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Capability Statement

Mercury Management

Mercury Decontamination

Hydrocarbon Decontamination

On-site Chemistry

Analytical Consultancy

Training Services

Total Hazardous and Integrated Solutions Co. Ltd

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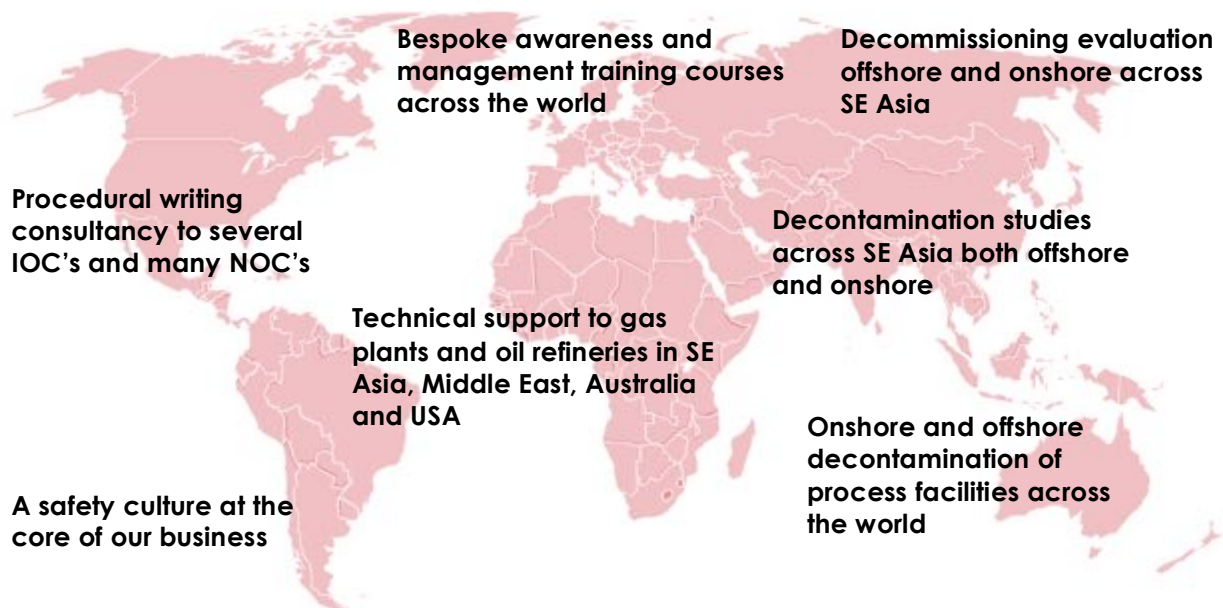
1 Introduction

Total Hazardous and Integrated Solutions [THIS] was established as an independent company in 2013 providing quality niche mercury-related project support and solutions to the Oil & Gas and Petrochemical industries across the globe. THIS is based in Thailand as a privately owned Thai Service Company with a focused range of Services, Chemical Technology and Products in full support of our customers throughout the world, and has quickly secured several contracts for provision of Mercury Management Services both offshore and onshore, across SE Asia.

THIS was founded and built upon military-grade chemical decontamination practices and methodology while using internal and customer-funded Research and Development to further evolve chemical technologies, analytical methods, proprietary equipment and decontamination applications (both manual and semi-automated) enabling it to earn its place at the forefront of Industrial Mercury Management and Decontamination, in conjunction with capabilities to manage other toxic and hazardous contaminants.

THIS has a combined 30+ years of experience, knowledge and expertise, especially with mercury, enabling us to provide a highly professional and truly dynamic service that is focused on ensuring our customers satisfaction with safe working practices throughout all of our activities.

Since 2013, THIS has significantly expanded its presence using internationally recognised experts in the provision of industry and application-related services with particular focus on Mercury Management including; mercury decontamination, waste treatment, biological monitoring, hazmat surveys and incident investigation, analysis, training and assessment, with a considerable portfolio of global projects in addition to SE Asia based consultancy work.



2 Accreditation and Quality

The company has successfully attained International Standards accreditation with ISO 14001, ISO 9001, OHSAS 18001 and TIS 18001 in; Provision of Industrial Cleaning Services, HazMat Consultancy and Associated Services, HazMat Training & Certification.



Total Hazardous and Integrated Solutions Co., Ltd operates a licensed, Hazardous Decontamination Facility [HDF] in Songkhla, Thailand. The HDF is an environmentally sealed, integrated chemical cleaning & recycle facility, providing transportation, segregation, classification, neutralization and encapsulation prior to managing final disposal of solid and liquid wastes using licensed facilities. Full COC (Chain of Custody) documentation is in compliance with OSHA, ISO, Pollution Control Dept., DIW (Dept. of Industrial Works), DMF (Dept. of Mineral Fuels) Regulations and Best Practice.

In all their activities, our personnel endeavour to maintain professional excellence and we recognise that this is achievable and is only maintained by:

- Employing experienced and competent personnel who have a commitment to continual improvement in order to provide the highest quality of service to our clients.
- Meeting client performance expectations through a thorough understanding of client requirements, extensive work planning and continual communication.
- Using a live management system that continuously adapts in response to revisions and implementation of industrial regulations, practices and procedures to ensure that information provided to clients is current.

3 Health and Safety

Safety is at the core of all THIS' activities and therefore our personnel employ a culture of safety whenever and wherever they are working whether this in our own facility, at client's onshore site or offshore installations, domestic or international.

Staff safety training is provided using both internal and third party training courses (for example, mercury decontamination, manual handling, fire training, confined space entry, semi-automated tank cleaning) and is fully documented and traceable through THIS training records and quality management system.

Through the correct implementation of industrial regulations and Job Safety Assessment THIS ensure that all safety requirements are met. All personnel performing on-site work hold, as a minimum, BOSIET and offshore medical certification while also subject to pre and post-project biological screening for mercury in urine and/or blood. THIS takes a proactive approach to work, constantly performing dynamic risk assessments to ensure all work activities are being carried out as safely as possible.



4 Primary Capabilities

Produced natural gas and oil always contains some non-hydrocarbon components and trace elements. These components may be considered as contamination or impurities and some constituents only become more evident at a later stage of production, as the reservoir is depleted. These can be corrosive or cause processing upsets, resulting in a requirement for special design and materials in processing and transportation systems. Others may be an environmental pollutant, highly toxic or pose a serious health risk to personnel. Even at trace concentrations some impurities can cause significant implications for producers.

Mercury Decontamination

THIS have become recognised global experts in the decontamination of mercury in hydrocarbon process systems (gas, gas condensate, crude oil, produced waters and particulate), high value specialist equipment and support ancillaries as well as the full decontamination of decommissioned assets prior to recycle and/or disposal.

Capabilities of Mercury Decontamination include (but are not limited to):

- Full desorption and decontamination of mercury from carbon steel
- Decontamination of mercury from other steels, alloys and sealing materials
- Vapour suppression of work environments, spill sites, during hot work activities, storage tanks and process system maintenance scopes (during turnaround and shutdown)
- Surface cleaning and decontamination of mercury from process systems, catalyst units, tools and equipment
- Decontamination of sensitive systems and materials e.g. aluminium cold boxes
- HazMat demolition of decommissioned assets



Mercury Management

THIS recognises the three major areas for concern resulting from the presence of mercury are corrosion (liquid metal embrittlement), poisoning of catalysts and environmental pollution, of which the latter includes the potential for worker exposure. Therefore the design and implementation of a bespoke Mercury Management Plan (MMP) provides the customer with the relevant, proven and effective practices and procedures, specific to their requirements and systems. This is generated upon conclusion of a detailed gap analysis, procedural review, on-site chemistry analysis, biological assessment and hazmat surveys.

Upon completion of the MMP the client is presented with hard copies and e-copies of an internally-branded reference manual complete with live data links, non-bias commercial supply links, references, bespoke training for client personnel (taking into account the various levels of responsibility and work scopes) as well as proactive periodic updates on domestic and international regulations, procedures and technologies.



Hydrocarbon Decontamination

In conjunction with its Mercury decontamination applications **THIS** have implemented and optimised both manual and semi-automated hydrocarbon-borne vapour suppression, chemical cleaning and decontamination applications. Tackling these contaminants, deposits and debris not only enhances the mercury desorption and decontamination capabilities but provides a safer work environment in a fraction of the time and cost of traditional methods.

HazMat Investigation & Surveys

Occasionally there are incidents, accidents or catastrophic events that could be attributed to the presence of one or more contaminants and this has to be determined using on-site analysis and determination where possible. Additional investigative analysis may require that samples are correctly captured for off-site laboratory or third party testing without damage or degradation of the sample normally resulting from incompatible or incorrect sampling practices, equipment, packaging or shipping.

Training Services

THIS has gone to great lengths to ensure that the training courses it provides are current, informative, easy to understand, and relevant to the intended parties and their respective position, responsibility and work scope. Courses are designed to cover differing levels of expertise and caters for both whiteboard instruction and physical interaction to ensure maximum uptake and retention, complete with a final quiz/assessment. Training courses carried out for third party training institutes or exclusively for customers also include fully editable training materials for future use.

Treatment Solutions

In conjunction with its Mercury desorption and decontamination applications **THIS** has assessed the treatment of resultant waste streams generated during the decommissioning and decontamination processes to maximise the use of non-specialised hazardous waste disposal options. By filtering, neutralising, flocculating, stabilising, encapsulating and/or solidification of mercury-contaminated waste streams it is possible to concentrate contaminant levels into smaller volumes before making them TCLP-compliant for low level treatment and/or landfill.

On-site Mercury Analysis

THIS, with support from their UK-based analytical and on-site chemistry partners Qa³, has extensive experience conducting cross plant mercury surveys, giving clients a clear picture of mercury partitioning, accumulation and losses across a process. Monitoring of mercury removal bed performance and prediction of bed life is also a service regularly conducted by Qa³.

Qa³ can provide this service onsite in accordance with ISO 6978 (modified) (ASTM D5954) for gases, ASTM D7623 (modified) for hydrocarbon liquids and EPA 7473 (modified) for aqueous samples (including methanol, amine and glycols). Onsite speciation of mercury is also available.

- Mercury in produced fluids during well testing
- Mercury in gases and produced liquids at offshore installations
- Mercury mass balance across gas and oil processing plants
- Mercury removal bed performance
- Atmospheric monitoring during plant shutdowns
- Mercury speciation and phase modelling



5 Research and Development

With its focus on the successful decontamination, removal, treatment and protection of assets and personnel from the hazards of mercury THIS continues to carry out extensive Research and Development studies, either independently or client-backed, in support of our goals.

THIS have investigated and assessed chemical decontamination efficacy and efficiency for the likes of mobile applications i.e. mercury decontamination of subsea pipelines (in-situ) as well as performance limitations for encapsulation, solidification and amalgamation agents, personal protective equipment (PPE), steam applications, atomisation and dispersal technologies as well determining comparative algorithms of field and lab-based analytical techniques and methods.

With the support and backing of analytical partners such as Qa³ and analytical unit manufacturers (e.g. Olympus, Oxford Instruments, Rigaku, etc.) THIS is able to design, implement and audit a wide variety of studies on behalf of or in conjunction with clients, universities and/or projects.

6 Additional Services

Additional support capabilities include:

- Desorption, decontamination and vapour suppression chemicals – sales, service
- Production treatment chemicals (H₂S, Wax, EOR) – sales, service
- Waste treatment products – sales, service
- Mercury vapour analysers (fixed and portable) – sales, service, repair and calibration
- Hydrogen Sulphide ultra-low level vapour analysers (fixed and portable) – sales, service, repair and calibration
- Toxic gas and radiation detectors and monitors – sales, service, repair & calibration
- Portable breathing air filtration systems – sales, service, repair and calibration
- Specialist PPE (vapour-proof masks, passive toxic vapour detector badges) – sales, service

Please contact us for more information on the additional services we offer.

7 Clients and Countries of Operation

The client list of THIS includes International oil and gas companies, national oil and gas companies, crude oil refining companies, environmental monitoring companies and agencies, oil industry service companies and specialised chemical companies. THIS also performs work for and alongside, independent consultants and research institutions.

Below is a summary of locations where THIS have completed projects (offshore and onshore):

- Central Asia** - Pakistan
- Far East** - Malaysia, Indonesia, Thailand, Brunei, Philippines, Vietnam, Singapore
- Australasia** - Australia
- North America** - USA



8 Contact Details

If you have any questions on the services that **THIS** can offer, please do not hesitate to contact us. For many of our services we have information sheets that discuss and describe bespoke subject matter and analytical applications in detail; please contact us if you would like to receive any additional information about a specific service.

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9 Blank Page for Client Notes

A series of horizontal dotted lines for writing notes, with a large red stamp overlaid in the center. The stamp features the word "THIS" in a bold, sans-serif font, followed by a checkmark. The stamp has a slightly distressed, ink-like texture.