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(54) Title: SYSTEMS AND METHODS FOR GENERATING RADIONUCLIDES

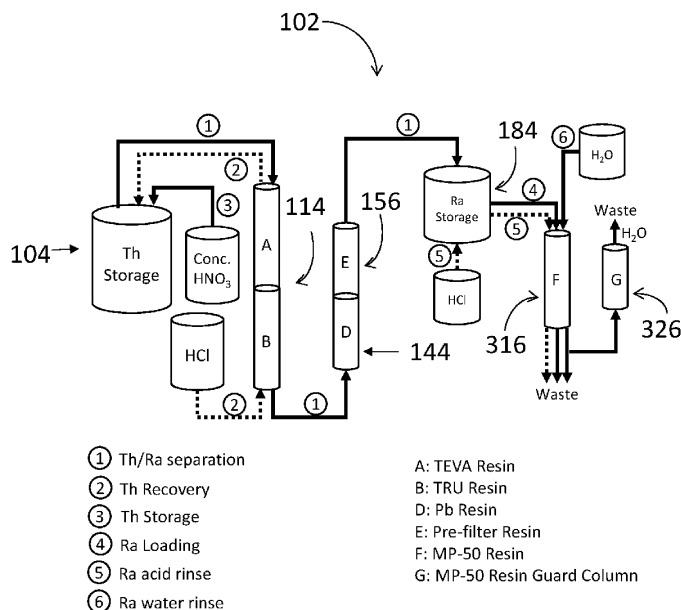


FIG. 2

(57) **Abstract:** Systems and methods for generating radionuclides, such as radium-224. Systems herein may include a first cartridge having a first opening, a second opening, and a chamber therebetween having a first resin having affinity for thorium-228 and bismuth-212; a second cartridge having a first opening, a second opening, and a chamber therebetween having a second resin having affinity for thorium-228 and bismuth-212, a third cartridge having a first opening, a second opening, and a chamber therebetween comprising a third resin having affinity for thorium-228 and bismuth-212, a fourth cartridge having a first opening, a second opening, and a chamber therebetween having a third resin having affinity for lead-212; wherein a continuous flow path is formed from a top of the first cartridge through the second cartridge, through the third cartridge, and to a bottom of the fourth cartridge during system use.

[Continued on next page]

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