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OPTIMIZED BENCHTOP GC-MS PARAMETERS FOR THE MEASUREMENT OF PBDEs: Selective, sensitive, congener-specific analysis for these POPs in Environmental samples.

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A new gas chromatographic – mass spectrometry (GC-MS) method, using low resolution benchtop instruments, was developed for the selective measurement of 38 polybrominated diphenyl ethers (PBDEs) in environmental extracts. Chromatographic and ionization parameters were optimized for each of the 38 congeners in order to develop a sensitive, selective, robust, and affordable method for measuring this class of persistent organic pollutants in environmental samples. Injection port temperature, GC oven temperature profile, MS ion source temperature, electron-capture negative ionization (ECNI) buffer gas & pressure, ion source electron energy, ion source emission current, and compound specific ions for selected ion monitoring were optimized. Care was taken to optimize these parameters across a broad range of values. Source temperature, buffer gas flow rate, and electron energy were the most sensitive parameters for optimizing PBDE molecular ion abundance, and therefore selectivity and sensitivity of the method.