



## Polycyclic Aromatic Hydrocarbons (PAHs) in Fish

### What are PAHs?

Polycyclic aromatic hydrocarbons (PAHs) are a group of chemicals that form during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. There are more than 100 different PAHs. Of those, scientists consider 17 of the specific PAHs as a group (called total PAHs) because:

- More information exists on these specific PAHs than on the others;
- They are suspected to be more harmful than some of the others;
- They exhibit harmful effects that are typical of PAHs;
- There is a greater chance that you will be exposed to these PAHs than to the others; and
- Of all the PAHs analyzed, these are the PAHs found at the highest levels at hazardous waste sites across the nation.

### How might I be exposed to PAHs?

PAHs are formed by burning coal, gasoline and fuel oil. They are also a major part of asphalt and tar. Some sources of PAHs include:

- Auto exhaust
- Leaking motor oil
- Coal-tar pavement sealants
- Tire particles
- Broken up asphalt from driveways and parking lots
- Past and current manufacturing processes

### What is the screening level for PAHs in fish?

The Florida Department of Health's (DOH) fish screening level for total PAHs is 3 micrograms per kilogram (3 ug/kg). Florida DOH recommends limits on how much fish someone should eat based on how many fish meals (one per week, two per week etc.) of a specified meal size (8 ounces) someone can eat over a given period (one month) with little or no harm to health. A consumption advisory is not a regulation. Instead, it is a voluntary recommendation made to help people protect their health. By following these advisories, you can get the many health benefits of eating fish yet avoid unwanted chemicals.

### How can PAHs in fish affect my health?

Screening levels for fish are set at very low levels. Eating fish at or below the consumption advisories for your entire lifetime is unlikely to cause illness.

To set screening levels in fish, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set the level hundreds or thousands of times less than the "no-effect level." Therefore, screening levels slightly above the guideline for a short time period does not greatly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases. It also increases when you eat contaminated fish often.

The type and severity of health effects related to exposure to a certain chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

The effects of chemical exposures on someone range widely from person to person. The guideline is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Little information exists about what kind of health risks are likely from eating fish with low levels of PAHs for short time periods. However, long-term exposures at levels above the screening level have the potential to cause developmental and reproductive effects.

**How likely are PAHs in fish to cause cancer?**

Not all PAHs cause cancer. However, studies show that some PAHs are likely cause cancer. Others may cause cancer but are still under study.

Currently, cancer will affect about one in every three people in Florida, primarily due to smoking, diet, and family history factors. If you follow the advisory over your lifetime, the PAHs in the fish you eat may not increase your cancer risk at all. At worst, using Environmental Protection Agency (EPA) methods to calculate risk from a lifetime of eating contaminated fish, it is estimated that about one additional cancer case may develop in 100,000 people eating contaminated fish, according to this advisory. Eating fewer meals of contaminated fish will further decrease your cancer risk.

**Is there a medical test to see if I have been exposed to PAHs in fish?**

There are laboratory tests that can measure PAHs in your blood, urine, and body tissues. These tests are not routine at most doctor offices because they require special equipment. Although these tests can show exposure to PAHs, these tests cannot predict whether any health effects will occur. The tests also cannot determine the extent or source of your exposure to the PAHs. It is not known how effective or informative the tests are after exposure has ended.

**What should I do if I consumed fish with PAH levels above the screening limit?**

Most fish are not contaminated enough to cause harm after a single or a few meals. The health risk comes from eating contaminated fish often and regularly over a very long period of time from certain water bodies. Advisories are issued for very low levels in fish to insure the safety of people who eat the fish. Your body will get rid of most of these chemicals over time once the source has stopped.

**Who should I consult to discuss my concerns about health effects from PAH exposure?**

Bring this fact sheet and discuss with your doctor, the professional with the best understanding of your overall health.

**For additional health information:** Please call the Florida Department of Health toll-free help line 877-798-2772. After hours, you may leave a voice mail. Or visit us online at: [www.myfloridaeh.com/com](http://www.myfloridaeh.com/com)

For more information about the health effects from exposure to this chemical in different situations and at higher levels than those usually found in fish, please see the ATSDR ToxFAQs for PAHs at: <http://www.atsdr.cdc.gov/tfacts69.pdf>