

Characterizing antibiotic resistant *Serratia marcesens* in watersheds of upstate South Carolina.

In the summer of 2002, two tetracycline-resistant *Serratia marcesens* were isolated from a zinc-contaminated tributary of the Enoree River. The bacteria were tested for antibiotic resistance by using the Kirby-Bauer disk method and determining the minimal inhibitory concentrations (MIC). A separate study in 2003 isolated a total of 636 bacteria from Durbin Creek and the Enoree River in the upstate of South Carolina. Of these isolates, four were resistant to tetracycline (30 µg/ml) and two of those were identified as *S. marcesens* using BIOLOG. One of the *S. marcesens* was isolated directly downstream of a wastewater treatment plant (WWTP) in the Enoree River and the other was isolated directly downstream of the WWTP in Durbin Creek. The antibiotic-resistant patterns of these two isolates were examined by using the Kirby-Bauer disk method and determining MIC of the specific antibiotics. Our current research focus is to study the genotypic and phenotypic variations of these four isolates. By comparing the antibiotic-resistant patterns of these isolates, a profile of phenotypic diversity can be established. To further investigate the genotypic diversity of these four isolates, restriction fragment length polymorphisms pattern of their 16S rRNA genes will be compared. To study the phylogenetic relatedness of these isolate, the 16S rRNA genes of each isolate will be cloned and sequenced for further analyses.