

Atmospheric Particulate Matter in Proximity to Mountaintop Coal Mines

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Scientists from the USGS collected air samples in MTR residential communities in Boone and Raleigh counties, and in non-MTR communities for comparison. The samples were collected to analyze the amount and content of dust from MTR. Sampling methods included dust collection on filters and greased surfaces, and collected from wiping exterior windows of homes. The samples were analyzed for both inorganic elements (e.g., metals) and organic compounds. Samples were collected between June 2011 and May 2012, but the analysis so far includes only samples from 2011.

The results showed that, compared to the non-mining area, the MTR dust from sites E and T had higher levels of “crustal” elements (aluminum and others) that indicate that the dust is coming from local silica-based material, that is, overburden. The dust levels in the Boone and Raleigh MTR samples were about the same as for the “internal” control in Wyoming County.* The MTR dust from site S* was higher than internal and external controls for both “crustal” elements and anthropogenic sources (arsenic, cadmium, vanadium). The analyses of organic compounds show that such compounds are present more commonly in MTR areas, and that the source of the compounds is coal itself rather than coal combustion.

Bottom line: dust levels are higher in MTR areas, and the higher dust is mainly from the coal and the overburden.

*Note from M Hendryx: The Wyoming County ‘internal control’ site was selected by USGS and was intended to represent an area with mining but not MTR; personally I suspect that the Wyoming site is also impacted by MTR although MTR may not be as close as the sites in Boone and Raleigh. I think that site E is Edwight, site T is Twilight and site S is Sylvester, but would need to confirm this with USGS.