Determination of Soil VOC Content due to Coal Dust Deposition along Major Railroad Transportation Routes

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Wyoming is the largest producer of sub-bituminous coal in the United States, and produces enough energy to provide the electricity needs for nearly half of all of the people living in this country. Most of the coal is obtained within the Powder River Basin, where it is loaded onto mile long trains of both the UPRR and BNSF Railroads. Last year, 275 million tons of coal was transported from Wyoming to many destinations throughout the US. However, 102 kg of coal per hopper car is said to be lost in transition through Coal Dust Deposition along the railroad tracks. This deposition litters the nearby soil with very fine particles and gives the soil an increase of VOC's (Volatile Organic Compounds) within its contents. Destructive distillation is a process at which can help determine the amount of VOC's left in the soil. This process takes raw materials and heats them in the absence of oxygen changing the coal into charcoal while releasing a variety of gases. The resulting Coal Gas is a flammable mixture composed of H2, CH4, and CO. The coal gas being produced in this project helped determine the amount of coal dust that was found in the soil. The goal of this project was to determine to what extent coal dust deposition has an elect along major railroad routes in SE Wyoming and W Nebraska. The assumption was that the further along a train travels away from its point of origin then the less deposition would occur. Although there is no denying that there is indeed coal dust deposited along the right-a-ways, the evidence from this project proved inconclusive to show that the eastern (furthest from its point of origin) sample collecting sites displayed less coal deposition or Soil VOC content than their western counterparts.

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