In-situ Beta Detector Overview

The in-situ beta detector is used to locate and quantify subsurface radionuclide contamination in the vadose zone and groundwater; specifically the analyses are gross beta, strontium-90 and uranium-238. The advantages of in-situ measurements are many including reduction or elimination of waste material generated with conventional sampling methods, reduced analytical costs, near real-time data analysis. Additionally cost savings are associated with reducing the exposure of personnel to potentially radioactive contaminated sample material. Conventional subsurface sampling methods require drilling and core retrieval, and/or pumping and containerizing of groundwater, at considerable expense. Typically, there is less than 100% recovery of the core, so there are data gaps; additionally, sampling groundwater may require deployment of pumps and containerizing potentially hazardous groundwater; however, in-situ measurements allow the entire length of the borehole to be assessed for beta-emitting contamination. Additionally, in-situ measurements allow measurements to be duplicated and repeated on a periodic basis to help determine whether or not the contamination is migrating vertically. Conventional methods would require the drilling and coring of additional holes to determine if the contamination is moving in the subsurface.