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The Bioaccumulation and Toxicity of Platinum Group Metals in Developing Chick Embryos IOANA PAVEL, JENNIFER MONAHAN, MARJORIE MARKOPOULOS, Department of Chemistry, Wright State University, Dayton, OH 45435, USA, ZOFIA GAGNON, BRITNEY NEJAME, JACOB CAWLEY, DAVID REENS, Department of Environmental Science and Policy, School of Science, Marist College, Poughkeepsie, NY 12601, USA — Recent studies showed that platinum group metals (PGMs) such as Pt, Pd, and Rh from automobile catalytic converters, can accumulate in the soft tissues of a variety of living organisms. However, the effects of PGMs on bone and organs development of animals are not clearly understood. To examine these aspects, developing chick embryos were injected with 0.1, 1.0, 5, or 10 ppm solutions of Pt, Rh, Pd, or with a PGMs mixture. 1) Pathological Changes: were observed for all PGM treatments above 1 ppm. Bone Cells Assesment: Chondrocyte cells in thibiotarsus showed decreased diameter and length. 2) PGMs Accumulation in Tissues: was quantified by GFAAS spectrometry on finely ground tissue powder. 3) Bone Demineralization: was detected by micro-Raman spectroscopy imaging on paraffin embedded bone sections. 4) DNA Damage in Cells: was determined by using a Comet assay and fluorescence spectroscopy. Oxidative Damage in Tissues: was analyzed using a glutathione peroxidase assay. The overall results indicated that PGMs presence in our environment raises concerns about their long-term health effects on all organisms.

Ioana Pavel
Department of Chemistry, Wright State University, Dayton, OH 45435, USA

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