

# GROUNDWATER CONTAMINATION BY POLYFLUOROALKLYL SUBSTANCES (PFAS) IN GUAM

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**Abstract** - Perfluoroalkyl substances (PFAS) have received attention as emerging contaminants of concern in drinking water resources. US EPA examined six PFAS from public water systems. PFAS monitoring of Guam's drinking water production wells began in March 2015, and overall six production wells were reported to be contaminated with perfluorooctane sulfonate (PFOS), perfluorohexanesulfonic acid (PFHxS) and perfluoroheptanoic acid (PFHpA). Among these contaminants, PFOS concentrations were consistently above 70 ng/L with maximum health advisory levels occasionally exceeding 400 ng/L in two production wells. These two wells are located in Hagatna, one of the oldest villages on Guam, but sources of PFOS impacting both wells are currently unknown. More concern on this site is that geological feature consists of argillaceous limestone uplands underlain by volcanic rock, thus PFAS migration pattern in limestone aquifer is not easy to predict due to complexity of water flow in limestone. As one way of determining PFAS contamination sites and their migration pattern, preliminary analysis of PFOS levels at the wells and rainfall events conducted. This result showed that a delayed well response time of at least one month following major rain events existed. Based on this evidence, potential PFAS contamination sites were selected near the well site. Herein, the selection method of PFAS contamination sites in the argillaceous limestone region were introduced.

**Keywords** - Perfluoroalkyl Substances, Perfluorooctane Sulfonate, PFOS, Groundwater contamination, Limestone, Hydrogeology.

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