

Catalytic solutions for the cleansing of wood stove emissions



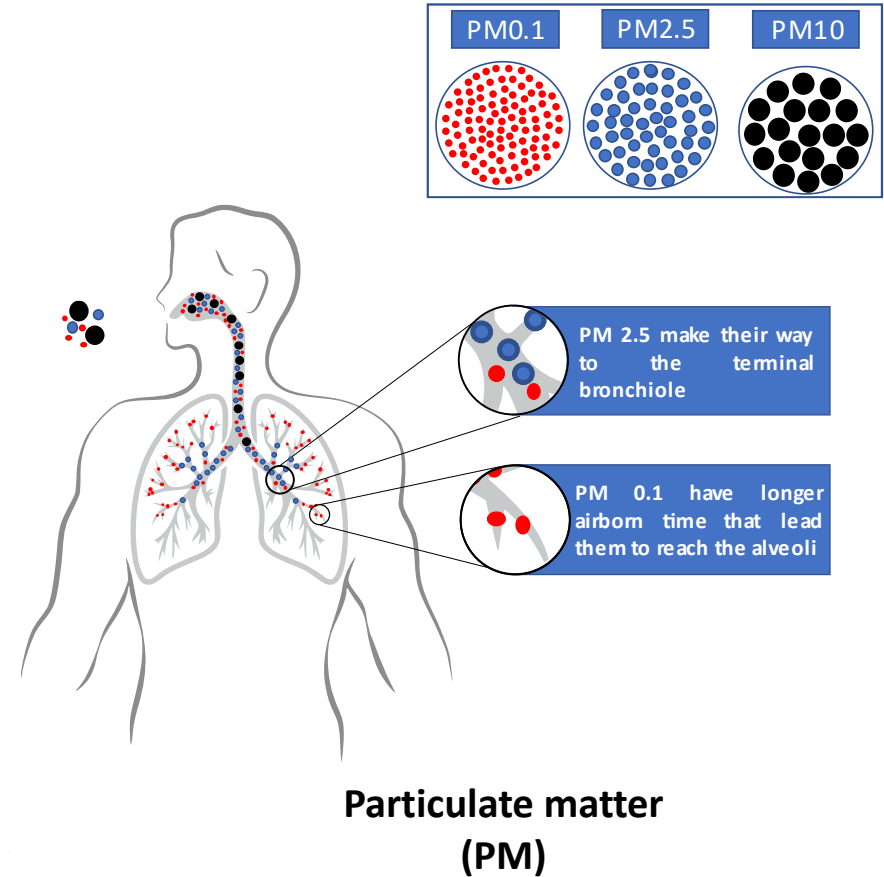
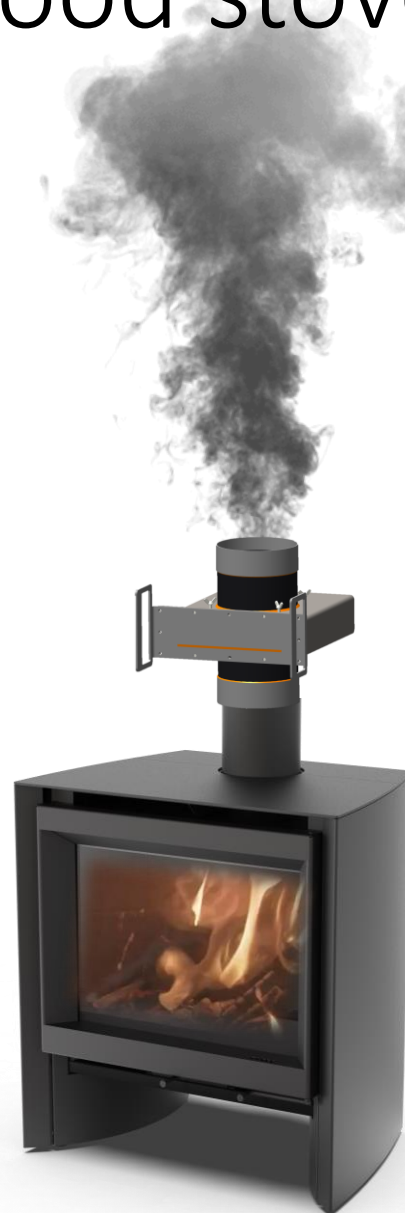
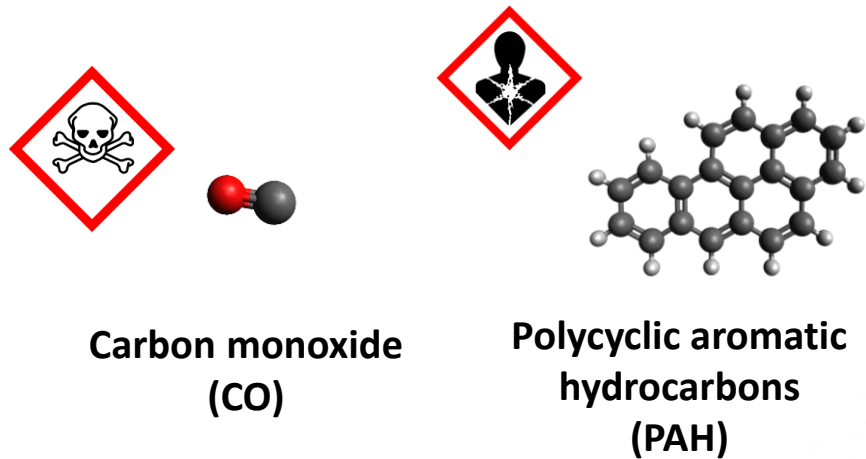
Tuesday 20th June 2023



Marvin Laboureur



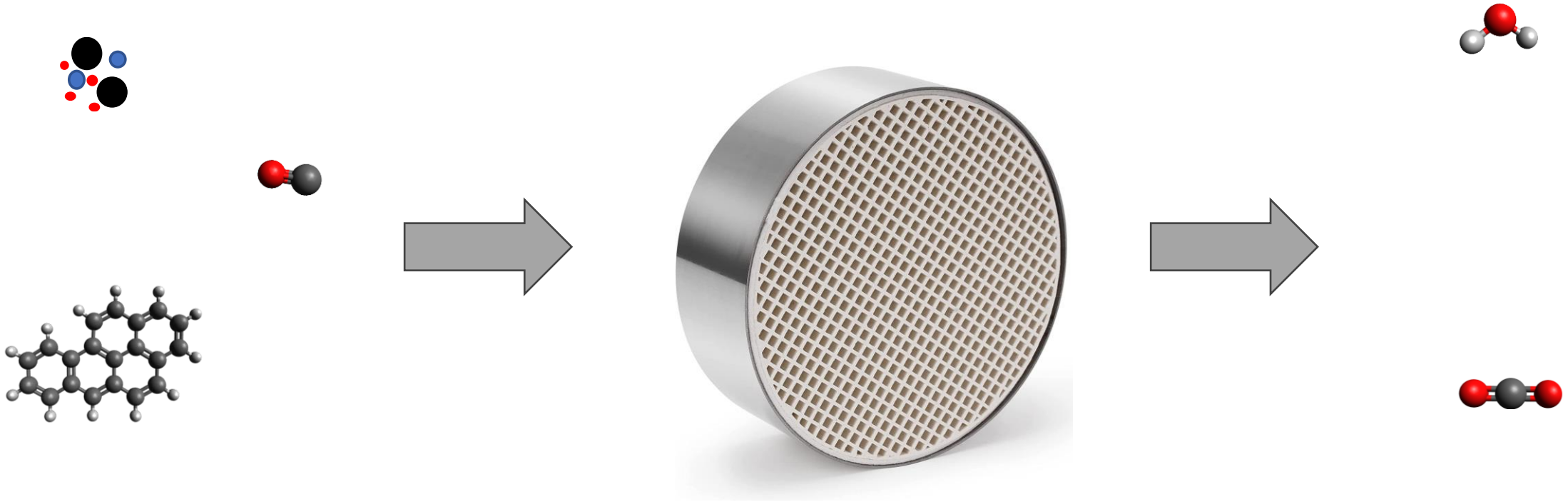
What are the main pollutants emitted by wood stove?



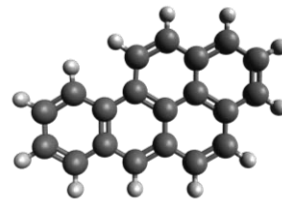
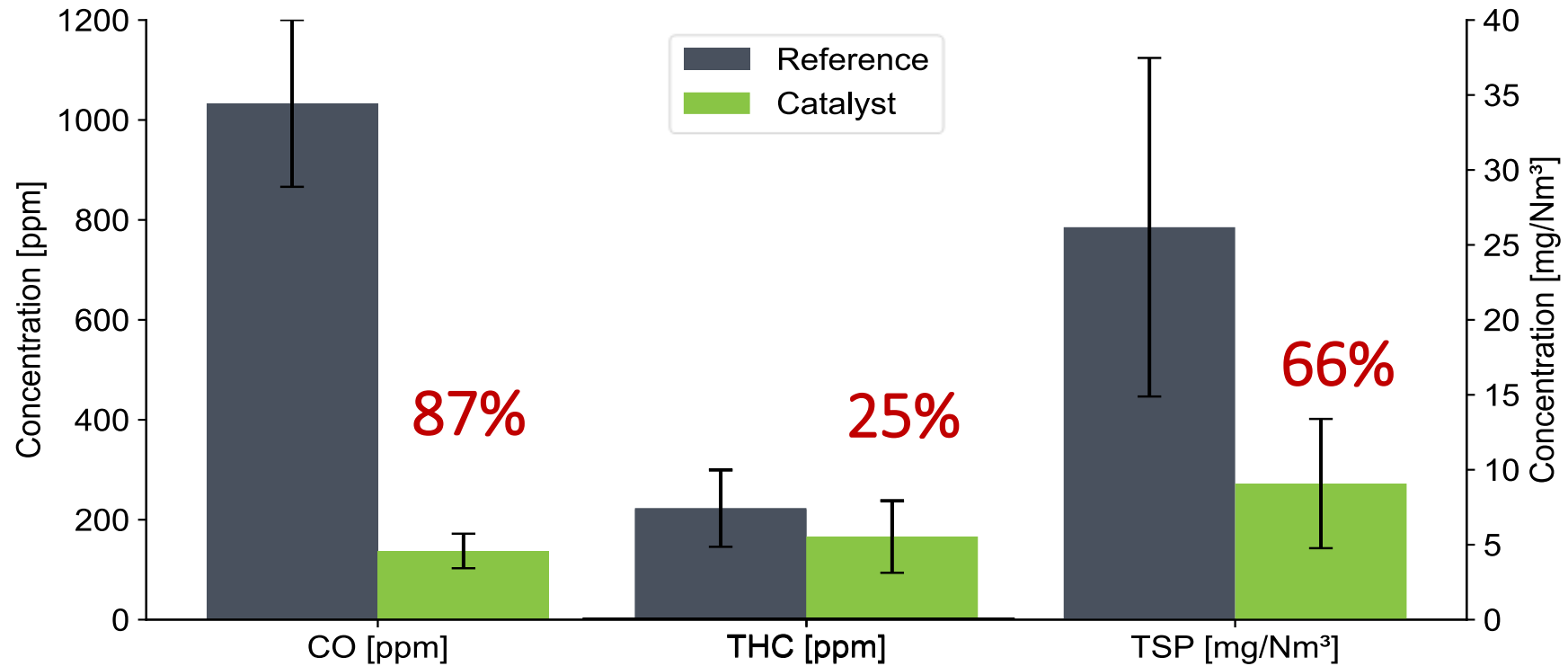
Catalytic oxidation as a solution!



Catalytic oxidation as a solution!

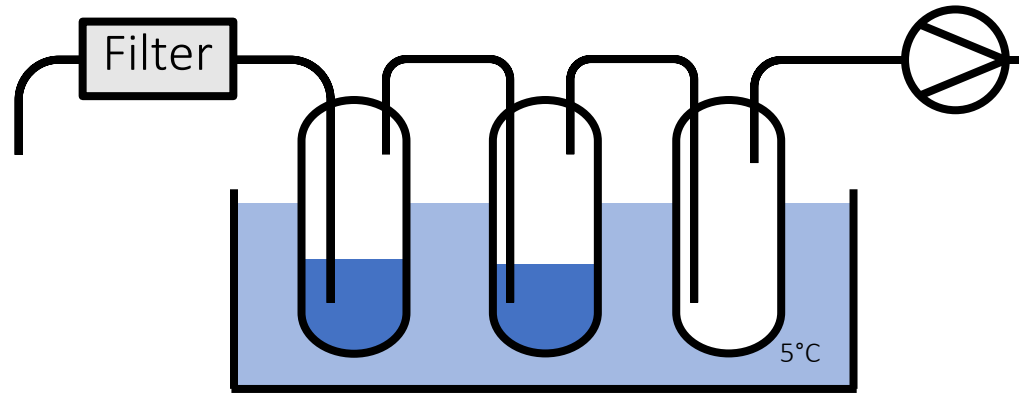
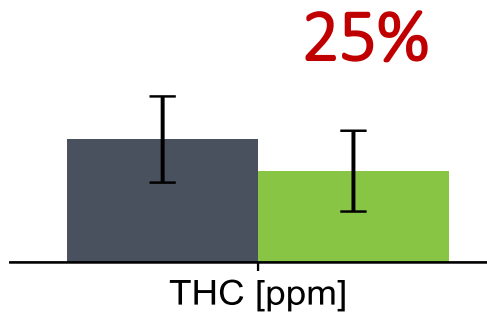


Catalytic conversion



Is 25% enough?

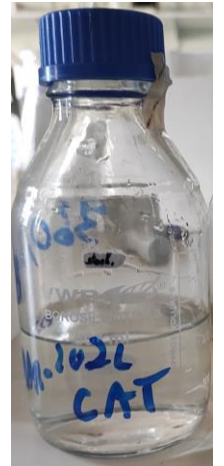
Condensable organic compounds



Homemade condenser



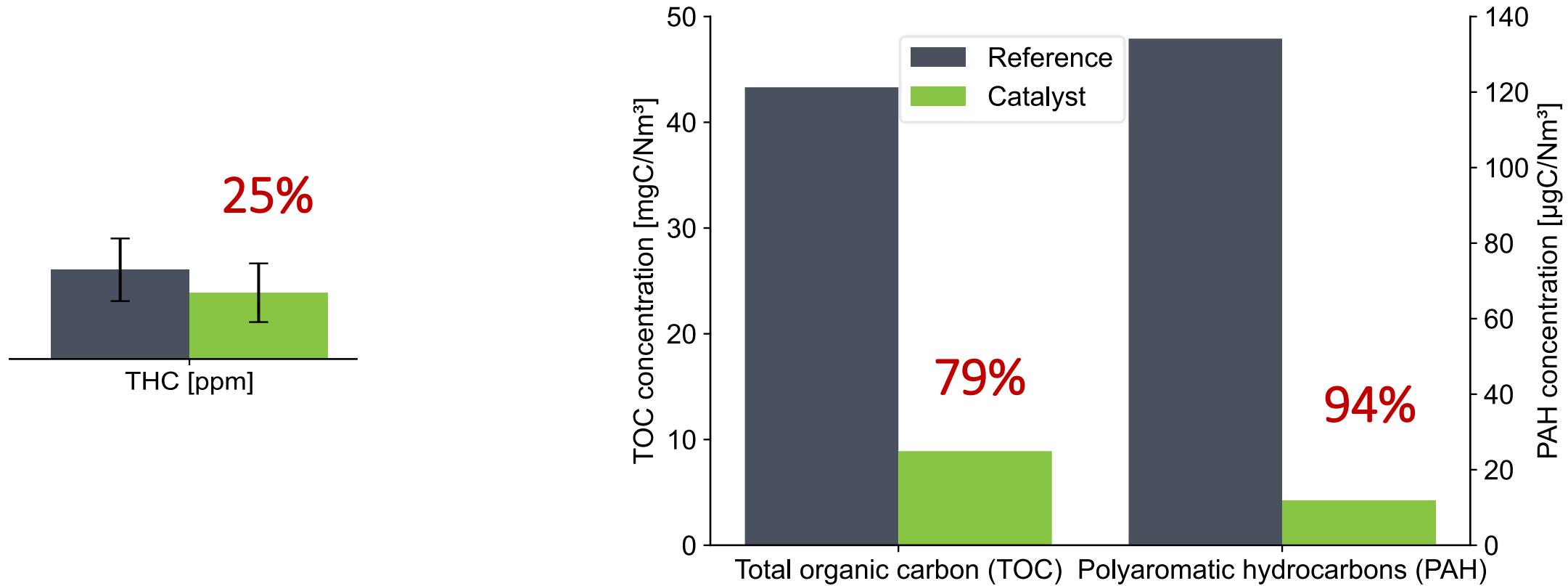
Reference



Catalyst

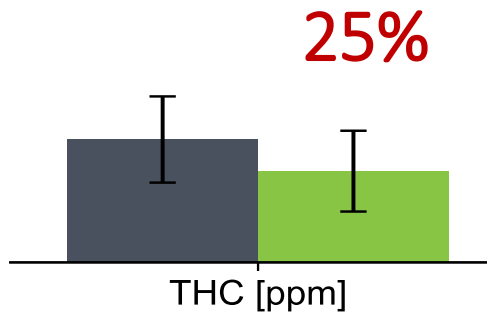
Visual aspect of condensates

Condensable organic compounds

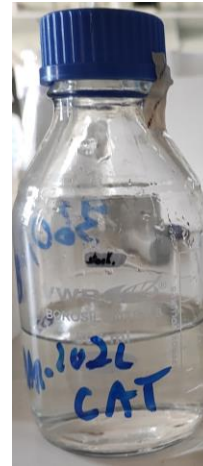


What about the toxicity?

Condensable organic compounds

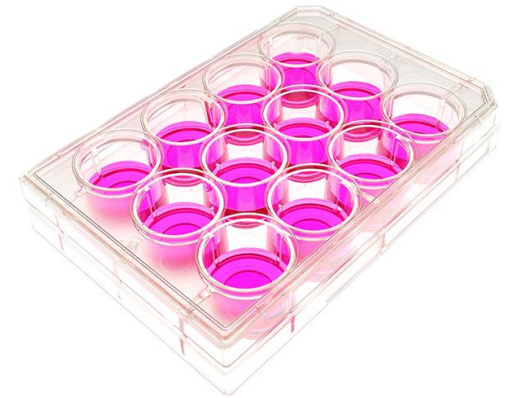


Reference



Catalyst

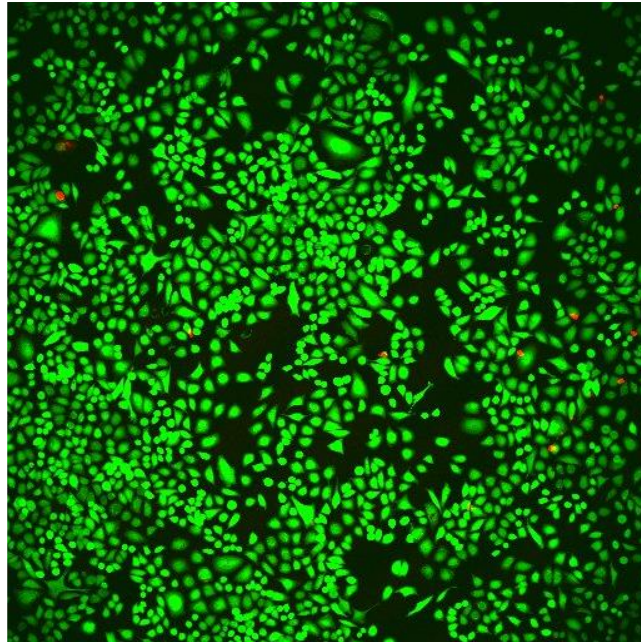
Visual aspect of condensates



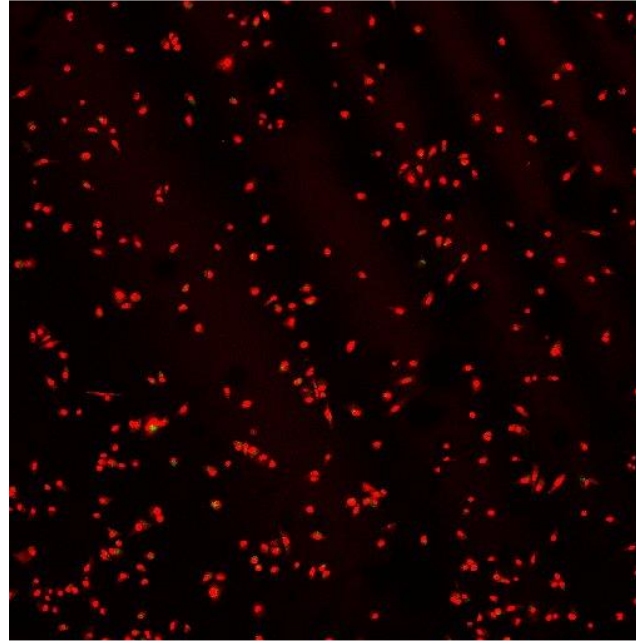
24 h exposition to condensate

In vitro - Live dead assay

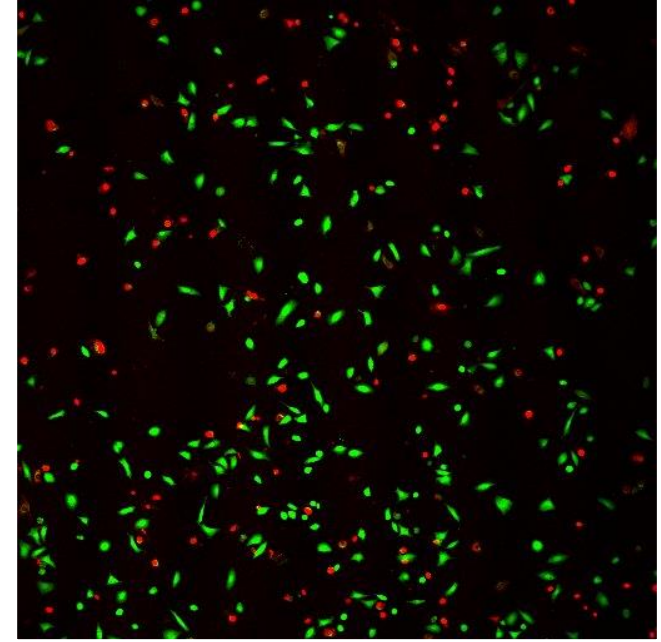
Control (no smoke)



Reference – 1.00 COC



Catalyst – 1.00 COC

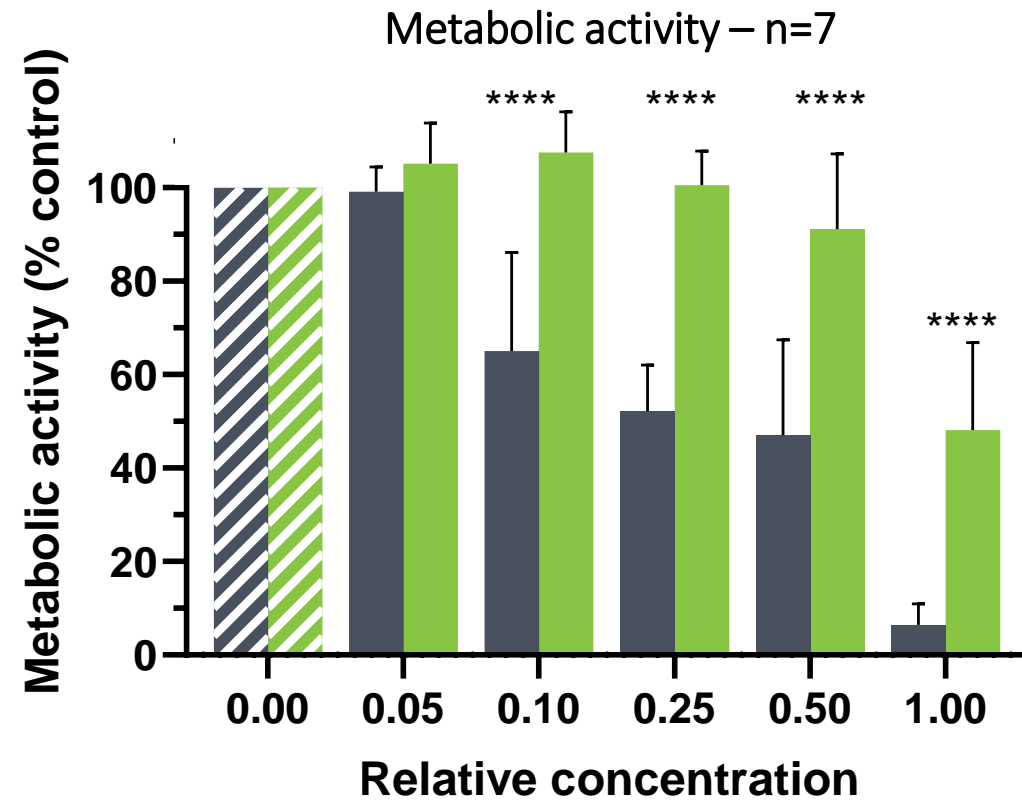
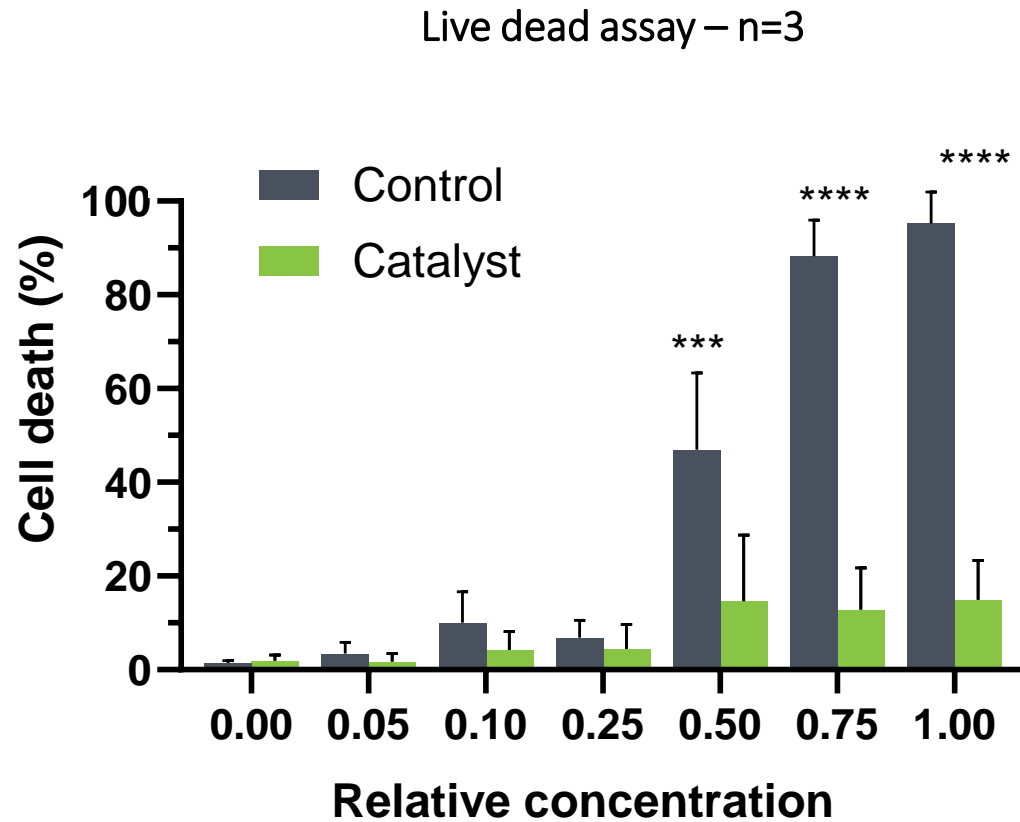


Ethidium homodimer-1 = Dead

Calcein AM = Alive

**Some cells are still alive at high concentration
With the catalyst**

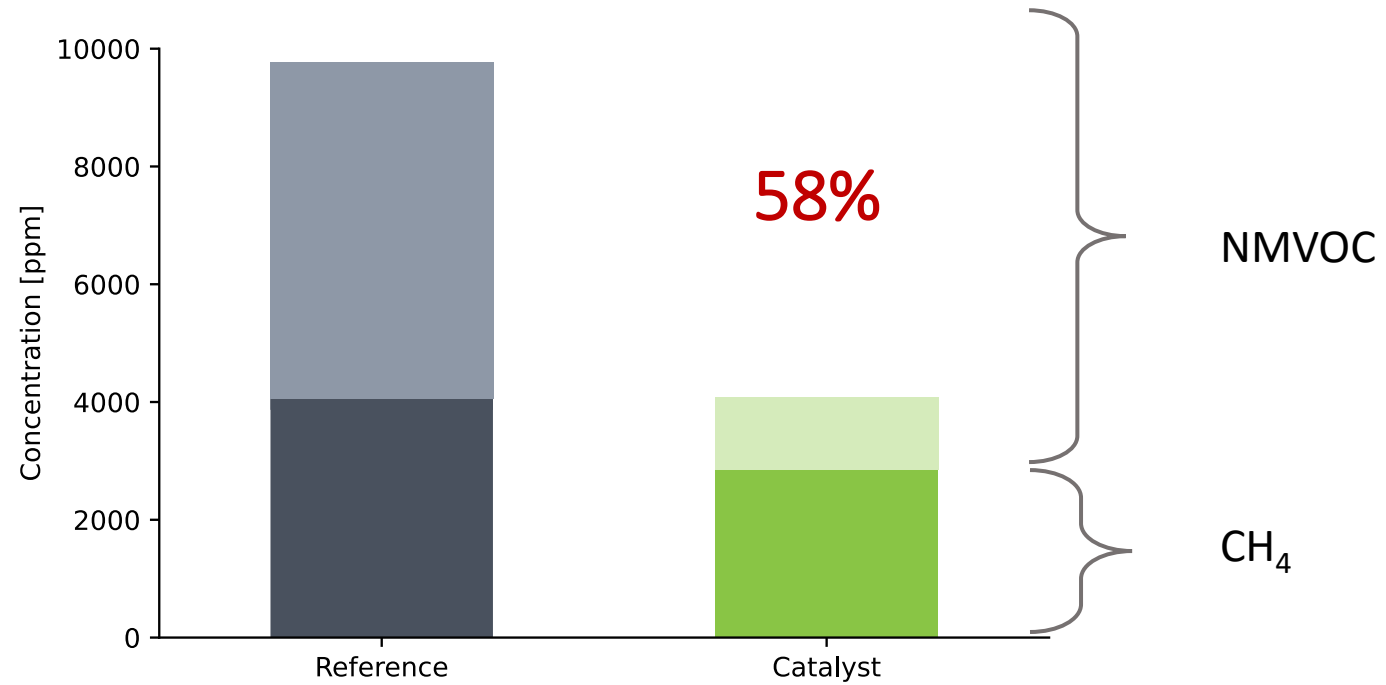
In vitro studies



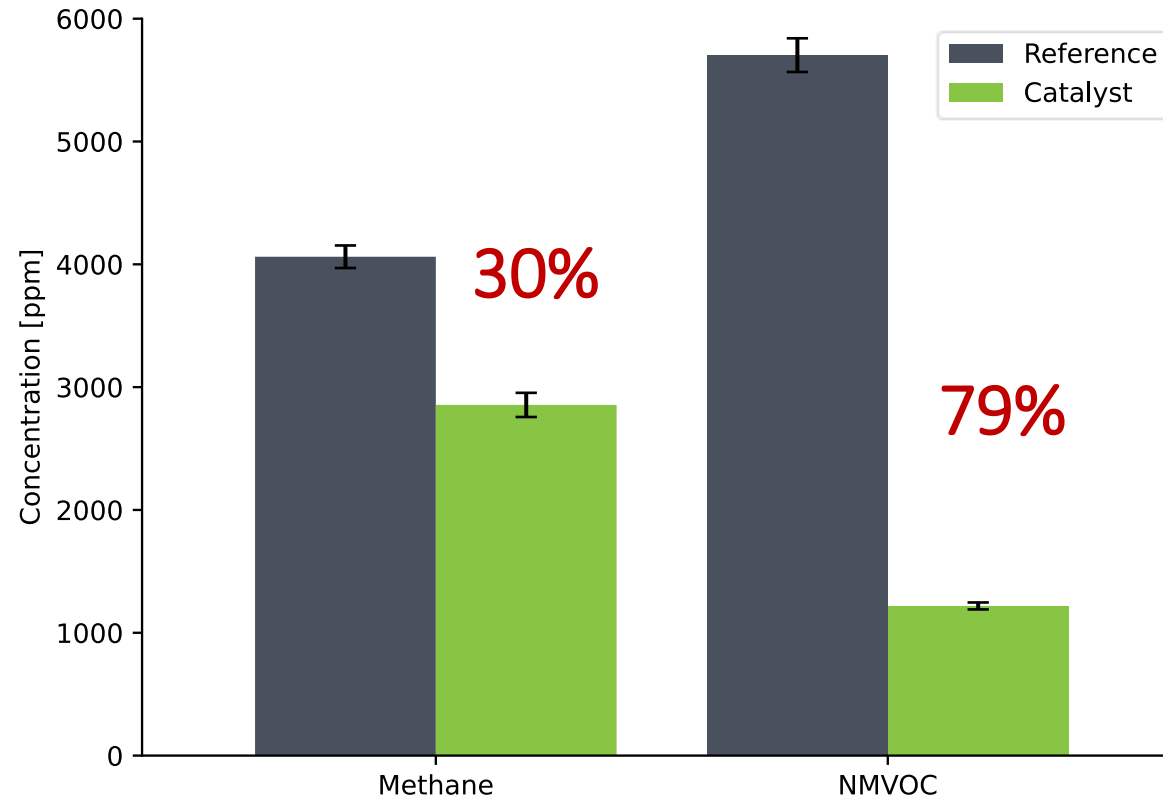
Significant decrease in cytotoxicity, but why?

THC composition (Preloads)

High emission phase



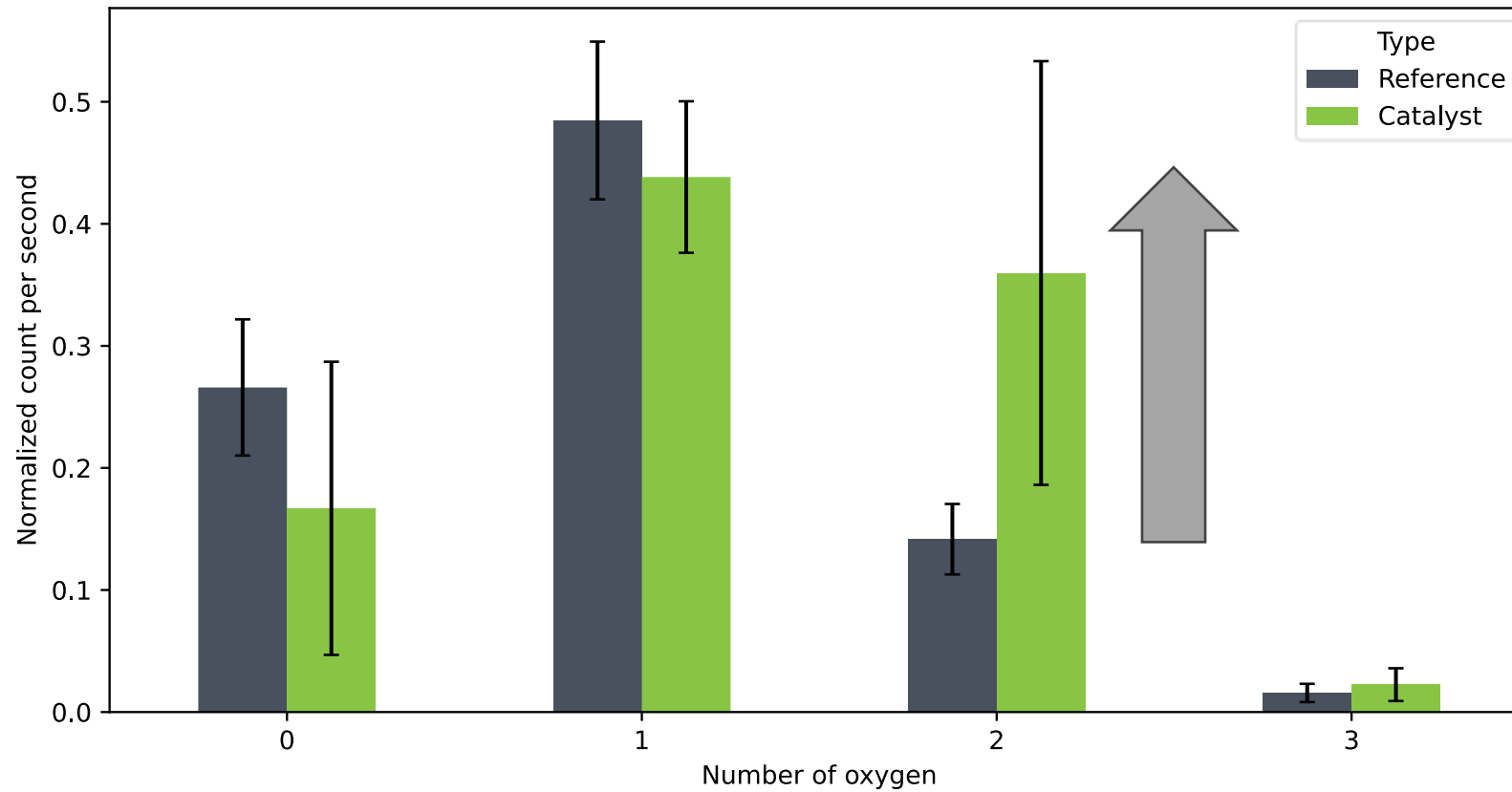
THC composition (Preloads) High emission phase



Low conversion of CH₄

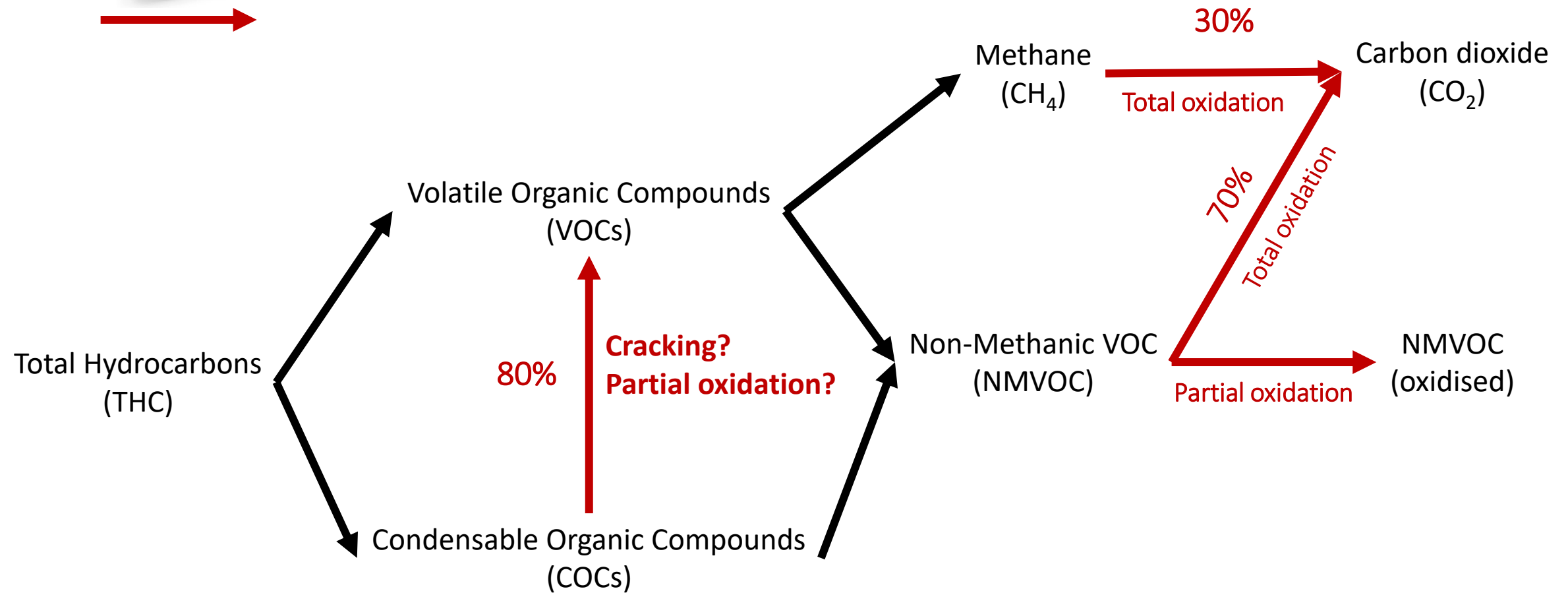
THC composition

Shift toward oxygenated species



Partial oxidation of VOC

Summary



Acknowledgement



Thank you for your
attention!

Any questions/suggestions?

