

Medical Isotopes

AMERICAN DISCOVERY TRANSFORMING PATIENT TREATMENT



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Isotope Program
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TARGETED THERAPIES ADVANCING MEDICAL INNOVATION

The routine use of radioisotopes in biology, medicine, and pharmaceutical development has transformed the diagnosis and treatment of a range of medical conditions, including cancer and infectious diseases, leading to improved health outcomes worldwide.

The U.S. Department of Energy Isotope Program (DOE IP), through its extensive network of national laboratories and university partners, plays a crucial role in developing, producing, and supplying essential isotopes for advanced medical diagnostics and therapies. These efforts help to effectively address critical supply chain gaps.

With the support of particle accelerators, research reactors, medical cyclotrons, and radiochemical processing labs, the DOE IP ensures the availability of more than 35 medically relevant isotopes through the National Isotope Development Center catalog with several additional isotopes currently in the research and development phase.

To request a quote visit isotopes.gov/catalog
or scan this QR code.

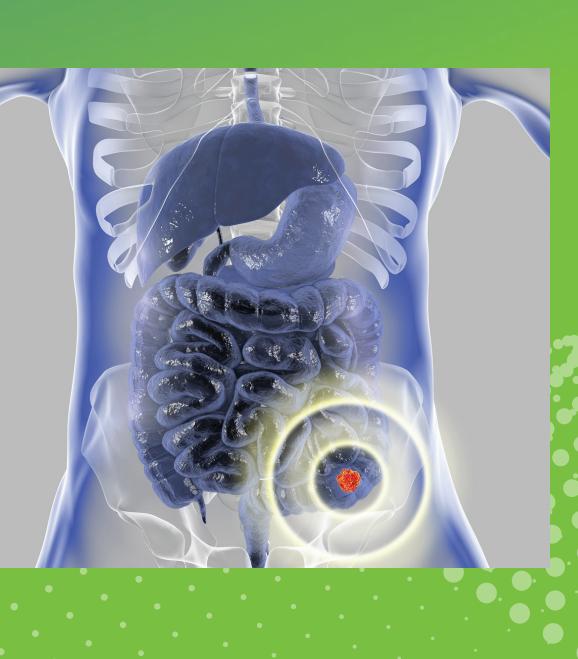


Currently Available

ISOTOPE	HALF-LIFE	APPLICATION
Ac-225	9.92 d	Cancer therapy R&D
Ac-225/Bi-213	9.92 d	Cancer therapy R&D
Ac-227	21.8 y	Cancer therapy
Al-26	717,000 y	Radiotracer
As-73	80.3 d	Radiotracer
At-211	7.21 h	Cancer therapy R&D (leukemia, lymphoma, multiple myeloma)
Au-199	3.14 d	Treatment of arthritis and cancer therapy
Ba-133	10.5 y	X-ray radiocontrast agent
Be-7	53.2 d	Radiotracer
Bi-207	31.5 y	Gamma calibration source
Br-77	57.0 h	PET imaging
Ce-134	3.16 d	Imaging analog for Ac-225
Ce-139	138 d	Medical imaging
Co-55	17.5 h	Cancer research
Co-60	5.27 y	Cancer therapy
Fe-52	8.28 h	PET imaging
Fe-55	2.74 y	Medical research
Fe-59	44.5 d	Radiotracer
Ge-68*	271 d	Parent of Ga-68; PET imaging
Lu-177	6.65 d	Cancer therapy
Mn-52	5.59 d	Bi-modal imaging
Na-22	2.60 d	Radiotracer
Pb-203	51.7 h	Medical imaging
Ra-224/Pb-212	10.6 h	Cancer therapy R&D
Ra-223	11.4 d	Cancer therapy
Re-186	3.72 d	Potential theranostic isotope
Se-72	8.40 d	Diagnostic imaging and generator for As-72
Se-75	120 d	Radiotracer
Sn-117m	14.0 d	Bone cancer pain relief
Sr-89	50.6 d	Bone cancer pain relief
Sr-90	28.8 y	Sr-90 cancer therapy
Th-227	18.7 d	Cancer therapy R&D
Th-228	1.91 y	Cancer therapy R&D
Tl-44	59.1 y	Parent of Sc-44; potential therapeutic isotope
V-48	16.0 d	Medical research
W-188	69.8 d	Parent of Re-188; cancer therapy R&D
Xe-127	36.4 d	Diagnostic imaging
Y-86	14.7 h	PET imaging
Y-88	107 d	Substitute for Y-90 in cancer R&D
Zn-65	244 d	Medical research

Under Development

ISOTOPE	HALF-LIFE	APPLICATION
Bi-205	15.3 d	Potential theranostic isotope
Ca-47	4.54 d	Radiotracer
C-14	5,700 y	Radiotracer
Gd-153	240 d	Brachytherapy and bone density measurement
Ir-192	73.8 d	Brachytherapy
Kr-76	14.8 h	Parent of Br-76; PET imaging
Nb-90	14.6 h	PET imaging
Pt-195m	4.01 d	Biomedical imaging
Re-189	24.3 h	Potential theranostic isotope
Rn-211	14.6 h	Parent of At-211; generator for At-211
Sc-47	3.35 d	Cancer therapy R&D
Te-119m	16.1 h	Parent of Sb-119; cancer therapy R&D
Tl-44/Sc-44	4.04 h	PET imaging
U-230	20.8 d	Parent of Th-226; cancer therapy R&D
Xe-129	8.89 d	Lung imaging



New isotopes are driving the future of medicine —

Radioisotopes are revolutionizing medicine by enabling safer, more effective treatments for cancer and infectious diseases, improving lives worldwide.

Diagnostic isotopes emit radiation that helps physicians see disease in action —

By revealing biological activity throughout the body, these powerful imaging tools support early detection and more effective, personalized treatment planning.

Radioisotopes are used to deliver precise radiation directly to cancer cells, minimizing damage to healthy tissue —

Whether administered alone or linked to targeting vehicles like monoclonal antibodies or peptides, these therapies are changing the outlook for cancer and infectious diseases.