The guidance document SANTE 11945/2015 recommends that cereal samples be milled to a particle size preferably smaller than 1.0 mm and that extensive heating of the samples should be avoided. The aim of the present study was therefore to investigate the differences in milling procedures, obtained particle size distributions, and the resulting pesticide residue recovery when cereal samples were milled at the European Union National Reference Laboratories (NRLs) with their routine milling procedures. A total of 23 NRLs participated in the study. The oat and rye samples milled by each NRL were sent to the European Union Reference Laboratory on Cereals and Feedingstuff (EURL) for the determination of the particle size distribution and pesticide residue recovery. The results showed that the NRLs used several different brands and types of mills. Large variations in the particle size distributions and pesticide extraction efficiencies were observed even between samples milled by the same type of mill.