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## **Endocrine Disruptors in the Sediment of the Quinnipiac River**

Anthropogenic sources, such as chemical spills, sewage, and poor wastewater treatment, have brought a significant amount of estrogenic compounds into the environment. As a result, these estrogenic compounds are known to produce developmental, reproductive, neurological and immune effects (NIEHS 2016). Estrogenic compounds may be naturally produced hormones or may take the form of synthetic chemicals that interact with the human endocrine system (xenoestrogen) (EMXE 2004), both of which may produce negative effects.

In Connecticut, the Quinnipiac River has a long history of contamination from industry use, which has resulted in more foreign substances, like plasticizers, making their way into the sediment (The Quinnipiac River Fund 2015). These plasticizers are additives that give plastics flexibility but are suspected to interfere with the endocrine system (Plasticizers 2016). Studies have shown demonstrated that the exposure to Bisphenol A (BPA) activates estrogen receptors, which stimulate breast cancer cell growth (Fernandez 2004). Steroid hormones, like estradiol, have a hydrophobic (Oren 2004) thus creating the potential that they may be drawn down into the sediment and persist there rather than moving through the water column/flow.

The yeast *Saccharomyces cerevisiae* BLYES has been genetically modified to respond to estrogenic compounds by producing bioluminescence. It does so in a quantitative manner; producing more light in response to more estrogen such that total estrogenic potential in a sample can be calculated. When the strain is exposed to samples, a correlation is made between standard concentrations of estrogen and the potential estrogens present (Sanseverino et al. 2005).