

Polycyclic aromatic hydrocarbons (pahs)



**ASSIGN
BUSTER**

Polycyclic Aromatic Hydrocarbons (PAHs) Introduction Polycyclic Aromatic Hydrocarbons represent a group of chemicals found naturally in the environment or man-made and normally occur in groups of more than one chemical. They are formed through combustion of organic matter as they occur in oil, coal and tar (Shimada and Fujii-Kuriyama, p. 43). Research has shown that some PAHs compound are carcinogenic, mutagenic and others teratogenic. The universe is said to hold abundant levels of PAHs formed after Big Bang many years ago, while some are found in cooked food like meat which has been subjected to high temperatures ((Shimada and Fujii-Kuriyama, p. 52).). Delaney clause on the other hand states that carcinogenic in food is unacceptable. Through this it protects public health and especially children who are vulnerable. However, every alternative to Delaney incorporates some risk assessment which defines certain levels of acceptable risks.

Delaney clause is subject to some limitations in prioritizing the level of risk management for Polycyclic Aromatic Hydrocarbons. One of the problems is that it does not take into account the exact risk that a carcinogenic substance can pose once consumed (Dickey, p. 42). This is because the analytical chemistry has been improved and can detect even smaller quantities of chemicals as chemicals have become widely used nowadays. Regulatory agencies are thus faced with difficulties in trying to administer Delaney's Clause because it applies to quantities used in large amounts and can easily be detected. The Food and Drug Administration (FDA) confronted this problem by using quantitative risk assessment and set a standard known as "de minimis", which held that risk was negligible if a carcinogenic food additive was concentrated at less than 1 part in 1,000,000 (Dickey, p. 45).
<https://assignbuster.com/polycyclic-aromatic-hydrocarbons-pahs-research-paper-samples/>

The issue regarding pesticides use for which Delaney's Clause prohibited also had limitations. This is found in section 409 and it poses difficulties to those agencies which has the mandate to regulate pesticides (Shimada and Fujii-Kuriyama, p. 71). Agencies like Federal Insecticide Fungicide and Rodenticide Act (FIFRA) and Federal Food Drug and Cosmetic Act (FFDCA) conflicts with Delaney's Clause because they license the sale of pesticides and most probably if they are of more benefit to the country than the risk they pose. This is contrary to Delaney's Clause which does not take into account the risk-benefit analysis but have a clear conclusion that if the pesticide in a food additive is evident to cause cancer inhuman being or in animals then it should be prohibited (Rotkin-Ellman, Wong, and Solomon, p. 35).

Delaney's Clause has also led to a standstill in the re-registration of pesticides by the Environmental Protection Agency (EPA) which uses a 'negligible risk' standard rather than that used by the Delaney's Clause of 'zero risk' standard (Rotkin-Ellman, Wong, and Solomon, p. 56). The two has very conflicting statements and Delaney's Clause has been regarded as obsolete as EPA is developing a program that is clear towards pesticides and that of food safety laws.

Appropriateness of the application of Delaney's Clause has been criticized by EPA for a number of reasons. For example those pesticides that results in residual requiring food additive like that of tomato paste generally don't mean that they pose greater risks than the ones requiring only regular sections like that of fresh tomatoes (Rotkin-Ellman, Wong, and Solomon, p. 62). Again, EPA has also questioned Delaney's Clause on whether it would promote the food supply safety wherever a pesticide only shows a marginal

<https://assignbuster.com/polycyclic-aromatic-hydrocarbons-pahs-research-paper-samples/>

carcinogenic effect in an animal study. This proves that Delaney's Clause is subject to limitations and cannot be said to be perfect (Dickey, p. 47).

In conclusion, Delaney's Clause is subject to limitations in prioritizing the level of risk management for Polycyclic Aromatic Hydrocarbons. These limitations include: Not taking into account the level of risk that a carcinogenic additive can have once consumed. The other limitation is that of prohibiting the use of pesticides which is highly criticized by the EPA. Again the aspect of 'zero risk' standard is an issue to be debated on as EPA proposes the risk benefit analysis. It also seems to be inappropriate in most of its application.

References

Agency for Toxic Substances and Disease Registry. (1995). Toxicological Profile for Polycyclic Aromatic Hydrocarbons. Atlanta, GA: Agency for toxic Substances and Diseases Retrieved from <http://www.atsdr.cdc.gov/toxprofiles/tp69.pdf> on 09 April 2014).

Dickey, R. (2012). FDA Risk Assessment of Seafood Contamination after the BP Oil Spill. *Environ Health Perspect*.

Rotkin-Ellman, M., Wong, K. and Solomon, G. (2011). Seafood Contamination after the BP Gulf Oil Spill and Risks to Vulnerable Populations: A critique of the FDA risk assessment. *Environ Health Perspect*

Shimada, T. and Fujii-Kuriyama, Y. (2004). Metabolic Activation of Polycyclic Aromatic Hydrocarbons or Carcinogens by Cytochromes. *Cancer Sci*.