The principles of HACCP system were applied as a tool for evaluation and safety improvement of parchment coffee species *Coffea arabica*, produced in Zona da Mata region, Cerrado region, and Sul region, in Minas Gerais State. Based on the diagnosis on meeting good agricultural practices (GAP) requirements, the necessary changes were accomplished for farms infrastructures compliance and the post harvest processing workers were trained. It was conducted a study on fungal and ochratoxin A (OTA) contamination, and data from harvest to storage in each farm were monitored for two years. The study was used to develop HACCP plan according to *Codex Alimentarius*. The hazards found during drying and storage steps, which were identified as critical control points, were toxigenic fungal and OTA contamination. The variables critical limits were: water activity < 0.70 and product moisture < 12%; 50%-70% relative air humidity during storage. These critical variables were continuously monitored to guarantee *Aspergillus ochraceus* and OTA contamination prevention. It was feasible to guarantee safety regarding OTA contamination in parchment coffee by employing drying at cement terrace associated to correct implementation of pre-requisites programs and the proposed HACCP plan in regions in Minas Gerais State, where relative air humidity is high (> 70%) and temperature is low (< 20 °C).