

## **Polyaromatic Hydrocarbons (PAH) in Evening Primrose Oil**

Following their investigation earlier this year into dioxin levels in fish, the Irish Food Safety Agency is now undertaking a survey of evening primrose oil supplements and the possible presence of PAH (polyaromatic hydrocarbons) in the oils.

### **What are PAHs?**

PAHs are environmental pollutants that may be found in air attached to dust particles, in soil, stream sediment, water and food. They are found in nature in coal and crude oil and in emissions from forest fires and volcanoes. Most PAHs entering the environment are formed unintentionally during burning (coal, oil, wood, gasoline, garbage, tobacco and other organic material) or in certain industrial processes. Several PAHs have been identified as carcinogenic, chemicals that can cause cancer of the skin, lung, bladder, liver, stomach and breast in laboratory animals.

Humans are exposed to PAHs from breathing in tobacco smoke, breathing heavy exhaust from traffic, workplace exposures with higher air levels of PAH include: coal coking, coal tar production, aluminum/iron/steel production, municipal trash incineration, asphalt production and smokehouse operations. We may also be exposed to PAHs through food grown in contaminated soil, or by drinking/using water that has been contaminated. Charbroiled meat, fish, and smoked foods (meats and cheeses) have higher levels of PAHs.

### **How do PAHs relate to the oil industry?**

PAHs first came to the attention of the edible oil industry a few years ago when high levels (3000  $\mu\text{g}$ ) were discovered in crude coconut oil, and their source was traced back to the use of diesel to dry the raw copra from which the oil was then extracted.

The industry dealt with this by developing specific refining procedures to remove PAH and through its trade association adopted a set of standards defining maximum acceptable limits for these compounds in edible oils. Statutory limits have not been set although there is now an EU recommended guideline limit of 2  $\mu\text{g}/\text{kg}$  maximum.

Since then PAHs have also been found in a range of other vegetable oils (rapeseed, sunflower, olive oil), although not at the levels identified in coconut oil, and it has become apparent that although diesel fired seed dryers are the most common source, general environmental contamination can also be responsible.

### **Testing for PAHs**

Currently, the FSAI is testing evening primrose oil capsules for the presence of benzo (a) pyrene, one of the PAHs that has been most extensively studied. Levels of benzo (a) pyrene should be below 2  $\mu\text{g}/\text{kg}$  in the evening primrose oil capsule. With proper oil refining and bleaching, the PAHs can be removed and therefore should be below recommended levels.

#### **Bioriginal Food & Science Corp.**