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Physicochemical properties and neurotoxicity of hazardous carbon smoke nanoparticles with heavy metals

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Now in Ukraine with huge artillery shelling and missile attacks, a large amount of pollution consisting of carbon particles with heavy metals-iron, copper etc. and remains of organic molecules are formed. This is why modeling these particles and collecting them is important for understanding how they affect human health. Here the data on physical, chemical and neuroactive properties of the particles are presented. Earlier a method for obtaining nanohybrids based on carbon particles was developed in the Palladin Institute of Biochemistry NAS of Ukraine and applied for biochemical tasks [1].

The spectroscopic data showed that carbon particles with Cu and Fe of both valences are similar to property of carbon quantum dots with specific features. Size of particles are registered in wide regions from nm to tens of μm. Different molecular groups belonging to hazard aromatic molecules was observed. The data obtained allow us to conclude about the potential toxicity of these nanoparticles for human health not only in Ukraine and Europe but everywhere.

1. Tarasenko, A., Pozdnyakova, N., Paliienko, K. et al. A comparative study of wood sawdust and plastic smoke particulate matter with a focus on spectroscopic, fluorescent, oxidative, and neuroactive properties. Environ Sci Pollut Res 29, 38315–38330 (2022). https://doi.org/10.1007/s11356-022-18741-x

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