

## SUBSTANCE SPECIFIC

## MERCURY

**What is Mercury**

There are many forms of mercury; this guidance sheet will discuss elemental mercury. Elemental mercury is often referred to as quick silver and is the only metallic element that is liquid at standard temperature and pressure. Elemental mercury is very dense and generates beads when in sufficient quantity.

**Where is it Found**

Mercury can be found in older equipment that has mercury switches or in oil and gas products such as crude oil or natural gas. Mercury concentrations within oil and gas products are generally extremely low; however, mercury can accumulate within pipe, process equipment and process chemicals (amine and glycol). In rare instances mercury can be visible as beads or pools of mercury. More commonly mercury builds up within the metals of pipe and process equipment and be released as a vapour during confined space entry or during hot work such as cutting or welding. As a result, the absence of visible mercury does not mean the absence of a mercury hazard!

**Primary Routes of Exposure**

Mercury can be inhaled as either a vapour or an aerosol such as a dust or mist. Mercury can also be significantly absorbed through skin contact.

**The Risks****Health Effects**

Mercury has a wide variety of effects on the body that include the following: tremors, irritability, vision changes, hearing loss, kidney damage and changes in reproductive function of both men and women. Mercury has a full-shift 8-hour occupational exposure level of 0.025 mg/m<sup>3</sup>.

**Exposure Assessment**

Mercury can be detected in a variety of ways, but care and attention are required especially in relation to some types of real-time monitors that have cross sensitivities to sulphur and other compounds commonly encountered in petroleum products.

**Exposure Control**

Exposure control consists of respiratory protection and skin protection. Air-purifying respirators can be worn provided they are equipped with special mercury cartridges, are changed according to the colorimetric strips and the concentrations do not exceed the maximum use criteria or the immediately dangerous to life of health (IDLH) concentration. Skin protection consists of rubber gloves and disposable coveralls.

**Process Safety**

Mercury can amalgamate with certain metals such as aluminum and brass. This results in metal embrittlement and has in some facilities around the world resulted in catastrophic failures of piping and equipment such as refrigeration heat exchangers. As a result, understanding the level of mercury in process streams is key to understanding process risks and potential mitigation such as mercury scrubbers.

**PRECAUTIONS YOU SHOULD TAKE**

- Ask your employer if mercury has been identified in equipment or products onsite
- Follow the safe working procedures laid down by your employer
- Know the health effects associated with mercury exposure
- When working with mercury ensure you have adequate ventilation controls, personal protective and respiratory protective equipment available