Polyethylene glycol (PEG) is considered as the gold standard polymer for the preparation of long circulating nanoparticles (NPs) as it shields NPs from opsonization and prevents rapid blood clearance. Upon administration in vivo, characterization of PEGylated NPs requires their separation from the rest of plasma components. In this study, we describe an immunoprecipitation method, using antiPEG antibodies crosslinked to magnetic beads, for the specific extraction of three types of radiolabeled PEGylated systems: polymeric, liposomes, and therapeutic proteins. The extraction protocol is characterized in terms of extraction capacity and kinetics. We show that this extraction is possible for NPs after their administration in vivo. Using Nanoparticle Tracking Analysis (NTA), we show that this extraction technique can be used to determine changes in size of NPs after intravenous and intraperitoneal administration.