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## Recent Study Purports to Link **Mountaintop Mining** with Increased Rate of Birth Defects

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Last week, researchers from West Virginia University and Washington State University released a study, entitled *The Association Between **Mountaintop Mining** and Birth Defects Among Live Births in Central Appalachia, 1996-2003*, that reports a purported link between community birth defects and **mountaintop mining**. The study tracked the prevalence of birth defects in both **mining** and non-**mining** communities in central Appalachia. The study findings are weak, but the authors conclude that a higher prevalence of various birth defects, particularly respiratory effects, exists in counties with **mountaintop mining** operations, as compared to those with other types of coal **mining** or no **mining** at all.<sup>1</sup> The study is receiving considerable media attention and may instigate further investigations or lawsuits.

### Study Overview

The retrospective study investigated almost 1.9 million live births over eight years in Kentucky, Tennessee, Virginia, and West Virginia. The authors recognized that birth defects may arise from genetic or non-genetic factors, but are often multifactorial. The study design purports to control for the higher level of socioeconomic disadvantage in the study areas, including factors such as smoking, obesity, and education level.

The authors cited to a number of other studies documenting various environmental pollutants, including mercury, lead, selenium, and arsenic, that the authors state are attributed to **mountaintop mining** activities and linked to birth defects or impaired fetal development in animals or humans. The study hypothesized that these pollutants would produce a higher incidence of birth defects in counties where **mountaintop mining** occurred. Using geographic mapping information, the authors isolated counties with **mountaintop mining** activity, past or present, and compared the rates of a wide array of birth defects between 1996 and 2003 in those counties with the rates in counties where only surface **mining** or no **mining** at all took place. Any resulting associations with environmental pollutants were either weak or not statistically significant. Regardless, the authors attributed an increased incidence of birth defects to **mountaintop mining**:

"Results extend previous research on low-birth-weight outcomes and on adult morbidity and mortality in **mining** areas by demonstrating increased rates of birth defects as an additional public health effect related to coal **mining** in Appalachia. Results also offer one of the first indications that disparities are concentrated specifically in **mountaintop mining** areas, and have become more pronounced as this type of **mining** activity has expanded."

### Potential Impact

A number of previous studies by this same group of researchers have targeted coal **mining** and **mountaintop mining** as a source of health effects. This new study extends those claims to birth defects and is attracting media coverage from both scientific publications and mainstream press such as *USA Today*. This study and the authors' conclusions are subject to a number of criticisms that are not being reported in the press, such as:

- The study is an "ecological" design, the weakest form of epidemiology study.
- The study lumps together a wide array of individual birth defects into large "organ system" categories, which masks the reality that the study likely would have found no increased incidence of any specific birth defect in **mountaintop mining** areas.

- The rates for **mountaintop mining** are not dramatically different from those for other **mining** areas or non-**mining** areas (e.g., for urogenital effects the rate for **mountaintop mining** of 1.35 percent is almost identical to that for other **mining** areas (1.32)).
- The study could only compare "counties" that contain **mountaintop mining** activity to those that did not, and thus could not identify any birth defects actually occurring in geographic proximity to such a mine, or that any birth defect actually resulted from exposure to mine pollutants.
- The study failed to account for consanguinity, one of the most prominent sources of birth defects.
- The study did not identify a dose-response relationship (e.g., higher rates in counties with more **mountaintop mining** activity), a key component of any causation conclusion.

Despite the study limitations, the authors' strong, conclusory language may encourage new activity from the plaintiffs' bar. Litigation alleging injury to community health often requires advance investigation and planning, as well as a robust defense in the community and otherwise, to counter unfounded claims of injury or disease. Crowell & Moring has significant and experience in both community and birth defect litigation and can address both the strategies and science involved. To further discuss this study or your company's environmental litigation defense strategy, please contact any of the attorneys listed on this alert.

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<sup>1</sup> Ahern, M.M., et al., The association between **mountaintop mining** and birth defects among live births in central Appalachia, 1996-2003. Environ. Res. (2011), doi:10.1016/j.envres.2011.05.019.

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