CH3041 Tutorial 9
Pesticides, Toxic Aromatics & Heavy Metals

Name:

1. Using examples explain why **organochlorine insecticides** have been phased out and organophosphate and carbamate insecticides brought in.

2. **Agent Orange**, a 1:1 mixture of the herbicidal chemicals 2,4-D and 2,4,5-T, was widely used as a defoliant in the Vietnam war. The class of chemicals called Dioxins were implicated as being responsible for the after effects of people working with the defoliant. Explain how the dioxins could have **formed** and how the **toxicity characteristics** of the defoliant could be **assessed**.

3. **Bioaccumulation** is a common problem with pesticides, toxic aromatic compounds and heavy metals. Using DDT as an example explain what factors are important for a compound to bioaccumulate and explain using Pb as example why this bioaccumulates but **doesn't biomagnify**.

4. Explain the use of **SAR analysis** to predict activity and toxicity characteristics using a class of pesticides as an example.

5. Lead does not biomethylate in the environment while mercury does. Both metals are regarded as priority pollutants which must carefully monitored. Explain why **biomethylation is a problem** and why **Pb** is a highly toxic metal despite the fact that it **does not biomethylate**.