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An Isotope Harvesting Beam-dump for the NSCL

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The process of harvesting isotopes from beam dumps and other activated materials at accelerator facilities is becoming an important tool for accessing difficult-to-produce radionuclides (e.g. ERAWAST at PSI). At FRIB, the unique design of the water-filled beamstop will allow rapid access to the multitude of short- and long-lived isotopes that are formed as a result of stopping fast heavy ion beams in water. Currently, at the NSCL we are developing an isotope harvesting program from an analogous target (beam stop) fabricated from the same materials. Preliminary experiments are giving some clues about the environment inside of the beam dump and the effect of heavy-ion radiolysis on the water chemistry. Overall the program can be viewed as a way to make a nuclear target out of the beam dump, rather than throwing away the production capacity of unreacted beams.

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