

# CASE STUDY

## MERCURY REMEDIATION AT NATURAL GAS PLANT DECOMMISSIONING



## SCOPE

Mercury remediation at natural gas plant decommissioning using **FOAMCHEK**, **HYDRO TREAT LIQUID** and **RAMSOL BCX**.

## The PROBLEM

A natural gas processing platform, previously staged offshore in Eastern Canada, undergoing decommissioning required remediation of mercury contamination detected in several operational assets. Mercury is a naturally occurring heavy metal capable of poisoning personnel and inducing catastrophic forms of corrosion.

The way this occurs is dependent on the forms or compounds of mercury identified. In natural gas processing, the forms of mercury often identified include elemental, sulfide-bound, halide-bound, as well as inorganic and organic forms with the latter capable of forming toxic vapors. Each form has different physical characteristics that warrant the use of a diverse set of chemical cleaning stages to complete full system remediation.

The operator of the facility noted that gaseous, liquid, and solid mercury contamination was present. Mercury vapors were recorded at 0.35 mg/m<sup>3</sup>. Contamination in the system fouling was recorded at 3000 ug/g and broken down as 30% w/w mercury sulfide, 30% w/w mercury halide, and 40% w/w elemental mercury.

## Our SOLUTION

Upon establishing exclusion zones, the operational assets first required purging to capture mercury vapours. Then vapor-phase injection, high-pressure jetting, liquid circulation, or a combination of each was used to execute the remainder of the remediation work.

West Penetone provided the industrial cleaning contractor with a mercury decontamination chemical treatment program to be applied by the above-mentioned methods, based upon the following decontamination stages:

STAGE	PRODUCT	EXPECTED OUTCOME
Hydrocarbon removal	RAMSOL BCX	De-oiling and water-wetting surfaces
Mercury removal	HYDRO TREAT LIQUID	Removal of inorganic mercuric salts
Scale removal	FOAMCHEK	Removal of produced oxide scales
Neutralization & rinse	SODA ASH	Neutralization of acid residuals



## Our **SOLUTION** *(continued)*

Each stage was completed in the 70-80°C (158-176°F) and 2-20% v/v range, monitored, and completed in under a 24-hour period. This allowed the contractor to complete the overall scope of work, including demobilization and waste treatment, in a 10-day period. The mercury reactive chemical, **RAPIDYNE**, was not needed for this project. **RAPIDYNE** would be applied alone, following, or in combination with the scale removal stage to expedite leaching of mercury salts under certain conditions of plant equipment design.

## **RESULTS ACHIEVED**

- ▶ The use of HYDRO TREAT LIQUID and FOAMCHEK provided clear trends in the reduction of elemental and ionic form of mercury based off acid-leach, spectroscopic, titratable, and colorimetric testing. Portable XRF testing of the base metal indicated full mercury contaminant remediation upon job completion.
- ▶ The use of ferric chloride and polymer-based coagulants for precipitating mercury colloids as per waste treatment protocols was successfully completed on all waste effluent.

## *A comprehensive and* **integrated approach**

With over 100 years of product development, manufacturing and application experience, the West Penetone family of companies has designed and patented many products to satisfy the needs of our clients world wide.

Our technical group provides customers effective support to ensure that contaminants are paired with the right chemistry for any task.

Establishing and maintaining a collaborative approach with our customers in tackling their operational and maintenance challenges is key to realizing efficiencies and cost savings.

Questions? [solution@westpenetone.com](mailto:solution@westpenetone.com)



Canada

**WEST PENETONE INC.**  
10,900 Secant St  
Anjou, Quebec H1J 1S5  
**1.800.361.8927**

[www.westpenetone.com](http://www.westpenetone.com)

**WEST PENETONE INC.**  
11411-160 Street  
Edmonton, Alberta T5M 3T7  
**1.866.454.3919**

United States

**PENETONE CORPORATION**    **PENETONE CORPORATION**  
125 Kingsland Avenue    8201 4th Street, Unit G  
Clifton, NJ 07014    Downey, CA 90241  
**1.800.631.1652**    **1.800.421.6211**

[www.penetone.com](http://www.penetone.com)