

# Mercury: detection and analysis



## Why?

**Mercury poses a major hazard in our industry.** It is a highly toxic element which can have a major impact on environmental, health and safety issues. The cost of mercury removal can reach **5% of total cost of oil and gas production facilities.** In 2015, the UN estimate of global mercury emissions was **2,220 tonnes.**

## Who we are

With over **40 years' experience** of mercury analysis in oil and gas, Expro has the expertise to deliver specialist on-site sampling and analysis services across the well lifecycle.

## Our approach

We are **energised**. We give you the insight and answers to your problems. Our **solutions**, our **people** and **expertise** are what defines us.

Whether delivering an early field appraisal or surveying longstanding production facilities Expro's Experts will work with you to develop:

- A **bespoke** sampling and analysis programme to best understand your mercury concentrations and assess the impact on your assets
- **Custom**, client specific analytical SOPs to deliver key data objectives

## What we do

Reservoir characterisation	Production optimisation	Asset integrity
<p>Providing analytical services to identify and quantify the contaminants present in reservoir fluids</p> <ul style="list-style-type: none"> <li>• NRS - Non-Reactive Sampler: representative bottomhole mercury measurements</li> <li>• Well test / DST / Clean-up sampling and analysis</li> <li>• Surveys of producing wells to verify E&amp;A data</li> <li>• Onsite mercury speciation for facilities design</li> </ul>	<p>Understanding mercury concentrations, speciation and distribution across facilities to ensure fluids remain within specifications for production and export</p> <ul style="list-style-type: none"> <li>• Mass balance mercury surveys</li> <li>• Export and sales specification compliance</li> <li>• Facility mercury distribution assessments</li> <li>• Onsite mercury speciation to optimise removal</li> </ul>	<p>Verification of removal bed performance with ongoing facility surveillance to ensure your asset, your people and the environment are protected from mercury induced harm</p> <ul style="list-style-type: none"> <li>• Mercury treater evaluation</li> <li>• Analysis of contaminated waste streams</li> <li>• Monitoring of potential worker exposure</li> <li>• Identification and quantification of sources of environmental release</li> </ul>

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## Sampling

Representative sampling for mercury analysis requires care and consideration, due to the adsorption, chemisorption, and reaction of mercury to and with surfaces and materials it comes in to contact with, which results in significant losses from fluids before, during and after sampling. Inappropriate sampling will lead to (often significant) underestimations of mercury concentrations.

Expro's unique sampling system, the NRS, has been scientifically demonstrated as a truly non-reactive tool for obtaining bottomhole mercury samples, mitigating sources of mercury loss, and delivering representative reservoir concentrations.

Our extensive experience of different sampling containers, coatings and techniques allows us to recommend the best practice for your application to give optimal samples and dependable data.

## Analysis

Expro have expertise in all major mercury measurement techniques and deploy a range of analytical instrumentation, selecting the best approach for the operation.

As well as being able to measure total mercury concentrations, Expro can offer onsite mercury speciation to determine the predominant mercury species, grouped by physical and chemical property.



## Benefits to you

Mercury detection, analysis and speciation mercury analysis and monitoring can bring substantial benefits:

- Improved product quality
- Reduced mercury emissions
- Effective corrosion control
- Risk to your equipment is minimised
- Helps to maintain your asset's integrity
- Lower maintenance costs
- Reduces health risks to your personnel
- Lessens the impact of emissions to the environment

## Our methodology

**ISO 6978** – Natural gas – determination of mercury

**ASTM D5954** - Mercury Sampling and Measurement in Natural Gas by Atomic Absorption Spectroscopy

**ASTM D7623** – Total Mercury in Crude Oil Using Combustion-Gold Amalgamation and Cold Vapor Atomic Absorption Method

**UOP 938** - Total Mercury and Mercury Species in Liquid Hydrocarbons

**EPA 7473** – Mercury in Solids And Solutions By Thermal Decomposition, Amalgamation, And Atomic Absorption Spectrophotometry

Find out how our Expro Experts can help you.

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