabilities to provide both novel radionuclides for researchers as well as upgrading its quality systems to provide routine reliable quality radioisotopes for medical and commercial applications.

DOE is actively developing novel production and purification methods for radioisotopes for use in a variety of applications. Current efforts have focused on developing methods to produce therapeutic radioisotopes particularly alpha emitters with high purity and thus minimal to no impurities as well as high specific activity theragnostics which can be attached to biomolecules or targeting vectors that selectively distribute within diseased tissues, thus delivering toxic radioactivity to diseased tissue while minimizing or sparing damage to healthy or normal cells.

Furthermore, DOE has upgraded its production facilities and capabilities to meet increased demand and to allow for assessment of novel production methods. While simultaneously increasing its testing facilities and quality programs to meet the regulations required for radioisotopes of use in clinical trials and in approved drug formulations. This presentation will present an overview of the program and its facilities highlighting upgrades it has made at its various facilities to meet the needs of its various stakeholder.

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