

Chemical Contaminants Entering Estuaries of the South Atlantic Bight and Determining Their Effects by Bioassays (57)

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A survey of research related to toxic contaminants in the South Atlantic Bight revealed five major sources (industry, silviculture, agriculture, golf courses, urban/suburban runoff) of contaminants that have the potential to harm coastal estuaries and the near-shore environment. All of these sources are associated with human activities within the watershed, some with historical activity, and some with relatively recent land use trends. Recently completed studies in coastal South Carolina and Georgia showed an increase over a five-year period in pesticides from golf course communities and polycyclic aromatic hydrocarbons from highway runoff. The presence of atrazine, a widely used herbicide, was used as an indicator of pesticide input. Other pesticides found in drainage creeks from golf course communities included chlorpyrifos, chlorothalonil and fipronil. Fipronil, used against termites, mole crickets and fire ants, is very toxic to estuarine crustaceans and the concentrations of this pesticide found in the drainage creeks of some communities (11-23ng/L) are approaching the concentrations that cause effects on the estuarine copepod, *Amphiascus tenuiremis* (160 ng/L). Bioassays using benthic copepods, grass shrimp and juvenile clams showed increased mortality and effects on growth and reproduction after exposure to sediments receiving highway runoff. In addition, there appeared to be an association between reproduction abnormalities and increased DNA strand breaks as a result of grass shrimp exposure to estuarine sediments collected from near busy highways.