

ISTA18-341884 - ECOTOXICITY EVALUATION OF COAL FLY ASH TO DAPHNIA SIMILIS AND DANIO RERIO

A K CAVALCANTE¹, K C DAMASCENO¹, J S MAZIERO¹, G A MARTINI¹, M B ORMENIO¹, F S C MAMEDE¹, C S MIRANDA¹, J C IZIDORO¹, F A CAMPELLO¹, D A FUNGARO¹, S O ROGERO¹, J R ROGERO¹

¹Instituto de Pesquisas Energéticas e Nucleares, IPEN - CNEN, São Paulo, Brazil

Coal Fly ash is a major solid waste from coal-fired power stations. In Brazil, more than 4 million tons per year of fly ash are generated with a tendency to increase every year. Only 30% of fly ash is applied as raw material for cement and concrete production. The remaining is disposed in on-site ponds, nearby abandoned or active mine sites, or landfills. The inadequate disposal of fly ash may pose a significant risk to the environment due to the possible leaching of hazardous pollutants into the surrounding soil and groundwater. A combination of leaching tests and ecotoxicological analyses were used in this work for the evaluation of the adverse effects of coal fly in non-target organisms. Ashes were collected from coal-fired power plant located in South of Brazil. Acute toxicity tests were performed with *Danio rerio* embryos and *Daphnia similis*, according to OECD 236 and ABNT NBR 12713, respectively. Coal fly ash sample was subjected to a leaching procedure using USEPA SW 864 Method 1311. The leachate was prepared in seven dilutions: 1.56%, 3.12%, 6.25%, 12.5%, 25%, 50%, and 100%. The assays were performed in triplicates and the results showed lethality of *Danio rerio* after 96 hours of exposure to the leachate, and the calculated LC50 was 4.39%. The ecotoxicity tests with *Daphnia similis*, observed immobility after 48 hours of exposure to the leachate, and EC50 calculated was 7.25%. The results of these tests indicate toxicity of the coal fly ash leachate toward exposed organisms.

ISTA18-754391 - ECOTOXICITY EVALUATION OF THE PESTICIDE PIRIMIPHOS-METHYL TO AQUATIC ORGANISMS

V A V HIDALGO¹, V MORI¹, P K ASSANO¹, J M TAPARO¹, M C ARTAL², A F ALBUQUERQUE¹, A C OLIVEIRA¹, G A UMBUZEIRO^{1,2}

¹School of Technology, State University of Campinas, Limeira, Brazil#²Faculty of Pharmaceutical Sciences, University of São Paulo, São Paulo, Brazil

Brazil is the largest consumer of pesticides in the world. Once in the environment pesticides can cause impact to non-target organisms and their effects must be evaluated. Pirimiphos-methyl is an organophosphate acaricide and insecticide used in different crops. Although this pesticide is approved and used worldwide, ecotoxicity data are still scarce. The objective of this study is to evaluate the toxicity of pirimiphos-methyl to aquatic organisms from different trophic levels. Ecotoxicity tests were conducted with freshwater organisms: algae *Raphidocelis subcapitata*, cladocera *Daphnia similis*, cnidarian *Hydra attenuata* and the marine amphipod *Parhyale hawaiiensis*. Culturing conditions and toxicity tests were conducted in accordance with international protocols for each organism. The growth inhibition concentration (IC10) for *R. subcapitata* was 850 µg L⁻¹, and the effect concentrations (EC50) for *D. similis* and *H.attenuata* were 0.3 and 1250 µg L⁻¹, respectively. The EC50 for the marine amphipod was 201 µg L⁻¹. *D.similis* was the most sensitive organism to the pesticide in our study. More tests are being conducted with chronic endpoints to improve hazard evaluation of pirimiphos-methyl and to provide ecotoxicity data to the literature.