Abstract
This research aimed to optimize the extraction method parameters for sample pretreatment and determine the levels of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) contamination in food packaging made of paper. Techniques used were pressurized liquid extraction (PLE) followed by liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS). Influence parameters of PLE were carefully evaluated for extracted concentration of samples in low level (ng g⁻¹). The study found that the optimal conditions for PLE were 30 min static extraction time with a flush volume of 100% cell volume and one extraction cycle at 80°C and 1,000 psi. The extraction technique validated the absolute recovery from PFOS and PFOA fortified control samples at three different levels (5, 50, and 200 ng g⁻¹), with seven repeats at each fortification level. The average recoveries were 79% or higher, with relative standard deviation (RSD) less than 11%. Optimization of the PLE method was established based on recovery data, accuracy, precision, and repeatability of the method. Using optimal PLE technique, PFOS and PFOA were extracted from 34 food-packaging samples collected in Thailand. PFOS and PFOA were detected in all kinds of collected samples, with average concentrations of 4.89 and 2.87 ng g⁻¹, respectively. © 2013 Copyright Taylor and Francis Group, LLC.

Author Keywords
food packaging; LC-MS/MS; Perfluorooctane sulfonate (PFOS); perfluorooctanoic acid (PFOA); pressurized liquid extraction

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Correspondence Address
Boontanon S. K.; Department of Civil and Environmental Engineering, Faculty of Engineering, Mahidol University, Phuttamonthon, Nakhon Pathom, Thailand; email: suwanna.boo@mahidol.ac.th

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