TapTox

Air Pollution in Thailand and its detrimental health impacts

Project Team

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Project Aim

Poor air quality caused by particulate air pollution is a global problem, however the source of particulate matter (PM) emissions may vary in different countries. It is established that PM emitted from traffic can cause a spectrum of adverse health effects:

It is now essential consider if PM emitted from other sources (e.g. biomass burning) is associated with similar adverse health effects. Accordingly the TAPTOX project will **assess the toxicity of particulate air pollution** samples collected from **Chiang Mai** and **Bangkok** during and after **haze events** to help identify whether the PM emission source (e.g. traffic, agricultural burning) influences particle toxicity

Methodology

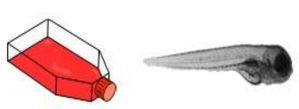
- The toxicity of PM samples will be assessed ***in vitro*** (pulmonary cell lines) and ***in vivo*** (zebrafish embryos)
- The **physico-chemical properties** of the PM samples will be investigated in parallel to the toxicology studies
  - Identify which PM attributes confer toxicity (e.g. particle size, PAH, endotoxin, or metal content)

PM sample collection

During & post haze events

Bangkok Chiang Mai

PM Extraction



Physico-chemical Characterisation

Size & Morphology *Metals* *PAHs*

Endotoxin *Levoglucosan*

Toxicity Testing (*in vitro* cell models and zebrafish embryos)

Cytotoxicity *Inflammation* *Cell Morphology*

DNA Damage *Developmental Tox*

Compare to epidemiology data

Timeline

Jan 2020	Project Starts
Feb – Mar	PM sampling during Haze events
April – July	Toxicity Testing
July –Aug	PM sampling during non-haze events
Aug – Nov	Toxicity Testing
November	Project Workshop
December	Project Ends

Project Outputs

- Addressing **knowledge gaps** regarding the toxicity of PM emitted from biomass burning
- **Increasing awareness** of the importance of assessing the adverse impacts of PM emissions from biomass burning
- Providing an **evidence base** for policy making
- **Training of early career researchers**
- **Building partnerships** between the UK and Thailand

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