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## Abstract

Phosphate fertilizer industry is considered as one of the main sources of environmental pollutants. Besides solid waste products, e.g. phosphates, sulphates, and heavy metals, also atmospheric pollutants such as hydrofluoric acid fumes (HF), sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>2</sub>), and particulate matter with diameter up to 10 µm (PM<sub>10</sub>) can be dangerous. Genotoxic effect of these pollutants was monitored by assessing the DNA damage using alkaline comet assay in brain, thoracic muscles and gut of *Aiolopusthalassinus* collected at three sites (A-C) located at 1, 3, and 6 km away from Abu-Zaabal Company for Fertilizers and Chemical Industries. Control site was established 32 km from the source of pollution, at the Cairo University Campus. The level of the DNA damage was significantly higher in insects from polluted sites comparing to that from the control site. A strong negative correlation between percentage of cells with visible DNA damage (% severed cells) and the distance of the sites from Abu-Zaabal Company was found. The best parameter for monitoring of fertilizer pollutants is % of severed cells. Possible impact of Abu-Zaabal Company (extremely high concentration of phosphates and sulphates in all the polluted sites) on DNA integrity in *A. thalassinus* tissues was discussed. The potential use of the comet assay as a biomonitoring method of the environmental pollution caused by fertilizer industry was proposed. Specific pollution resulting from the activity of the fertilizer industry can cause comparable adverse effects in the organisms inhabiting areas up to 6 km from the source of contamination.