عنوان مقاله:

Effects of landslide hazards on quality of stream water and sediments

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BACKGROUND AND OBJECTIVES: Landslide disasters in Thailand between ۱۹۷۰ and ۲۰۱۱ revealed a notable pattern: they primarily originated on mountain slopes, distinguished by a deeper soil profile. This soil profile comprised clay loam and sandy loam textures and was situated over aged geological formations of granite and shale rocks. The affected areas included the southern and northern provinces of Thailand.This study investigated the consequences of landslide hazards on stream water and sediment quality in two watersheds: the Mae Phul-Mae Prong watershed in Uttaradit province, the northern part of Thailand, and the Klong Kram watershed in Surat Thani province, the southern part of Thailand. These watersheds had experienced recurrent landslides, primarily on mountain slopes characterized by deep clayey and sandy loam soils over old granite and shale rock types as well as old granite limestone.METHODS: During wet and dry periods in April and November ۲۰۱۵, ۱۰۸ samples were collected from ۱۸ stations (۹ stations in the Klong Kram watershed and ۹ stations in the Mae Phul-Mae Prong watershed). These samples included upland soil, stream water, and sediments. For upland soils, ۱ kilogram samples were collected through auger and V-shaped pit techniques using a stainless-steel spade, with composite sampling conducted at ۰-۳۰ centimeters across all ۱۸ stations. Stream water was collected in one part using a ۱-L polyethylene bottle at ۳۰ centimeter from the stream layer, while other samples were compositely collected in sterilized glass bottles to determine coliforms. Soil and sediment samples were compositely collected from the bottom using a stainless-steel spade. All samples were stored at ۴ degrees Celsius and transported to a laboratory for analysis. The insight gained from these

collection efforts elucidated the dynamics of landslide impacts at the spatial scale for the two watersheds.FINDINGS : Most water samples met Thai surface water quality standard for various parameters; however, microbial contamination of the water samples attributed to community activities along stream banks was detected. Notably, arsenic was consistently detected in upland soil, stream water, and sediment samples. For Uttaradit, the average arsenic concentrations were ۰.۲۲ ± ۰.۰۹ milligram per kilogram, ۰.۰۱ ± ۰.۱۴ milligram per liter, and ۹.۷۴ ± ۴.۴۲ milligram per kilogram in upland soil, water, and sediment samples, respectively. For Surat Thani, arsenic concentrations were ۸۷.۶۳ ± ۲۰۸.۸۳ milligram per kilogram, ۰.۰۱ ± ۰.۰۱ milligram per liter, and ۱۹.۴۴ ± ۳۶.۳۸ milligram per kilogr ...

کلمات کلیدی:

Elemental contamination, Landslide hazards, Sediment quality, Stream water quality, watershed management