

# Isotopes – Improved process for medicine

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Solid radium sulfate sits in the bottom of a flask during the recovery process.  
Credit: Oak Ridge National Laboratory, U.S. Dept. of Energy

Oak Ridge National Laboratory researchers have discovered a better way to separate actinium-227, a rare isotope essential for an FDA-approved cancer treatment.

To produce Ac-227, researchers recover [radium](#)-226 from obsolete

medical devices and fabricate it into targets that are irradiated in the High Flux Isotope Reactor. Ac-227 is then separated from the targets and purified.

Initially, researchers used caustic solution to dissolve targets, but recently they developed an approach using an acidic solution.

"From that one simple step, we increased actinium yield, minimized waste production, optimized our processing timeframe and made it easier to recycle radium," said ORNL's Roy Copping. "This is an important project for the lab, and it's of enormous benefit to mankind."

ORNL began producing Ac-227 in 2017 and has a 10-year contract with U.S. DOE's Isotope Program and Bayer. Radium-223 dichloride, derived from Ac-227, is the primary ingredient in Bayer's Xofigo prostate cancer drug.



Ra-226 pellets are loaded in a target for irradiation in ORNL's High Flux Isotope Reactor. Credit: Oak Ridge National Laboratory, U.S. Dept. of Energy

Provided by Oak Ridge National Laboratory

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