

An Evaluation of Gestational Exposure to Perfluorooctanoic Acid (PFOA): Effects on Body Composition and Physiological Factors

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Exposure to environmental pollutants can be a factor for induction of metabolic disorders. This study examined if exposure to PFOA during development could alter body composition and other physiological outcomes. **Study 1:** Pregnant CD-1 mice were gavaged with PFOA at 0, 0.001, 0.01, 0.1, or 0.3 mg/kg body weight (bw) from gestation day (GD) 1 – 17. At weaning, pups were fed a high fat (HFD) or control (CD) diet. Body composition, blood pressure (bp), and gene expression in tissues of offspring were examined. **Male-** BW increased in 0 mg PFOA+HFD vs 0 mg PFOA+CD and 0.01 mg PFOA+HFD vs 0.01 mg PFOA+CD. In HFD, bw decreased in 0.3 vs 0 mg PFOA. There were no effects on percent of body fat. At postnatal day (PND) 90, diastolic bp was decreased in 0.1 and 0.3 mg PFOA+HFD vs 0 mg PFOA+HFD and increased in 0.3 mg PFOA+HFD vs 0.3 mg PFOA+CD. The bp effects of 0.1 mg PFOA+HFD persisted to PND 180. **Female-** At 0 and 0.001 mg PFOA+HFD had increased weight gain vs CD. The %fat increased in 0.001 vs 0 mg PFOA+HFD. At PND 180, diastolic bp decreased in 0.01 and 0.3 mg PFOA+CD vs 0 mg PFOA+CD. Differential gene regulation was produced by HFD and PFOA in white fat and liver at 52 weeks of age. At 0.001 mg PFOA+HFD vs 0.001 mg PFOA+CD, 3 genes in white fat and liver were under-expressed while 14 genes in white fat and 19 in liver were over expressed. At 0.01 mg PFOA+HFD vs 0.01 mg PFOA+CD, 3 genes in white fat and 4 genes in liver were under-expressed while 14 genes in white fat and 15 in liver were over-expressed. **Study 2:** Pregnant mice were fed NIH-31 (low phytoestrogen) diet and dosed with PFOA at 0, 0.01, 0.1, or 1 mg/kg from GD 1 – 17. Pups remained on the NIH-31 diet. There were no age- or dose-related differences in bw or %body fat in either sex. In summary, exposure to PFOA and HFD produced sex-dependent changes in bw, body composition, and bp response in mouse offspring exposed to the chemical during perinatal development. This abstract does not necessarily reflect USEPA policy.