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**MS ISO/IEC 17025
TESTING
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MERCURY LABORATORY CAPABILITIES STATEMENT 2009

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MERCURY LABORATORY CAPABILITIES

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COMPANY PROFILE

HG Solution was formed to specifically provide solutions to “Mercury Contaminants” in Oils and Gas and Petrochemical Industries. Managed by highly experienced professionals in upstream and downstream of Oil and Gas activities, HG Solution became among the first local Malaysian based company specializes in providing solution to mercury and other process-produced contaminants, upstream and downstream.

The lists of services offered by HG Solution Sdn Bhd are:

1. Consultancy and services in Mercury Hazmat handling for offshore and onshore facilities locally and globally
2. FULL mercury decontamination process for contaminated tools and equipments
3. Conduct inline and offline mercury assessment study, monitoring and mapping study for upstream and downstream facilities. Data gathered can be used for determination of mercury concentration and possibility of mercury accumulation in process equipment
4. Mercury Awareness training and consultancy services in the areas related to mercury hazard and other toxic chemicals
5. Laboratory services for total mercury analysis and operational mercury grouping analysis via internationally recognized standard method.
 - HG Solution lab laboratory is an ISO 17025 accredited lab. Our scope of accreditation is total mercury analysis in hydrocarbon and water media.
6. Onsite total mercury analysis for quick determination of mercury concentration via internationally recognized standard method.
7. Formulating, manufacturing and supplying of mercury decontamination chemicals, HGS308, for plant daily maintenance usage and during shutdown jobs



MERCURY LABORATORY CAPABILITIES

MERCURY ANALYSIS

Traced analyses of total mercury in samples are simply vital and crucial due to following valid reasons:

1. Economics impact on existing price of oil and gas product
2. HSE related issues
3. Impact of mercury on precious metal based catalyst
4. Metallurgy selection or protection
5. Impact on process and equipments from mechanical point of views
6. Litigation related issues

HG Solution Sdn Bhd laboratory, which is an ISO 17025 accredited laboratory, provides total mercury traced analysis for all types of samples. The analysis is done quantitatively and the results are normally expressed in ppm (part per million), ppb (part per billion) and ppt (part per trillion) depending upon the sample matrix and the techniques used or utilized.

The laboratory able to analyze for total mercury for the following samples regardless of their locations and origin of sampling;

1. Crude Oil
2. Condensate/Naptha/Distillates
3. Natural Gas/Ambient Air
4. Water and Waste Water
5. Sand/Sludge/Soil
6. Other Liquid and Solid Samples
7. Polymers and others



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Techniques used for traced mercury analysis are:

1. CVAAS (Cold Vapor Atomic Absorption Spectroscopy)
2. CVAFS (Cold Vapor Atomic Fluorescence Spectroscopy)

Standard method offered for total mercury analysis:

1. UOP 938-00
(Total Mercury and Mercury Species in Liquid Hydrocarbons)
2. ASTM D6350-98
(Standard Test Method for Mercury Sampling and Measurement in Natural Gas by Atomic Absorption Spectroscopy)
3. ASTM D5954-98
(Standard Test Method for Mercury Sampling and Measurement in Natural Gas by Atomic Fluorescence Spectroscopy)
4. IH-938-7473-09
(In-House Method, Total Mercury in Liquid and Solid Samples)
5. EPA 1631
(Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Spectroscopy)

**Note : Scope of Accreditation under ISO/IEC 17025 are UOP 938-00, ASTM D5954-98 & IH-938-7473 (09)*



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MERCURY ASSESSMENT, MONITORING & BASELINE STUDY

Mercury mapping and assessment study is a structured method to detect the presence of mercury or its compound (laboratory analysis) within the process lines of selected facility. Using this method, the distribution, concentration and speciation of mercury can accurately be projected without the need to interfere with day to day production activities.

Based on our years of experience, we could help process engineers to determine the critical representative sampling points (bleed points) for a wide range of facilities. This includes offshore installation platforms down to downstream petrochemical plants. The right selection of the points is vital to ensure right sample is taken. Based on your particular project objectives and needs, we then perform an analysis to determine the total mercury content or further perform the operational speciation analysis to identify the types of mercury and compute the total mercury concentration present strictly adhering to internationally recognized standards and protocols.

Utilizing state of the art mercury analysis equipment, we deliver highly accurate results in all our undertaking tasks. By doing so, potential mercury accumulation and distribution patterns in oil and gas processing facilities as well as other relevant industries can be reliably projected.

The ability to accurately project its accumulation and distribution pattern will certainly assist you to judiciously arrange the necessary HSE preparation to protect your workers from the hazards of mercury. Pro-active measures can also be taken to protect all sensitive equipment that may be damaged due to amalgamation effect such as aluminum heat exchangers (better known as cold box). Besides that, the effectiveness of any absorbent or catalyst used in mercury removal unit (MRU) can also be determined with this study.



MERCURY LABORATORY CAPABILITIES

IN-LAB & ON-SITE ANALYSIS

Due to complexity of maintaining in certain product matrices for critical mercury assessments, Hg Solution offers in-lab and on-site mercury measurement services throughout the region. Our teams of specialist can be deployed offshore and to remote facilities to provide mercury assessments.

Equipments below can be mobilized to site or done in-lab for mercury assessments:

1. Mercury Analyzer, NIC SP-3D

Method : UOP 938-00, ASTM D5954 & (In-House Method) IH-938-7473-09
Technique : Gold Amalgamation, CVAAS Detector
Applicability : Light Hydrocarbon, Heavy Hydrocarbon, Gas, Liquids & Solid
Detection : 0.01 ng/ml Hg





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2. Mercury Analyzer, NIC WA-4

Method : ASTM D5954-98
Technique : Gold Amalgamation, CVAAS Detector
Applicability : LPG and other Gases
Detection : 0.01 ng Hg





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3. PS Analytical Millennium

Method : EPA 1631, EPA 245.7, EPA 7474, ISO 13506
Technique : Gold Amalgamation, CVAFS Detector
Applicability : Liquid and Solid sample





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4. PS Analytical Sir Galahad

Method : ASTM D6350-98

Technique : Gold Amalgamation, CVAFS Detector

Applicability : LPG, Natural Gas and other gases





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5. Lumex RA-915+ with RP-91C or Lumex RA-915+ with RP-91

Method : In-House
Technique : Gold Amalgamation, CVAAS Detector, Zeeman Correction
Applicability : Light Hydrocarbon, Heavy Hydrocarbon, Liquids, Solids & Gas
Detection : Matrix dependent, low ppb range



RA-915+



RP-91



RP-91C