

## Toxicokinetics of BDE 47 in Female Mice: Effect of Dose, Route of Exposure, and Time

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2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) is present in commercial mixtures of polybrominated diphenyl ethers (PBDEs), which are used as flame retardants in a wide variety of consumer products. Despite its small contribution to PBDE global production and usage, BDE 47 is the major congener found in environmental samples and human tissue. No human data are currently available regarding the toxicokinetics of BDE 47 either as an individual congener or in the commercial mixture. Because previous studies have suggested potential toxicokinetic differences between rodent species, this study was conducted in an effort to fully characterize absorption, distribution, and excretion parameters following a single dose with respect to dose, time, and route of exposure in female C57BL/6 mice. Over 80% of the administered dose was absorbed after oral or intratracheal administration, whereas ~62% was absorbed when the dose was applied dermally. Disposition was dictated by lipophilicity as adipose and skin were major depot tissues. BDE 47 was rapidly excreted in the urine and feces. Of particular interest was the amount of parent compound found in the urine, which was a major factor in determining an initial whole-body half life of 1.5 days after a single oral exposure. Elimination, both whole-body and from individual tissues, was biphasic. Initial half-lives were 1–3 days, whereas terminal half-lives were much longer, suggesting the potential for bioaccumulation. This toxicokinetic behavior has important implications for extrapolation of toxicological studies to the assessment of health risk in humans.

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