Marwood C, B.L. McAtee, M.L. Kreider, B.L. Finley, J.M. Panko. Chronic Toxicity of Tire/Road Wear Particles in Sediment to Aquatic Organisms. Presented at the Society of Environmental Toxicology and Chemistry (SETAC) North America 31st Annual Meeting; Portland OR. Thursday November 11th, 2010, Exhibit Hall.

Tire and road wear particles (TRWP) consist of a complex mixture of rubber, asphalt, road dust, and other materials released from tires during use on road surfaces. There has been concern that TRWP generated on roads and washed by surface run-off into freshwater sediments may have adverse effects on aquatic organisms. Some previous studies have shown that constituents of tire particles extracted in the laboratory under some conditions can be toxic to daphnids. However, studies of TRWP toxicity under conditions more representative of receiving water bodies revealed no acute toxicity to green algae, daphnids, and fathead minnows at concentrations up to 10,000 ppm. In this study, the chronic toxicity of TRWP collected from an on-road driving system was evaluated in four aquatic species. Test animals were exposed to elutriates of sediment spiked with TRWP at concentrations up to 10,000 ppm. Exposure to TRWP elutriates had no adverse effect on growth or reproduction in *Ceriodaphnia dubia* or *Hyalella azteca*. Exposure to TRWP elutriates caused mild growth inhibition in *Chironomus tentans* and slightly diminished survival in larval fathead minnows, but other endpoints in both species were unaffected. These results, together with previous studies demonstrating no acute toxicity of TRWP, indicate that under typical exposure conditions TRWP in sediments pose a low risk of toxicity to aquatic organisms.