Concrete degradation in nuclear plants typically arises from design or construction flaws in combination with one or more of the following stressors: elevated temperatures, thermal cycling, freeze-thaw cycling, chemical exposure, radiation exposure, and static and dynamic loading.

Current inspection practices for concrete structures—many of which have been in service for decades—rely heavily on visual techniques. A comprehensive program of advanced nondestructive evaluation (NDE) methods for concrete structures is being developed by EPRI to support inspection, optimized maintenance, and safe and economical long-term operation of concrete structures at nuclear plants.

The symptoms of concrete degradation that are being addressed in this program are: a) corrosion of embedded reinforcement; b) cracks, delaminations, and voids; and c) pattern cracking. The degree of reliability and ease of deployment of commercially available NDE techniques to assess these degradations vary significantly. Therefore, this program also explores other newer NDE techniques to cover gaps in the existing techniques.