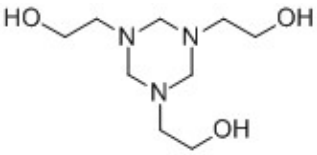
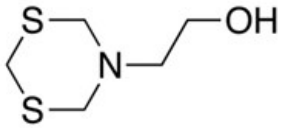
Dithiazine Testing in Natural Gas Pipelines

Natural gas pipelines have stringent specifications on the amount of hydrogen sulfide or H2S which can be present in the gas. One of the common methods for reducing hydrogen sulfide is using a scavenger such as one of the many variations of triazine. The most commonly employed triazine for scavenging H2S is 1,3,5 Tris (2hydroxyethyl) Hexahydro-s-Triazine, or what is commonly referred to as MEA triazine.



1,3,5 Tris (2-Hydroxyethyl) HexaHydro -s -Triazine	
CAS NO	4719-04-04
Molecular Formula	$C_9H_{22}N_3O_3$
Molecular Weight	219.28
Boiling Point	360°C

The MEA Triazine molecule reacts with hydrogen sulfide to form 2-(1,3,5-Dithiazinan-5-yl)ethanol, or what is commonly referred to as dithiazine.



2-(1,3,5-Dithiazinan-5-yl) ethanol	
CAS NO	88891-55-8
Molecular Formula	$C_5H_{11}NOS_2$
Molecular Weight	165.28
Melting Point	40-44°C

The dithiazine molecule exhibits unusual phase behavior and can potentially precipitate out in relief valves, regulators and in the pipeline itself. As such, there is a desire to measure dithiazine concentrations, which are typically less than 1 part per billion or ppb.

Insight Analytical has developed and commercialized a unique method to measure parts per trillion to parts per billion levels of dithiazine in pipelines. A sample panel is installed at site. The sample panel allows a controlled flow of natural gas at line pressure to run over an absorber column, which captures any dithiazine in the gas. The system may be allowed to run for days or even a week, allowing the dithiazine to build up in the trap. The trap can then be returned to Insight Analytical, where the dithiazine is extracted and measured. Since the natural gas flow rate through the panel is measured, the mass of dithiazine on the column and the total volumetric flow allows us to determine the concentration of dithiazine in the pipeline. With detection limits as low as 100 parts per trillion, Insight Analytical can provide reliable and precise determination of dithiazine in pipeline and natural gas processing applications.

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Making Measurements Matter.