

# CHEMICAL CONTAMINATION IN OIL & GAS PRODUCTION



HELPING CLIENTS MITIGATE THE EFFECTS OF  
CONTAMINANTS IN PRODUCED FLUIDS



# WHY SHOULD WE BE CONCERNED ABOUT CHEMICAL CONTAMINANTS IN CRUDE OIL?

## NEGATIVE COMMERCIAL IMPACT

01

### TRANSFER

At Point of sale/custody transfer due to contamination

02

### RESTRICTED OPTIONS

Refinery unwillingness to take some crudes, restricted options  
Why? (damage to catalysts, water treatment plant issues)

03

### FINES

Direct costs to the operator in fines



# CRUDE OIL - COMMON CONTAMINANTS



## Sulphur/Nitrogen

**ORIGIN** - Naturally Occuring

**DOWNSTREAM EFFECT** - Catalyst Damage

## Chlorine

**ORIGIN** - Contamination

**DOWNSTREAM EFFECT** - Causes Corrosion

## Phosphorus

**ORIGIN** - Naturally Occuring & additives

**DOWNSTREAM EFFECT** - Fouling/plugging

## Methanol & Glycol

**ORIGIN** - Thermodynamic Hydrate Inhibitors (THIs)

**DOWNSTREAM EFFECT** - Catalyst fouling and effluent system disruption

## THPS

**ORIGIN** - Biocide

**DOWNSTREAM EFFECT** - Effluent system disruption



# CHEMICAL CONTAMINANTS EXPLORED

Once the function is fulfilled, these become contaminants.

Contamination of crude costs operators millions of dollars per year in penalties.

Here we look at three common yet detectable contaminants.



## Methanol

- THI - normally at well start-up/restart
- Oil/water soluble



## MEG

- THI - at well start-up and continual
- Water/oil soluble



## THPS

- Biocide - removal of FeS
- Water soluble







# IMPOSED LIMITS



## MeOH - Crude

- US - 50ppm
- UK - 30ppm
- W. Africa - 15ppm
- Guyana - 10ppm



## MeOH - Water

- UK - PLONOR
- US - 80bbl/m (e.g. Hadrian US)



## MEG - Crude

- Norway - 30ppm
- Other countries?



## MEG - Water

- UK - PLONOR
- Norway - 300ppm



## THPS - Water

- 5ppm at water treatment plant

# WHY IMPOSE LIMITS?

## *The Desalter:*

All incoming crude is washed in the desalter, which removes water solubles.

## *Water treatment plant:*

Issues can arise at water treatment plant, in molecular sieve beds.

***Who will pay?***



## FINES & PENALTIES

These contaminants can cause damage to water treatment plants and cost millions of dollars in sieve bed replacement.



Contaminant	Fine/Tonne	Cost/Tonne
MeOH - Crude	\$5000	\$500
MEG - Crude	\$5000	\$750
THPS - water	\$5000	\$2500

Contaminant	Penalty
MeOH – Water (PLONOR in UK)	USA Environmental limits for discharge
MEG - Water (PLONOR in UK)	Regen losses can cost £1,000,000 per year

# WHAT CAN YOU DO ABOUT THIS?



Establish how much  
there is.



Establish where it is in the system -  
what can you do about this?  
(FPS Waiver?)



Know your local rules -  
what are the limits?



Know your current  
management approach





# ANALYSE YOUR CRUDE

## Shore-lab Testing

- Delays
- Costs
- Relevance of test
- Offshore testing not conducted regularly
- E.g. chopper in South Africa

## Offshore Testing

- Modern colourimetric testing
- Accurate
- Quick results
- Cost efficient
- Informed real-time decisions
- Ease of use



# OMMICA

**OMMICA** is the forefront solution for chemical analysis. We redefine convenience in analyzing methanol, MEG, and THPS.

Our technology provides rapid results without compromising accuracy.

Whether it's oil, condensate, or water, **OMMICA** ensures you have the necessary information to manage risks and optimize resources effortlessly.

***Our tests are portable, fast, deliver accurate methanol, MEG, (and THPS) levels in oil, water, and condensate***





GET MORE  
INFORMATION



+44 7557 104 345



[www.ommica.com](http://www.ommica.com)



[Duncan.Baillie@ommica.com](mailto:Duncan.Baillie@ommica.com)

