Low Tox Method - Assignment 2

Response ID:53 Data

1. Ingredient research skill-building

1. What's your name?

Amy Westnedge

2. What chemical have you been given to research?

Pyrene

3. How would one describe this chemical or group of chemicals form a structural point of view?

Pyrene or PAHs for short, is one of a group of chemicals called polycyclic aromatic hydrocarbons consisting of two or more benzene rings in their structure.

The chemical formula is C16H10.

They can existing in over 100 different combinations but most commonly treated as a group of 15.

PAHs are naturally occurring in the environments but can also be man made. They are created when a product such as coal, oil, gas and, wood (including forest wood) and garbage are burnt but the burning process is not complete.

Most PAHs are used to conduct research. Pyrene is used to make dyes, plastics and pesticides and are also used to make benzo(a)pyrene.

4. Is there anything in the research (provide study links or articles written by authorities on the subject either journalists or scientists) that suggests this chemical can cause harm?

Yes, there have been animal studies to show Pryene is toxic to the kidneys and liver and affects several living functions in fish and algae.

When mice were feed Pyrene they developed nephropathy, a kidney disease. A number of PAHs have caused tumours in lab animals when exposed to Pyrene via their food or from breathing contaminated air or when applied to their skin.

While these effects have not been seen in humans, I believe that the results in animal studies warranty being concerned.

References:
https://www.sciencedirect.com/science/article/abs/pii/S1470160X13002501?via%3Dihub
https://www.sciencedirect.com/science/article/pii/S1095643312001869?via%3Dihub
https://www.sciencedirect.com/science/article/abs/pii/S1470160X11002500?via%3Dihub
https://www.sciencedirect.com/science/article/pii/S1095643312001870?via%3Dihub

5. Based on the research you gathered, to what level would you feel comfortable using a product with this ingredient in it?

Pyrene is not an ingredient added to products and instead you are exposed to it through the environment, home and workplace. It would be advisable to limit your exposure to Pyrene based on the animal studies and research mentioned above.

6. Where might we find this chemical appearing in our day to day lives?

People are are exposed to PAHs in the environment, home and workplaces.

You would most likely to be exposed to PAHs by breathing containment air or eating food that was grown in contaminated soil

or drinking water that was contaminated.

Eating food that is also grilled could also exposure you to PAHs

Cigarette smokes are exposed as PAHs can be found in tobacco and cigarette smoke, another reason to avoid smoking.

People who work in hazardous waste sites, such as the steel industry that use coal tar as fuel, can be exposed to contaminated air and be likely to be breathing in PAHs

7. If we were to stop using products with this chemical, what could we use instead? A couple of brand ideas that omit that ingredient or DIY recipe links to support the transition for people. (If you've found it to be safe and supported that with evidence, just pop N/A here")

The first and most obviously way to avoid Pyrene would be to not smoke or avoid situations where you could be effected by passive smoke.

If you would in a work place that deals with hazardous waste you should wear appropriate PPE and use appropriate safety equipment and follow safety protocols.

To limit your risk in relation to food and water contamination, I would suggest buying local fresh organic food when you can, when you see the farm you can see what conditions your food is grown in and grow what you can at home.

I would also be filtering my water. Benzo(a)pyrene can be removed from water using Sorption water treatment method, this method uses an absorbent media like activated carbon, modified clay minerals or biochar. Most water filters, including Southern Cross Pottery and Water Co have activated carbon.