

## **Case study Notes for “Regulation of estrogen in water management facilities”**

**Introduction:** This case study is designed for students in an introduction biology course at the end of the cell signaling and gene expression units. (May be used at higher levels as well) The students are asked to come to a decision about the regulation of estrogen (or estrogen like compounds) in the water supply.

### **Learning objectives include:**

1. Students will synthesize and evaluate scientific data gathered from animal model systems.
2. Students will identify sources of endocrine disruptors in the environment.
3. Students will recognize the social and environment impacts of regulating endocrine disruptors.

**Administration of case study:** In small groups (4-5), students will work through the problems and come up with a decision on if and how regulation should be done on endocrine disruptors. The groups will also discuss what additional information they would like to see in order to refine their decision.

**Possible extension:** A follow up assignment could be given where the groups go and find the additional information they would like to see before making a decision. The next class, the groups can compare what they found and revise their decision accordingly.

### **Citations:**

Kidd, Blanchfield, Mills, Palace, Evans, Lazorchak and Flick. 2007. Collapse of a fish population after exposure to a synthetic estrogen. PNAS vol. 104 no. 21 pg 8897-8901.

Harris, Hamilton, Runnalls, Vinciotti, Henshaw, Hodgson, Coe, Jobling, Tyler, and Sumpter. 2011. The Consequences of Feminization in Breeding Groups of Wild Fish. Environmental Health Perspectives vol 119 no.3

Wise, O'Brien, and Woodruff. 2011. Are Oral contraceptives a Significant Contributor to the Estrogenicity of Drinking Water? Environ. Sci. Technol. 45 (1), pg 51-60.

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