

TENINI, JOHN AND DENNIS HANEY. Furman University-Increased estrogen levels associated with wastewater treatment plants in the lower Broad River watershed, South Carolina.

Prior research has documented the deleterious effects of estrogen or estrogen-like compounds on fish in river systems. Wastewater treatment plants (WWTPs) are considered a primary source of estrogenic compounds in rivers. These compounds can come from synthetic sources such as those produced from the leaching of plastics, and biotic sources such as from human urine. Previous studies have examined estrogenic contamination from very large WWTPs. In the lower Broad River watershed of South Carolina, however, there are a large number of small WWTPs in close proximity along the waterways. We hypothesized that concentrations of estrogenic compounds would increase in river water downstream of the discharge point of WWTPs and that an additive effect of WWTPs would be seen along the river. Water samples were collected upstream and downstream of ten WWTPs, and effluent samples were obtained where possible. Water samples were filtered using a C-18 filter to concentrate estrogenic compounds. A  $\beta$ -galactosidase assay was then performed using *Saccharomyces cerevisiae* containing the human estrogen receptor. Increased estrogen concentrations downstream of several WWTPs were found, but there was no evidence of an additive effect of multiple WWTPs. Elevated estrogen concentrations were not correlated with the size of the WWTP. However, high concentrations may occur at sites where wastewater effluent contributes significantly to river discharge. These findings merit closer inspection of these sites.