has been detected in sewage treatment plant effluents and occasionally in surface waters in the US, UK, Canada, Brazil, Germany, and elsewhere. Reported measured concentrations span several orders of magnitude ranging from non detect at detection limits below 1 ng/l to detected concentrations of greater than 200 ng/l. For researchers studying the effects of EE2 in aquatic organisms, understanding whether this entire range of concentrations is environmentally relevant is essential, otherwise they might conduct experiments using EE2 concentrations that cannot occur in the environment. This poster presents a series of mass-based bounding calculations to establish a range of maximum possible EE2 concentrations in various stages of the "sewage cycle" as well as in United States surface waters. The results will help researchers establish the upper limits of experimental exposure concentrations for EE2 in surface water and help risk assessors to estimate maximum potential risks to aquatic life.

WP151 An Assessment of Exposure to Nanoscale Materials in Surface Water. P.D. Anderson, H.L. Ferland, AMEC, Westford, MA; P.D. Anderson, Geography and Environment, Boston University, Boston, MA. The potential effects to the aquatic ecosystem of trace levels of microconstituents present in wastewater treatment plant effluents has been receiving ever greater attention in recent months and years. Interestingly, nanomaterials are not generally included in the suite of "emerging trace constituents" that are the focus of this attention and potential concern, despite the ever increasing use of nanoscale materials in consumer products. This study uses the PhATE™ model to develop predicted environmental concentrations (PECs) in surface water for two nanoscale materials (Multi and Single Walled Carbon Nanotubules, as well as nanoscale silver). The nature of some nanomaterials, such as carbon nanotubules, makes it difficult to measure concentrations in surface water using existing analytical methods. Using PhATE™ allows us to develop PECs for over 27,000 kilometers of rivers in the US. The potential for these two nanomaterials to pose a potential risk to the aquatic ecosystem is determined by comparing PECs to available aquatic toxicity data to determine whether they exceed concentrations that have been shown to have potential effects.

WP152 Toxicity of Triclosan and Triclocarban to Marine Phytoplankton. K. Butler, W.H. Palefsky, A.M. Peck, Skidaway Institute of Oceanography, Savannah, GA; K. Butler, Wesleyan College, Macon, GA. Triclosan and triclocarban are antimicrobial compounds used in consumer products such as toothpaste, antibacterial soaps and skin creams and co-occur in the aquatic environment. These compounds are released into waterways as effluent from wastewater treatment plants and from the discharges of private septic tanks. Previous studies have shown that that algae are among the most sensitive non-target organisms to environmental exposures of triclosan. Few previous studies have focused on marine species and it appears no previous work has examined the toxicity of triclocarban on freshwater or marine phytoplankton. In this study, we examined the effects of triclosan, triclocarban on the growth rates and cell densities of four marine phytoplankton species (*Thalassiosira pseudonana*, *Akashiwo sanguinea*, *Skeletonema costatum*, and *Dunaliella tertiolecta*). In addition, this research was the first to analyze the outcome of these tests with a mixture of the two compounds. These experiments were conducted through standard 96-hour static bioassays that evaluated the effects of varying concentrations of the compounds and the mixture. Cell densities were measured using a hemacytometer.

WP153 Accumulation of Personal Care Products in Estuarine Food Webs. A.M. Peck, W.H. Palefsky, Skidaway Institute of Oceanography, Savannah, GA. The presence of pharmaceuticals and personal care products (PPCPs) in natural environments has been well documented over the last decade. While significant quantities of many of these compounds are introduced into coastal and estuarine systems, little is currently known about their fate or effects in these systems. Of particular concern are compounds that are used in large quantities, persist in the environment, have a designed bioactivity, or bioaccumulate in aquatic organisms. Compounds from three contaminant classes have been selected based on their use in the United States as well as their estimated bioaccumulation potentials. The selected compounds include topical antimicrobials and their primary metabolites (triclosan, triclocarban, methyl triclosan, 4-chloroaniline, and 3,4-dichloroaniline), polycyclic musk fragrances (HHCB, AHTN, ATII, ADBI, and AHMI), and active ingredients used in sunscreens (octyldimethyl-p-aminobenzoic acid, octocrylene, octyl methoxycinnamate, 4-methylbenzylidene camphor, and homosalate). Methods for the analysis of these compounds in water and biota have been developed and applied to samples collected from the Savannah Rivers Estuary.

WP154 The effects of fluoxetine on osmoregulation and nitrogen excretion in a marine teleost fish. D. McDonald, Marine Biology and Fisheries, RSMAS, University of Miami, Miami, FL. The most commonly prescribed antidepressants, including fluoxetine, inhibit the reuptake of serotonin (5-HT; 5-hydroxytryptamine) by 5-HT transporters in neurons, human platelets and gastrointestinal tract. This inhibition results in an increase in local 5-HT concentrations making the physiological action of fluoxetine analogous to 5-HT itself. After consumption, the metabolites of fluoxetine as well as 10-15% of the unchanged parent drug are excreted from the body and enter sewage treatment facilities but are not degraded. Consequently, these compounds have reached measurable quantities in surface waters and the impact of pharmaceutical exposure on marine life needs to be thoroughly examined. The gulf toadfish, Opsanus beta, is a benthic, marine teleost fish abundant along the Florida coastline and within the Gulf of Mexico. Many 5-HT sensitive physiological processes have been identified using toadfish that could be susceptible to environmental fluoxetine contamination. To test this potential, fish were treated with fluoxetine by intraperitoneal injection using slow-release coconut oil implants. These fish were compared to a third subset of fish that were exposed to fluoxetine in the water (nominal concentrations of 0, 0.01 and 10 µg/l) for 15 days. Circulating 5-HT and cortisol, an important stress hormone in teleost fish, were monitored in these groups of fish as well as acute and chronic changes in nitrogen excretion, a process that is regulated by 5-HT in toadfish, plasma and intestinal fluid osmolality and drinking rate.

WP155 Triclosan and Triclocarban in Four Wastewater Treatment Plants in Savannah, Georgia, USA- Clearance and Mass Loading. S. Kurunthachalam, Savannah State University, Savannah, GA; A. Peck, Skidaway Institute of oceanography, Savannah, GA; W.H. Palefsky, Skidaway Institute of oceanography, Savannah, GA; K.S. Sajwan, Savannah State University, Savannah, GA. Concentrations of triclosan (TCS) and triclocarban (TCC) were measured in influent and effluent of President Street, Wilshire, Travis Field and Georgetown wastewater treatment plants in Savannah, Georgia (USA). Among treatment plants, Wilshire plant showed elevated concentrations of TCS (influent; 86,200, effluent; 5370 ng/L), while TCC were greater in Georgetown plant influent; 36,200 and Wilshire plant effluent; 4760. Clearance of TCS and TCC were 95% and 92% in President Street plant, 94% and 85% in Wilshire, 99% and 80% in Travis Field plant, and 99% and 99% in Georgetown plant. Loading estimate results showed that President Street plant WWTP discharge 28 g/day TCS and 62 g/day TCC in to the Savannah River.

WP156 Perfluorinated Organic Compounds in Sediment, Aquatic Wildlife from Georgia Coast, USA. S. Kurunthachalam, M. Gilligan, C. Pride, K.S. Sajwan, Department of Natural Sciences, Savannah State University, Savannah, GA; Y. Zushi, S. Masunaga, Graduate School of Environment and Information Sciences, Yokohama National University, Yokohama, Kanto, Japan. Sediment and aquatic animals were collected from pond, lake, river and estuarine ecosystems in Savannah, Georgia Shelf (south Atlantic Bight), and the LCP Superfund Site in Brunswick, GA (USA). Samples were analyzed for 19 perfluorinated compounds (PFCs) such as perfluorinated sulfonates (PFSs), perfluorinated carboxylic acids (PFCAs), perfluorinated sulfonamidoacetic acid (N-MeFOSAA and N-EtFOSAA) and fluoroteromer unsaturated calboxylic acids (FTUCA). PFOS were the predominant contaminant with a concentration range of ND-320 followed by its isomer ND-75, PFHxA (ND-40) and PFNA (ND-23) on ng/g wet wt. Liver and muscle of Catfish collected from the Ogeechee River and Lake Mayer had greater concentrations. Sharks contained lower PFCs than other aquatic wildlife.

WP157 Investigating the Reactivity and Toxicological Significance of Fluorotelemer Unsaturated Acids and Aldehydes. A.A. Rand, S.A. Mabury, Chemistry, University of Toronto, Toronto, Ontario, Canada. Fluorotelomer alcohols (FTOHs) are residual compounds created in the process of manufacturing higher weight fluoropolymers and surfactants used for commercial products. FTOHs are released to the environment through residuals. They have been shown to degrade via abiotic and biotic mechanisms to perfluorinated acids (PFCAs), which