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Dr. E.Blaurock-Busch PhD / Research Direktor
Labor f. umweltmedizinische Untersuchungen / Laboratory f. Clinical and Environmental
Analysis

Dear Dr. Blaurock-Busch:

The line of research pursued by my laboratory is focused on health disparities research related to pediatric central nervous system effects of exposures to air pollutants. Accumulation of metals, early dysregulated neuroinflammation, brain microvascular damage, production of potent vasoconstrictors, endothelial up-regulation of cell adhesion molecules, and perturbations in the integrity of the neurovascular unit likely contribute to progressive neurodegenerative processes. The accumulation of misfolded proteins in exposed children coincides with the anatomical distribution observed in the early stages of both Alzheimer and Parkinson's diseases.

Equally important in exposed children, are the deficits involving measures of fluid intelligence and cognitive control which are able to predict school performance, complex learning, ability to control attention and avoid distraction, and reading and listening comprehension. Increased rates of depression, aggression, delinquency, poor school performance, and risky sexual behavior are seen in urban children (Jenkins et al., 2009).

Implementation of neuroprotective interventions to ameliorate or stop the inflammatory and neurodegenerative processes is warranted in highly exposed children. One aspect of our work that is critical for neuroprotection strategies includes the definition of toxins and robust biomarkers for the identification of children at risk for neuroinflammation and neurodegeneration. Defining the role of metals is at the core of our research.

It is important to remember there is a severe and woeful deficit of progress in the development of both AD and PD -modifying therapy. A subject of great interest given the new released data that the US will have 13.8 million Alzheimer patients projected for 2050 (Hebert LE et al., 2013).

Since fine and ultrafine PM likely play a key role in the development of neuroinflammation and neurodegeneration, it is very noteworthy, that in the US alone, more than 74 million people are being exposed to concentrations of PM_{2.5} above the 2006 standards (PM_{2.5} annual standard of 15 µg/m³).

These issues are of pressing importance for public health and support is needed.

Sincerely,

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