

H₂S in Crude Methods Survey Proposal Introduction

*Presented to the
Crude Oil Quality Association*

*Houston, TX
October 22, 2009*



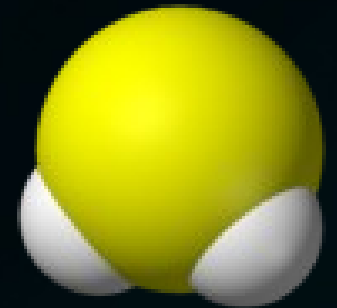
H₂S Background

- Current crude marketing, engineering knowledge bases are inadequate, inaccessible
 - Public domain, MSDS, private data lacking
- General knowledge is filled with assumptions and misconceptions
 - “the concentration of H₂S determines the relative sweetness of crude oil”
 - “The primary and essential difference between regular crude oil and "sour" crude oil is the presence of a gas known as hydrogen sulfide (H₂S)”



Canadian H₂S Experiences

- Canadian crudes are going further afield
 - Opening new, different markets
 - New markets are unfamiliar with Canadian crudes
- Recent challenges
 - Blended crudes and buffer selection
 - Moving & storing crudes (tanks, trucks, rail)
 - Barging crudes (marine shipping requirements)
 - H₂S scavenging requirements (eg. vapour recovery, chemical mitigation)



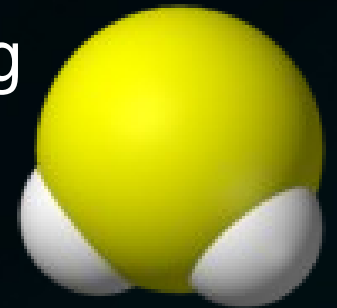
H₂S Proposal

■ *Observations & Hypothesis*

- $H_{2}S_{(vap)} \neq k_a * H_{2}S_{(liq)}$
- $H_{2}S_{(vap)} = f(H_{2}S_{(liq)}, P, T, \text{composition, agitation, ...})$
- Need accurate $H_{2}S_{(liq)}$ to determine $H_{2}S$ vapor potential

■ *Purpose & Goal*

- To compare current test methods (ASTM D5705 and UOP-163) & evaluate alternate method (IP570)
- To produce a framework for testing that provides the most accurate $H_{2}S$ content while minimizing error and technician variability



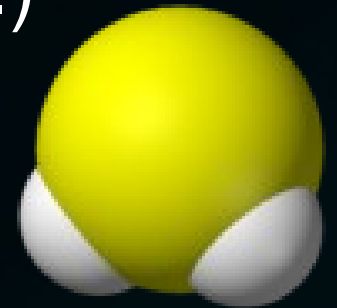
Proposed Players & Milestones

- Alberta Research Council (www.arc.ab.ca)



- Conducting work, maintaining standards
- Published report

- Joint project management – COQA/CCQTA
- ARC currently preparing samples for preliminary testing of IP570 instrument
- Gather support during 3Q2009 in Canada and US for joint effort (financial, resources, ...)
- Project scope definition – Feb 11, 2010



Next Steps

- Begin conversations & evaluate corporate interest in reliable H₂S measurement, prediction
 - Feedback your findings to Harry Giles, COQA and/or Phil Heaton, CCQTA
- Evaluate resource availability
 - Sample points, crudes of interest, potentially piggyback on existing cargo surveying & sampling, other financial and in-kind support
- Come prepared to the joint COQA/CCQTA meeting in Feb 2010

