

REDUCING ODOUR SAMPLE DEGRADATION COMPARATIVE STUDY OF NALOPHAN, TEDLAR® AND PTFE SAM BAGS

March 5, 2014

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Foundder of IDES Canada Inc.

Scen

COMPANY OVERVIEW

S Canada is the world's premier supplier of flour sampling, storage and measurement equipment.

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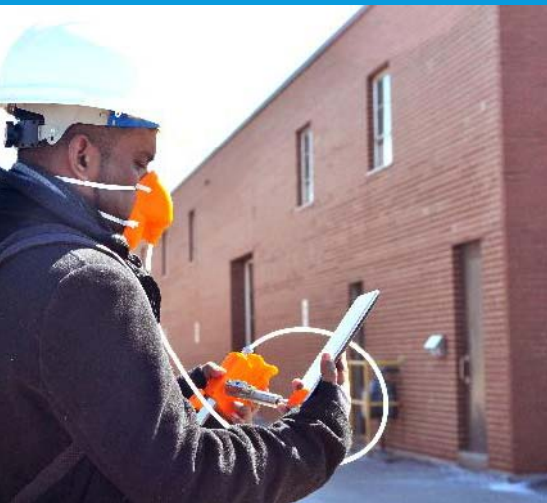
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PRODUCT LINES - OLFACTOMETERS

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SC300 Portable Olfactometer



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PRODUCT LINES – SAMPLING EQUIPMENT

Uum Chamber



Static Hood



Flux Chamber



Diluting Samp



PRODUCT LINES – SAMPLE STORAGE

PTFE Sample Bags



Tedlar Sample Bags



Stainless Steel Sample



Heated Purger



OBJECTIVE OF THE STUDY

- Transportation conditions and delay between sampling and analysis will cause odour degradation.
- European, Canadian, and American standards impose a 30 hour limit with the new German standard limiting storage to 6 hours.

Objective of this study is to demonstrate

1. the effects of sample storage media (PTFE, Tedlar, and Nalophan) on sample degradation during transportation and storage.
2. some of the good practices and techniques in sampling and storage to minimize sample losses.

EQUIPMENT USED

The Equipment used for this study was the SM100 Field Olfactometer. The equipment was used in a laboratory configuration using binary forced choice method with 2 panelist.



STUDY 1 – BACKGROUND ODOUR

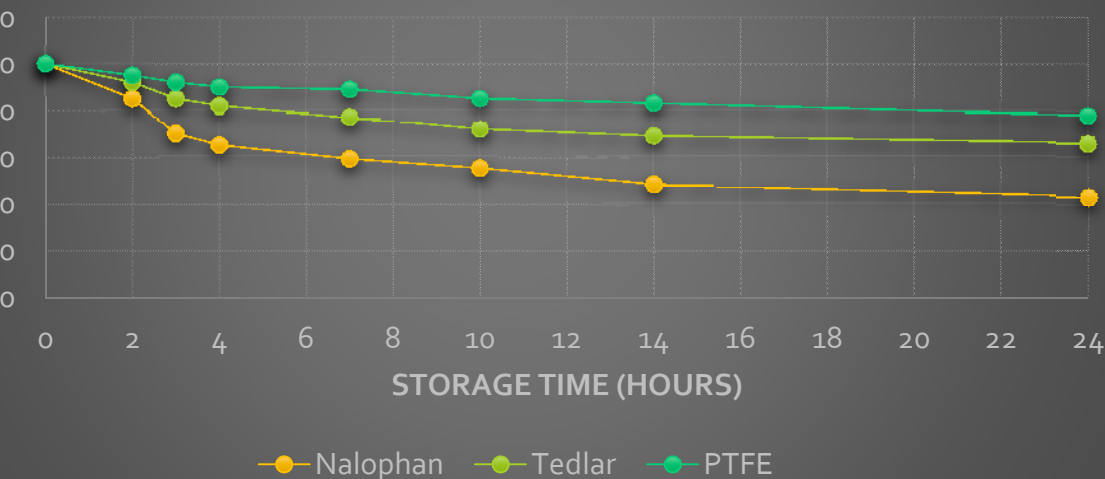
Each Sample bag was filled with Nitrogen and checked in 2 hours.

Sample bag	Odour Concentration measured (OU)
Nalophan	9
Virgin Tedlar	42
Pre-conditioned Tedlar	7
PTFE	0

STUDY 2 – SAMPLE DEGRADATION AT STP

les were stored at standard temperature and pressure (21C and 1 atm) and analyzed hours.

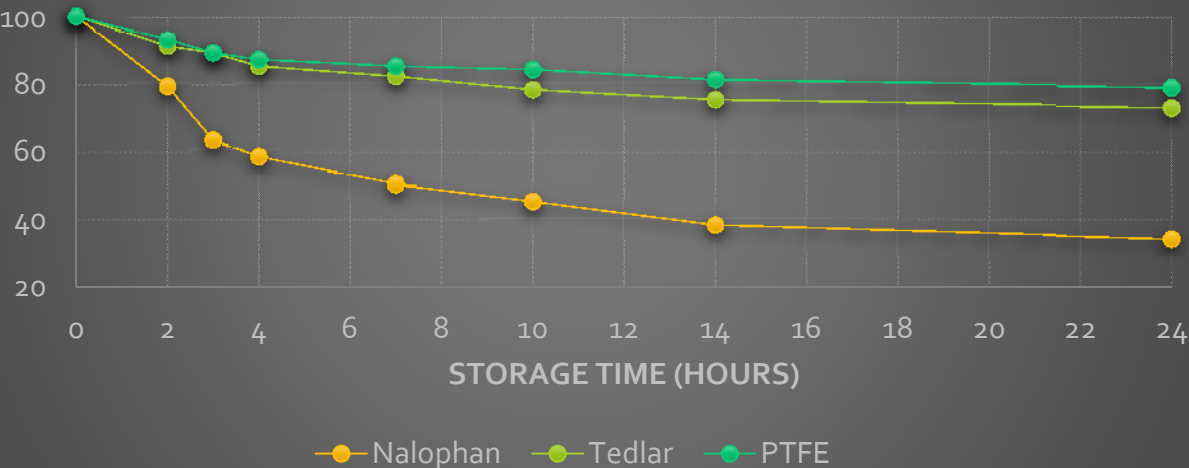
Odour Degradation for WWTP samples



STUDY 2 – SAMPLE DEGRADATION AT STP

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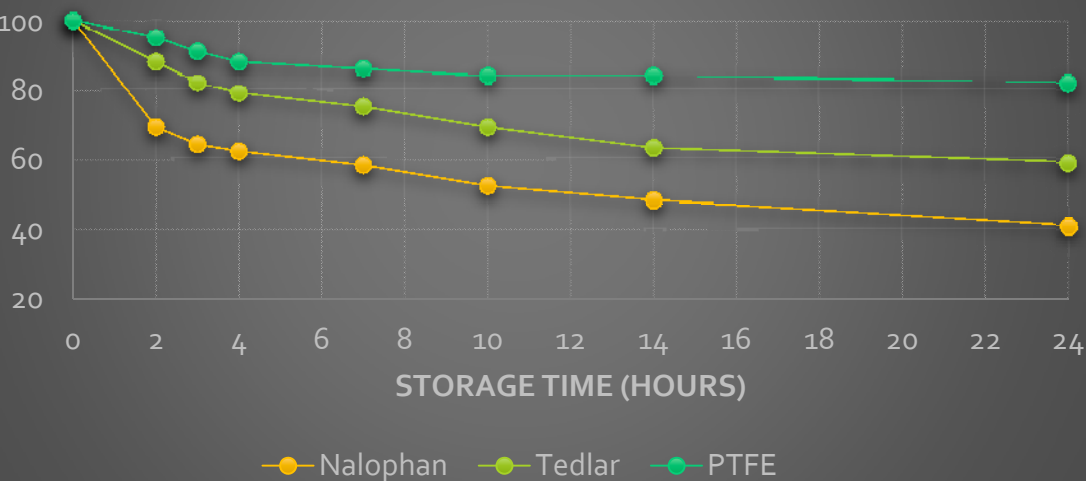
Odour Degradation for Agriculture samples



STUDY 2 – SAMPLE DEGRADATION AT STP

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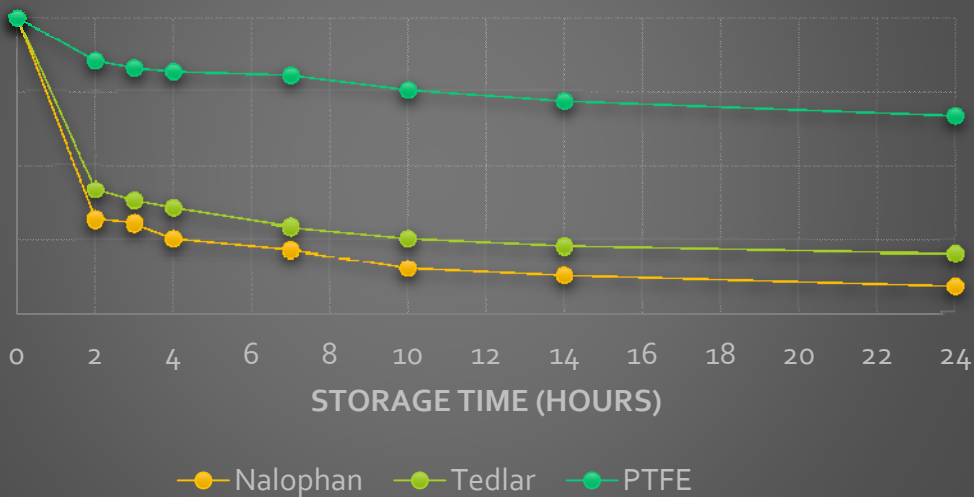
Odour Degradation for Compost samples



STUDY 2 – SAMPLE DEGRADATION AT STP

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Odour Degradation for Refinery samples



STUDY 2 – SAMPLE DEGRADATION AT STP

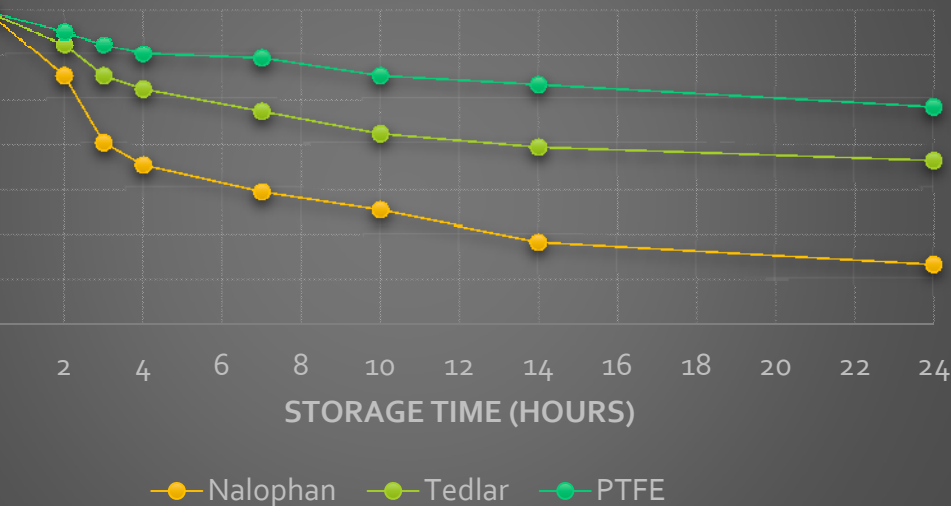
Investigate the rapid odour loss sample bags were sent to the laboratory for analysis of Benzene concentration losses over time.

Material	Concentration in the tank (ppm)	After 10 min (ppm)	After 45 min in (ppm)
Nalophan	100	51	35
Tedlar®	100	65	53
PTFE	100	88	85

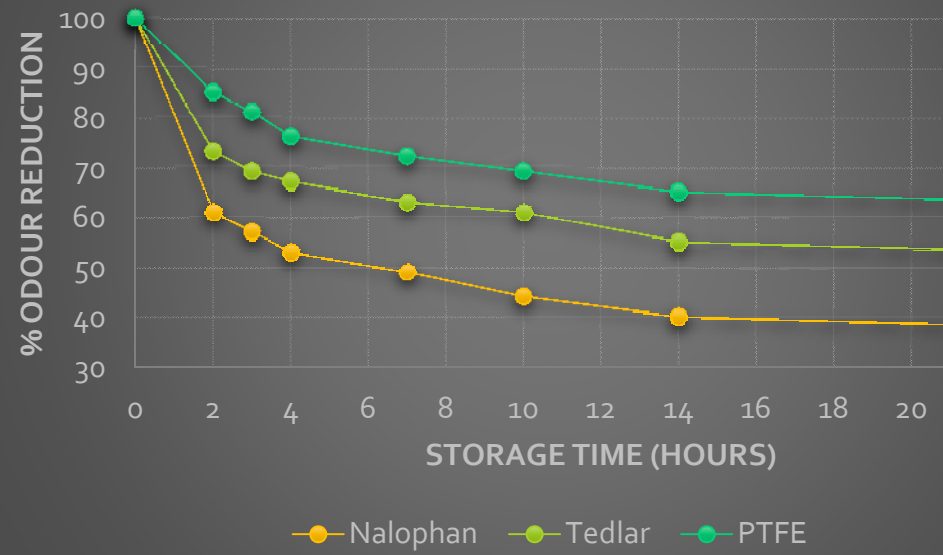
STUDY 3 – SAMPLE DEGRADATION IN AIR FREIGHT

Freight is subjected to lower pressure and temperature than STP. The conditions of the experiment were based on 13°C and 90 Kpa (0.9 Atm).

Odour Degradation for WWTP samples



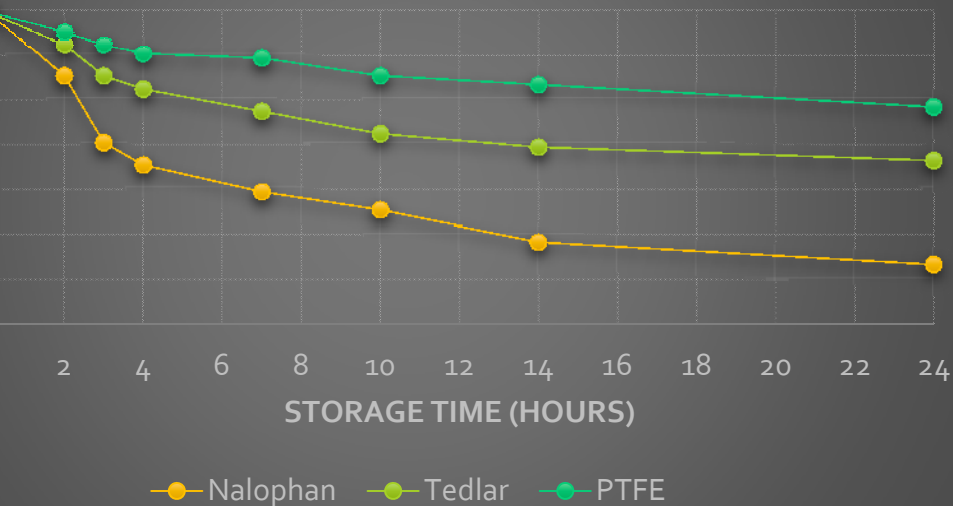
Odour Degradation for WWTP samples subjected to air Freight temp. and Pressure



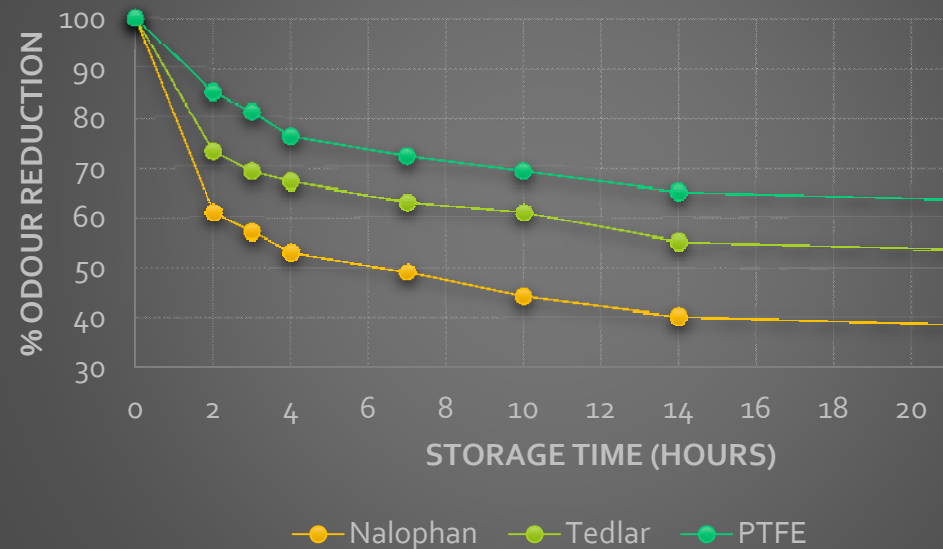
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Odour Degradation for WWTP samples



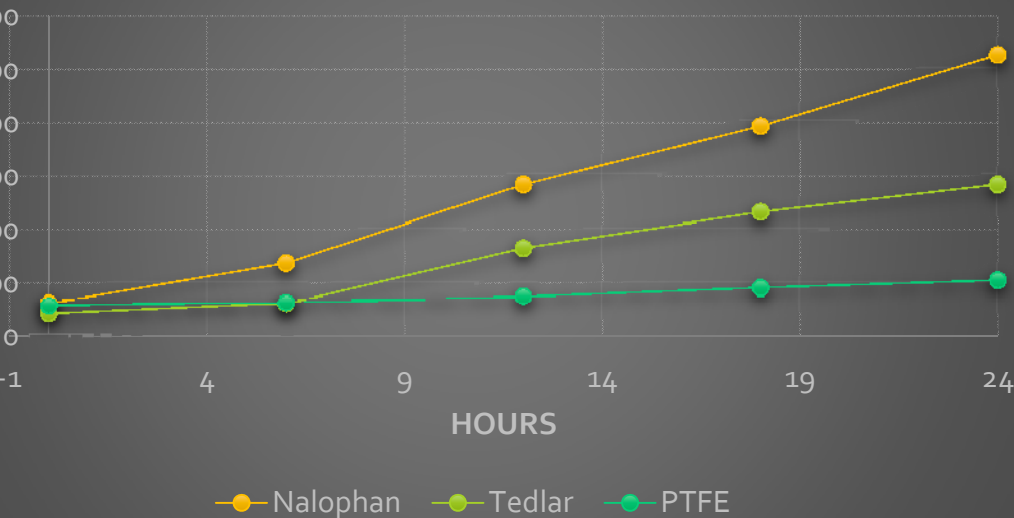
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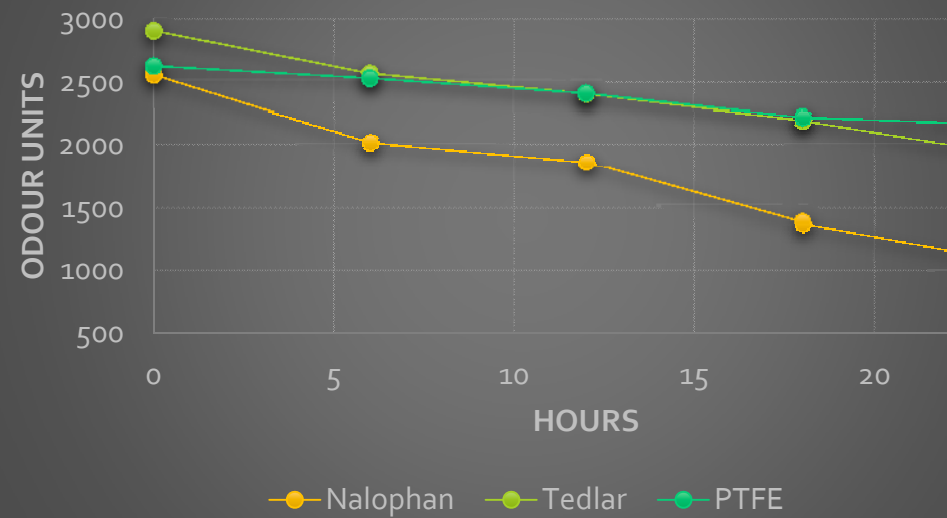
STUDY 4 – CROSS CONTAMINATION

Samples were taken from inlet and outlet of a odour filter and placed along side each other in the carton box resulting in cross contamination of the samples.

Outlet Samples

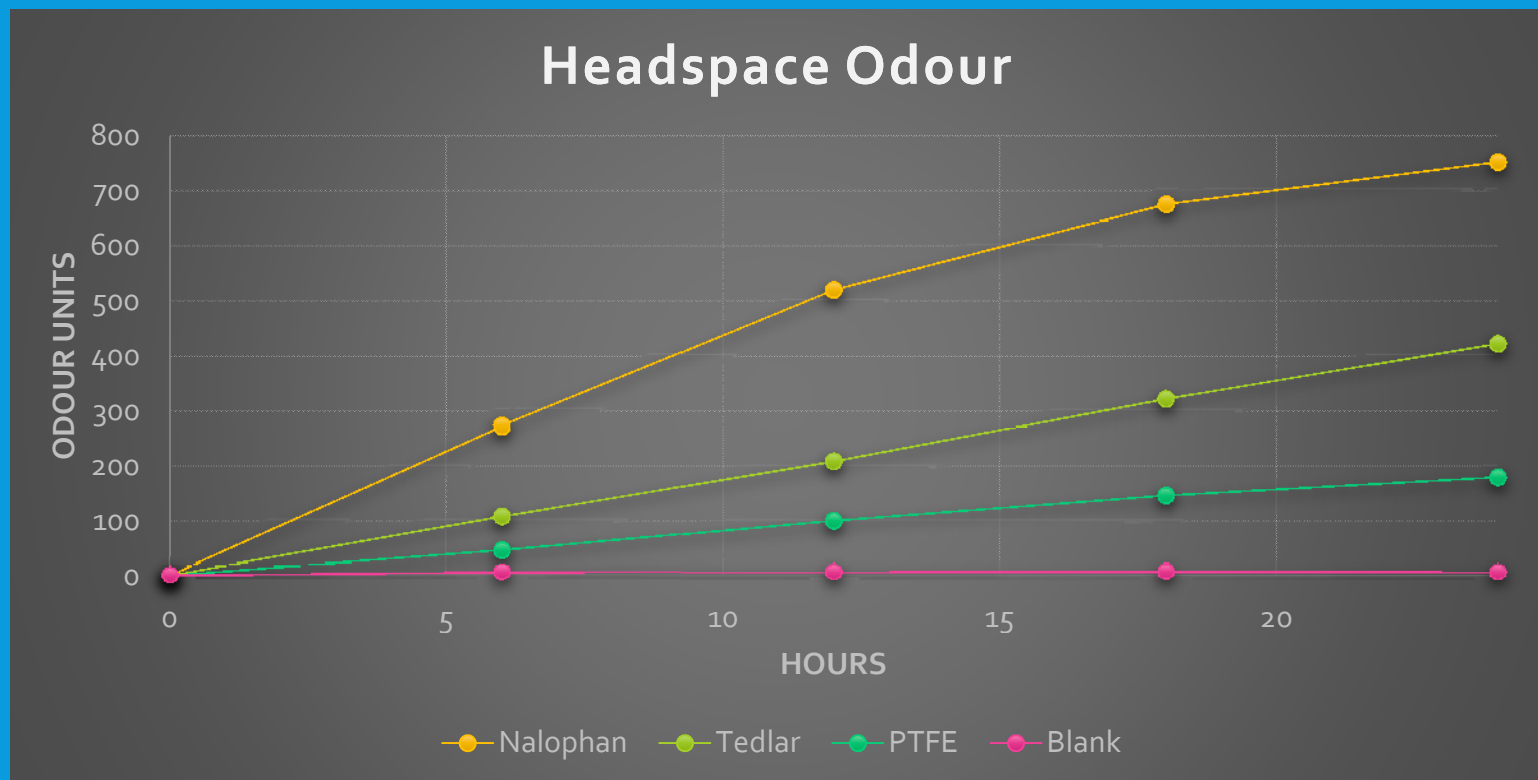


Inlet Samples



STUDY 4 – CROSS CONTAMINATION

Carton box had a background odour of 8 OU. The addition of odour contamination is to the samples being released through the bag material.



CONCLUSIONS

1. Samples should be analyzed as soon as possible.
2. The data clearly shows an improved sample preservation in PTFE over traditionally used materials such as Nalophan or even Tedlar®.
3. When bags are subjected to lower pressure the permeability of the bag is further exposed and therefore odour degradation is accelerated.
4. This is especially an issue if the bag is filled to 80% or higher of its maximum volume.

CONCLUSIONS

5. If possible samples of similar type and concentration should be stored together and preferably for as short a period as possible.
6. that samples that require more than a few hours of transit to a stationary lab should be analyzed using portable olfactometers or field olfactometers.
7. The advantages of increased accuracy gained by stationary laboratories is insignificant to the odour degradation caused by long distance shipping and air freight.

QUESTIONS?