

Plastic for Dinner: How Bisphenol A is Poisoning Alaska

Veronica Delaney (EVE), Thomas Farro (RBE), Jeffrey Letourneau (CHE), Alexander O'Brien (RBE), Samuel Young (AE)
Advisors: Professor Derren Rosbach (CEE) and Professor Sharon Wulf (SoB)

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Abstract

The chemical breakdown of plastics in the Pacific Ocean releases BPA, a known lipophilic endocrine disruptor⁽ⁱ⁾. The effects of this chemical are particularly felt in Alaska due to converging ocean currents and a traditional high-fat diet⁽ⁱ⁾.

We focused on a long term solution and a short term fix to this growing issue. To minimize human exposure to such harmful substances, we propose modified filtration systems on statewide sources of plastic waste and, on a local level; prevent the consumption of and contact with substances that contain BPA^(iii,iv).

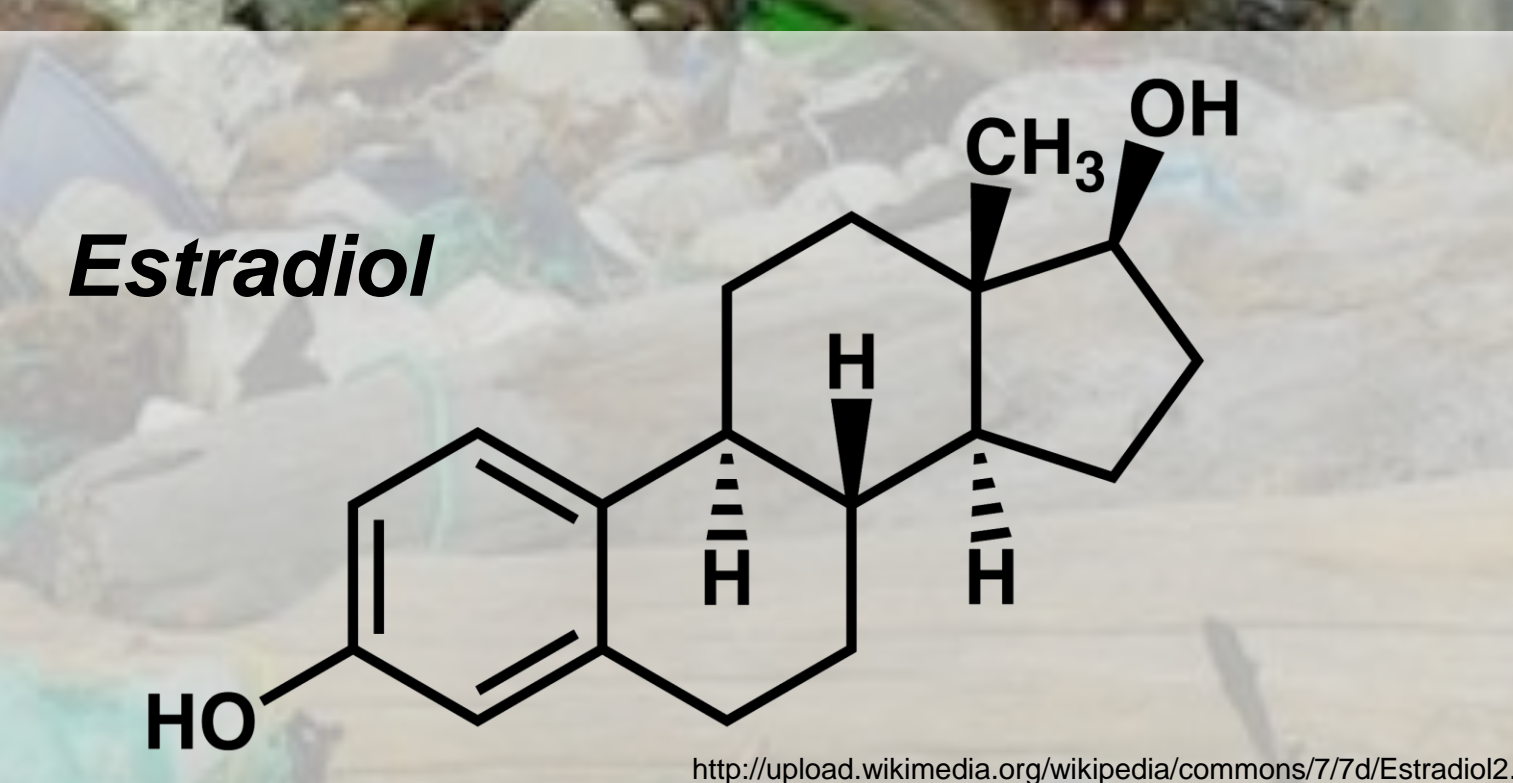
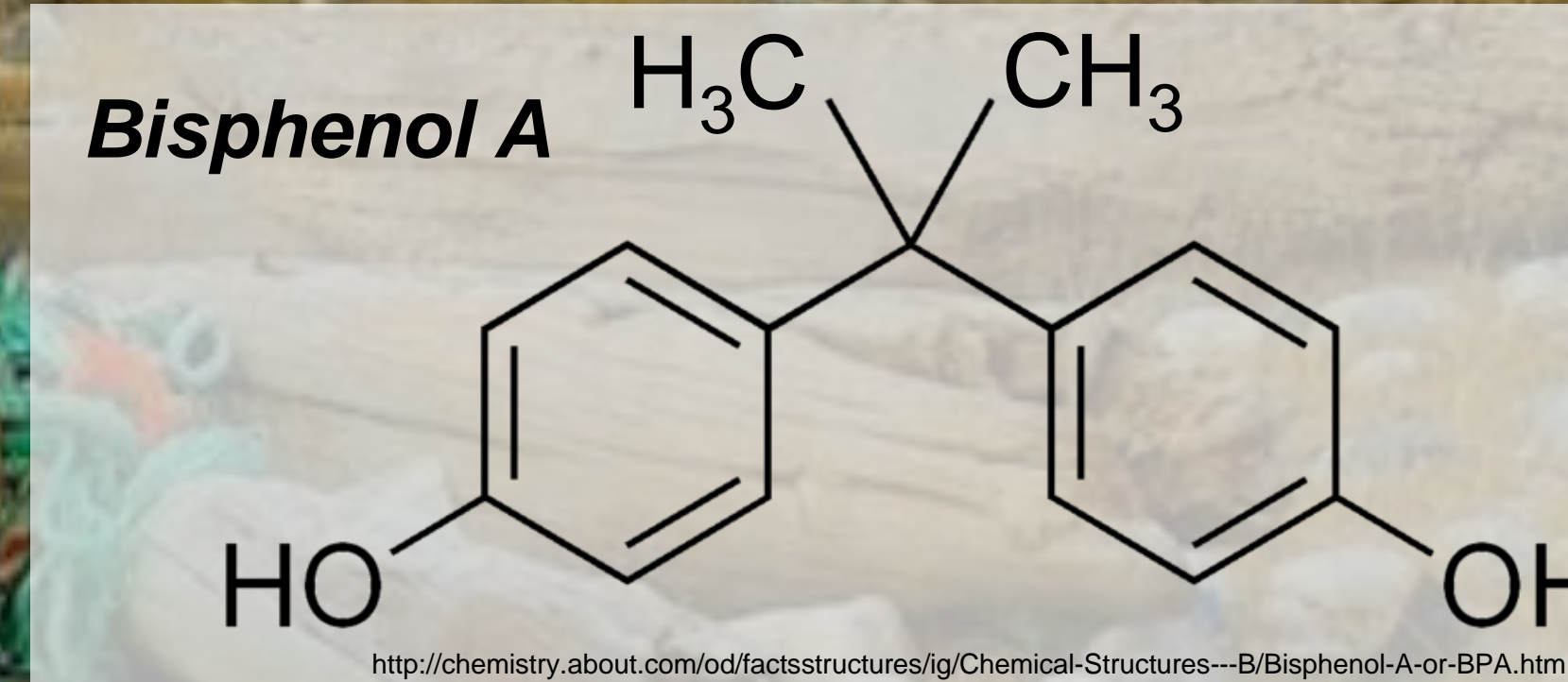
Background

There is currently an enormous patch of garbage in the Pacific Ocean^(viii). The debris there leaches harmful chemicals such as BPA into the water^(xii). BPA disrupts the endocrine system in humans and animals due to its chemical similarities to estrogen⁽ⁱ⁾. The effects of exposure include neurological changes, disruption of the immune system, and increased rates of cancer^(iv).

Plastic is consumed by fish and other marine organisms. BPA then bioaccumulates up the food chain to humans⁽ⁱ⁾. BPA tends to be found in the fat deposits of marine organisms that inhabit colder regions⁽ⁱⁱ⁾, so people who live near the arctic and rely on these animals as a food source are especially at risk. Research indicates that increasing rates of health problems among Alaskan natives correlates with BPA exposure^(i, ii).

Project Goals & Objectives

- Determine why Alaska is at heightened risk to health effects from BPA
- Investigate methods for cities and factories to reduce the amount of plastic outflow they produce
- Develop ways to reduce extraneous exposures to BPA in everyday life



Conclusions

- Populations of native and rural Alaskans are at high risk⁽ⁱⁱ⁾
- BPA and other harmful endocrine disruptors are always present in the environment^(vi,x)
- Small steps can be taken to reduce everyday exposure
- Awareness of possible risks and effects of the toxins is a powerful tool
- Using filtration on factory wastewater, point source outflow sites will reduce plastic output^(iii,iv,xi)
- Reducing pollution is more feasible than removing plastic from the ocean^(vii)

Recommendations

Short Term:

- Educate the public on how to avoid foods and materials which may contribute to adverse health effects⁽ⁱⁱⁱ⁾.

Long Term:

- Begin implementing water surface control systems and microfibrinous mats to filter out debris and harmful chemicals at waste sites and in city storm drains^(iii,vi,xi)
- Bring attention to local hazardous dumping sites in order to apply the sites for federal aid under the CERCLA act of 1980 and SARA act of 1986
- Establish local committees to monitor levels of BPA in the environment and in people

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