

**SUMMARY REPORT
OCCUPATIONAL HYGIENE REVIEW OF
VAPOR UNIT MODEL DT1AC-2.5 USING PRODUCT #504956
STAR ENVIROTECH INC.**

prepared for

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TITLE

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STAR ENVIROTECH INC.**

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INTRODUCTION

In accordance with instructions received from Richard Banyard of Star EnviroTech Inc., HSE Services was contracted to provide industrial hygiene consulting services to conduct research into occupational exposure issues during the production of “vapor” by the Star EnviroTech leak checking, vapor generating unit, model DT1AC-2.5 while using source product part number 504956.

The purpose of the research was to evaluate exposure products as well as establish typical worker exposure levels during both normal and abnormal operating conditions.

Information on the product in it’s liquid form was provided to HSE and a sample protocol was established to determine what materials would be present during production of “vapor”. Ultimately the project involved several tests, but can be broken down into essentially two phases:

- based on available information, conduct airborne screening for several components, including a screen for any volatile organic compounds,
- subsequent to the initial testing, identify those compounds of issue for further review, and conduct follow-up testing.

TESTING PROCESS

The initial screening conducted testing for the following:

- carbon monoxide,
- oxides of nitrogen,
- aldehydes,
- volatile organic compound (VOC) screen (including total VOC).

Based on the first set of testing, the following compounds had further testing completed:

- aldehydes,
- benzene,
- oil mist.

In addition to the follow-up testing, the investigative process also involved the review of supplier product components. This review led to a physical modification of the vapor unit before the final testing was completed.

It should be noted that all testing was done using the National Institutes of Occupational Safety & Health (NIOSH) sample methodologies as a basis of testing and all laboratory analysis was completed by a laboratory having American Industrial Hygiene Association (AIHA) accreditation for the components tested. The only variation to this would be the oxides of nitrogen and carbon monoxide tests, which were completed using Gastec brand detector tubes.

In regards to exposure limits, for the purposes of this project the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV's) were referenced.

CONCLUSIONS

Based on the results of all the testing and review, we would then provide the following Conclusions regarding the use of the product and equipment in question following manufacturer specifications for use:

- carbon monoxide results were below the detection and exposure limits and therefore there were no issues regarding carbon monoxide exposure,
- oxides of nitrogen results were below the detection and exposure limits and therefore there were no issues regarding exposure to oxides of nitrogen,
- under typical use conditions, aldehyde results were below the detection and exposure limits and therefore there were no issues regarding exposure to aldehydes,
- short term exposure to oil mist was found to be less than half the applicable exposure limit and normal shift exposures were determined to be well below the applicable exposure limit and therefore it was determined that there were no issues regarding exposure to oil mist,
- under typical use conditions, benzene results were below the detection and exposure limits and therefore there were no issues regarding exposure to benzene,
- the VOC screening identified no other compounds of concern (ie, those compounds that in very high concentrations of "vapor" did not have

concentrations that exceeded 1% of their applicable TLV) and the overall concentration of VOC's was also well below the associated exposure limit and therefore there were no issues regarding exposure to general VOC's.

Therefore, ultimately the project found that if used following manufacturer's specifications, that there were no occupational exposure issues for the unit and product in question.