

# **The Association Between Mountaintop Mining and Birth Defects Among Live Births in Central Appalachia, 1996-2003**

## **Questions and Answers**

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### **Q What did you study?**

**A** We compared the prevalence of birth defects in mountaintop coal mining areas compared with other coal mining areas and with non-mining areas in central Appalachia. We compared prevalence for two periods of time: 1996-1999 and 2000-2003.

### **Q What is mountaintop mining?**

**A** Mountaintop mining is large surface coal-mining operations in mountainous terrain in Central Appalachia. Research indicates that this type of mining is highly polluting to both air and water. Mountaintop mining increased from 77,000 to 272,000 acres between 1985 and 2005, a 250% increase. These sites were identified in four central Appalachian states (Kentucky, Tennessee, Virginia, and West Virginia).

### **Q. Who did you study?**

**A** We used secondary data to study all live birth outcomes regarding birth anomalies (defects) for the years 1996 through 2003. We determined mother's residence relative to county mining type (mountaintop mining, other mining, no mining). We controlled for birth-defect risks including mother's age, race/ethnic origin, education, smoking and drinking during pregnancy, diabetes, and metro/nonmetro location, infant gender, and low prenatal care.

### **Q What did you find?**

**A.** Some of the study results are as follows:

- We found significantly higher prevalence rates for birth defects in mountaintop mining areas vs. non-mining areas. In contrast, birth defect prevalence rates in other mining areas was not significantly different from non-mining areas.
- Birth defects were significantly higher in mountaintop mining areas vs. non-mining areas for six of seven types of defects: circulatory/respiratory, central nervous system, musculoskeletal, gastrointestinal, urogenital, and 'other'.
- Overall, the prevalence rate for any defect was significant in both periods (1996-1999 and 2000-2003), but was higher in the more recent period (2000-2003). The overall rate of birth defects was 13 percent higher in the earlier period, and increased to 42 percent higher in the later period.
- Mountaintop mining is one county contributes to birth-defect prevalence rates in surrounding counties.

**Q. What are the most important conclusions of this study?**

**A.** Elevated birth defect rates are partly a function of socioeconomic disadvantage, but remain elevated after controlling for those risks, suggesting that environmental influences in mountaintop mining areas may be contributing factors to elevated birth defect rates. Findings are consistent with research showing greater land, water, and air disturbance occurring in mountaintop mining areas.

**Q. Why is this study important?**

**A.** A growing body of studies of the association between residence in coal-mining areas and health outcomes have found significant associations between coal-mining areas and a variety of chronic disease problems for adults, after controlling for other disease risk factors. Research related to infants has found that mothers residing in coal mining areas are more likely to have a low-birth-weight infant. This study extends that research, showing that mountaintop mining areas are associated with elevated levels of birth defect prevalence rates. These prevalence rates have risen in more recent years.

**Q. What are the implications of this study?**

**A.** This study contributes to the growing evidence that mountaintop mining is done at substantial expense to the environment, to local economies, and to human health.

**Q. What were the funding sources for this study?**

**A.** No external funding was used to complete this study.