

Status report

PFOA (C8) exposure and pregnancy outcome among participants in the C8 Health Project

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We conducted an analysis of pregnancies reported by women who participated in the C8 Health Project in 2005-2006. We assigned PFOA exposure using the exposure reconstruction models that linked information on chemical plant releases, movement of PFOA through the environment to water supplies, and an average intake and excretion of PFOA over time. We considered all 11,737 pregnancies that were reported to have occurred between 1990 and 2005, which is the period when we believe we could make the most accurate assignments of PFOA levels at the time of pregnancy. In the C8 Health Project questionnaire, women listed all their pregnancies, including when they occurred and what the pregnancy outcome was. We studied the relationship between PFOA exposure around the time of pregnancy and the risk of miscarriage (loss of pregnancy before 20 weeks), stillbirth (loss of pregnancy after 20 weeks), preeclampsia (a condition involving high blood pressure and leakage of protein into the urine during pregnancy), preterm birth (early delivery), term low birth weight (an indication of reduced growth), and birth defects (abnormalities in the infant). We made statistical adjustments to account for the calendar year when the births occurred, the mother's age at the time of the birth, the mother's education, parity (whether the woman had previous births), and tobacco smoking history.

Women in the study reported a total of 1,443 pregnancies ending in miscarriage, and we found that there was no association between the estimated serum level of PFOA at the time of the pregnancy and risk of miscarriage. Stillbirths were reported for 106 pregnancies, and again, no associations were found with PFOA exposure. Based on our results, it does not appear that the survival of the pregnancy was affected by serum PFOA level.

No associations were found for PFOA in relation to the risk of preterm birth (based on 1843 cases), term low birth weight (based on 133 cases), or birth defects (based on 149 cases). In previous studies of PFOA and pregnancy, there was some suggestion that exposure might be

related to reduced birthweight, but we found no indication that babies born to mothers with higher exposure were smaller than babies born to mothers with lower exposure, based on the birthweight reported by the mother.

Preeclampsia was noted for 730 pregnancies, and there was evidence for an association: compared to the pregnancies with the lowest levels of PFOA, women with the highest levels of PFOA had a relative risk of 1.4 (95% confidence interval, 1.1-1.7). There are no other studies to support or challenge our finding of an association for preeclampsia. The association with preeclampsia is small but clearly present based on a variety of ways of examining exposure.

Our conclusions need to take into account limitations in estimating serum PFOA levels at the time of pregnancy, the potential for errors in the self-reported pregnancy outcome information, and incomplete information on other factors that might affect the outcome of pregnancy, such as other health problems the mother may have had. We will be obtaining additional important information on preterm birth and birthweight from ongoing analyses of health department birth records for the study area that will be combined with these results and others before a final assessment is made.