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# Stormwater Wet Ponds and Wetland Management -

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*Reference: United States Environmental Protection Agency (USEPA)*
Stormwater Wet Ponds and Wetland Management Guidebook
https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1006MDW.txt

I reviewed the above noted 80-page guidebook from the USEPA that speaks to Stormwater Wet Ponds and Wetland Management and learned the following key points regarding the subject.

In the early 1990's with the initiation of the federal National Pollutant Discharge Elimination System (NPDES) stormwater program, cities and towns began programs to limit stormwater pollution. These programs typically include the installation of wet ponds and artificial wetlands as tools to help control runoff volume and mitigate pollution from runoff, and redirect wetland flow. A formal program was set up requiring Best Management Practice (BMPs) for these ponds and unfortunately, the impetus to construct them became much stronger than the effort to maintain them once in place.

It is my understanding the applicant's proposed stormwater detention ponds will be constructed with the intent to contain and filter the excess water that will flush off the building and surrounding landscape. Although these ponds are put in place with some thought for wetland preservation and water control, I have concerns regarding these structures, specifically to the management of these ponds following construction and final occupation of the site.

Without proper maintenance of these ponds, nutrients such as nitrogen and phosphorus which is typically found in stormwater runoff can accumulate and lead to degraded conditions such as low dissolved oxygen, prevalence of algae blooms, plant die-off, unsightly conditions, and odors. Any excess pollutants and other toxins (such as the run-off of diesel fuel, oil, air pollutants, and other chemicals from vehicles) will be emitted into the ponds. When stormwater Best Management Practices are "flushed" during a large rain event, the excess nutrients causing these problems may be transferred to the receiving waterbodies and surrounding wetlands and could affect and become a water quality issue for the surrounding neighborhood and the receiving waterbodies.

The applicant's recent proposal to have the current ponding water on Governor's Highway will create a drainage vehicle into the existing wetlands area located at the Northeast corner of the property is alarming. If this occurs, there is great potential for toxins such as Polycyclic Aromatic Hydrocarbons (PAH) from motor vehicle exhaust, glycol (antifreeze), oils, and other debris to move into these wetlands. As a result, there will be significant changes to the runoff that will compromise the the trophic state of the wetland system and change it dramatically.

When the affected stormwater ponds are "flushed" during a large rain event, any excess pollutants, nutrients, or debris causing these problems will be transferred to the receiving waterbodies. In this case, the Podunk River and eventual flow to the Connecticut River will ~~more likely~~ be affected. With the obvious signs of climate change, this is more liking to occur.

There are other factors to consider as well.

1) **Habitat Impacts**
   The placement of ponds or wetlands, especially with larger facilities in low-lying areas may harm natural wetlands or existing habitats. Sitting ponds or other structural management practices within natural buffer areas and wetlands can degrade their natural functions and can interrupt surface water and ground water flow when the soils are disturbed for the installation.

2) **Health and Safety Issues**
   Waterfowl Geese and ducks may become undesirable year-round residents to the area in vast numbers and will eat available grasses and emergent plants. Water quality in permanent pools often becomes degraded due to increased fecal coliform counts and nutrients from geese and duck droppings. Geese can be very **noisy** during breeding seasons with display unfavorable behavior. A current example is the large volume of the geese in the area is at 125 Ellington Road in South Windsor (Broadridge facility).

3) **Maintenance Problems -** Maintenance is necessary over the long-term for a stormwater pond or wetland to operate effectively. The pollutant removal, watercourse protection, and flood control capabilities of ponds and wetlands will deteriorate if:

   - Invasive plants take over and out-compete the planted vegetation
   - Sediment accumulates reducing the storage volume,
   - Debris blocks the outlet structure,

- Pipes or the riser are damaged,
- Slope stabilizing vegetation is lost, or
- Structural integrity of the embankment, weir, or riser is compromised.

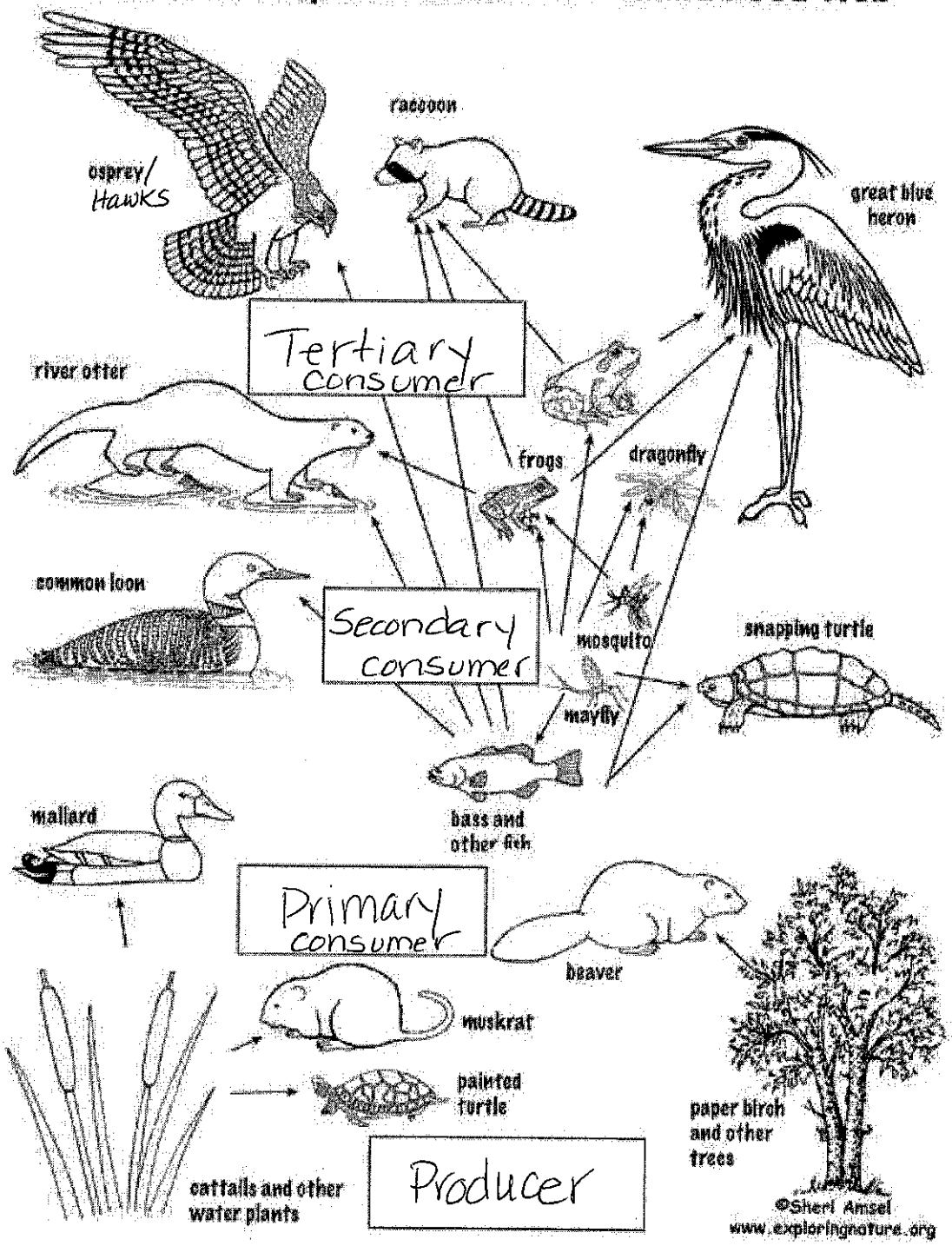
Pond and wetland maintenance activities range in terms of the level of effort and expertise required to perform them. Routine maintenance, such as mowing and removing debris or trash, is needed multiple times each year. More significant maintenance such as removing accumulated sediment is needed less frequently, but probably require a more skilled person(s) with special equipment. Inspection and repair of critical structural features such as embankments and risers will need to be performed by a qualified professional who has experience in this area.

Q: Could the Commission please ask the applicant if they are willing to provide a legal affidavit guaranteeing the maintenance schedule & procedures that will be used to maintain the proposed "artificial" wetland and stormwater structures?

I ask the commission to please consider these concerns regarding this application. The proposed plan is rather large for this parcel and I don't understand how it cannot have a great impact on the current wildlife habitat and the overall health of the surrounding wetlands.

Thank you for your volunteered time and consideration.

# Name the Trophic Levels of a Wetland Food Web



# Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).**

## What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl'ĭ-sī'klĭk ăr'ə-măt'ĭk hī'drə-kar'bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

## What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust. -delivery vans
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

## How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

# Polycyclic Aromatic Hydrocarbons

## How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

## How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

## Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

## Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 $mg/m^3$). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 $mg/m^3$ averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 $mg/m^3$ for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

## Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

## Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.