

Case Study – Methylene Chloride

A compressed breathing air system is used in a large spray booth where vehicle frames are painted. The air system is tested every 6 months as required by the CSA standard. The testing had been in place for years and the system had passed every time. During a routine test of the system, the system failed for total hydrocarbons. Specifically, the total hydrocarbon level was approximately 27 ppm. The hydrocarbon level, after subtracting for normal background levels of methane, were 25 ppm (The CSA standard allows a level of 5 ppm). Further analysis of the sample indicated that the high hydrocarbon levels were due to methylene chloride.

Methylene chloride is a carcinogen and has an ACGIH TLV of 50 ppm. Methylene chloride is not a common chemical and is most often used to remove paint or graffiti. Armed with the name of the specific compound found in the sample, it was easy to identify that methylene chloride was used in the booth to remove excess paint and clean up paint spills and overspray.

It is impossible for airborne contaminants in the booth to be collected in the sample so there must be methylene chloride being delivered by the system. However, the only place that methylene chloride is used in the plant is in the spray booth.

In discussion with the workers, it was found that one worker was cleaning the hose with methylene chloride to keep the hose clean. While the worker's actions were well intentioned, it was believed that the methylene chloride was being absorbed by the hose itself and permeating into the inside of the hose and thus into the airstream being delivered to the worker.

To test this theory, two tests were conducted. The air quality test was repeated on the old hose and then immediately tested again but with a new hose attached to the wall connection. The old hose had nearly identical results as the first failed result but the new hose passed with flying colours.

The old hose was taken out of service and disposed of and a policy of not cleaning the hoses with methylene chloride was introduced.