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TVA Kingston Fly Ash Release: Environmental Studies in Progress

Abstract Title:

The effects of fly ash release from the TVA Kingston Steam Plant on fish and benthic macroinvertebrates community effects and contaminant exposure

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Abstract:

The magnitude of the TVA Kingston Steam Plant fly ash spill certainly suggests concern about the potential bioaccumulation and health effects in downstream aquatic organisms such as fish and aquatic macroinvertebrates and perhaps terrestrial receptors (e.g., birds and mammals). A comprehensive assessment of the ecological consequences from the ash spill was initiated soon after the incident. Included in this assessment are studies of fish and benthic macroinvertebrate assemblages and studies of contaminant exposures (i.e., metals) in several species of fish and in two widespread and abundant invertebrates in the affected watershed: the snail *Pleurocera canaliculatum* and the mayfly *Hexagenia bilineata* (adults and nymphs). These studies are being conducted in conjunction with fish health and reproductive studies and similar studies with other wildlife, including insect-eating and fish-eating birds, in order to evaluate any cause-and-effect relationships between levels of contaminants and biological effects. Following the ash spill, TVA sampled the fish community using TVA's Reservoir Fish Assemblage Index (RFAI) and Spring Sportfish Survey methodologies in the Clinch and Emory Rivers, as well as at other locations throughout Watts Bar Reservoir. These surveys also were conducted before the ash spill and provide baseline data for comparison. The 2009 results indicate that fish are present in numbers and conditions typically observed. An initial assessment of the benthic macroinvertebrate community was completed in January 2009, with quantitative collections at 11 locations in the Emory, Clinch, and Tennessee Rivers; at least one upstream site served as a reference for each river. Results showed considerable variation among sites within and among the 3 affected rivers in species composition, density, and species richness. Densities and species richness among the reference sites and downstream sites in the Emory River and the Tennessee River sites were very similar, and relatively subtle differences existed in species composition. In the Clinch River, richness and density were generally highest at the 2 reference sites, although richness at a site immediately downstream of the confluence of the Emory River and one near the mouth of the river was comparable to the reference sites.