

Statistical Evaluation of Metal Concentrations as a Method for Identifying World Trade Center Dust in Buildings

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The explosion and collapse of the World Trade Center (WTC) produced an aerosol plume of dust and smoke that impacted several buildings in lower Manhattan. Because of the potential health risks associated with the particulates generated from the WTC collapse, a method for identifying WTC dust is needed to prioritize the cleanup of impacted buildings. For this evaluation, a discriminant analysis model using known WTC and background indoor dust samples was developed to determine if metal concentrations could be used to differentiate between WTC dust and ordinary indoor dust. The sensitivity of the discriminant analysis model was evaluated by mathematically diluting the known WTC dust samples with indoor dust. This method is able to differentiate known WTC dust samples from indoor dust with an accuracy of 94%. In addition, this method can differentiate WTC dust with an accuracy of 80% up to a dilution of 2 parts WTC dust to 1 part indoor dust. The accuracy of the method does not fall below 50% until the WTC dust content of the dust falls below 56%. This illustrates the potential utility of using discriminant analysis with metals concentration data to identify WTC dust in indoor dust from buildings impacted by WTC dust.

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