

SUMMARY REPORT

Client:	Tadiran Consumer and Technology Products LTD. 9 Ravnitzky St. Petah Tikva, Israel 4900617	Work Order:	19MIS1089
Submitted By:	Gal Dimand	Date Revised:	September 18, 2019 ¹⁾
Client's reference:	Test of Hydrogen Peroxide emission from TADIRAN AIR CARE. Based on PeroxMaker Technology	Date Received:	August 20, 2019
		Date Analyzed:	September 12-13, 2019
		Date Reported:	September 17, 2019
		Analysis:	Hydrogen Peroxide
		Reference Procedure:	OSHA 1019

Introduction:

LCS Laboratory Inc. (Laboratory), was commissioned to measure accumulation of Hydrogen Peroxide in air during operation of "TADIRAN AIR CARE" instrument which is based on PeroxMaker technology (device). Client specified that testing should be performed in accordance to OSHA 1019 method with a sensitivity no less than 0.030 ppm. Tadiran Consumer and Technology Products LTD provided the device for testing.

Experimental Setup:

Laboratory assembled pyramid shaped enclosure with the base of 265 by 210 cm and 136 cm tall. The frame was wrapped in polyethylene plastic film and taped to reduce air exchange with outside air. The device was placed inside and connected to the power line.

Samples of air were collected at a flow rate of 2 L/min for a duration of 2 hours. For quality control purposes, up to two samples were collected simultaneously within the enclosure.

The device was placed on the floor half way between the center of the enclosure and the wall. Samples are collected from two different locations:

- In the center of the enclosure 60 cm above the floor ("center")
- At the device air outlet ("on device")

In a separate experiment, concentration of the hydrogen peroxide was measured on the device outlet running on the laboratory bench in 12 L enclosure.

Environmental Conditions:

Samples were collected on September 5, 2019. Ambient temperature was T=23°C and relative humidity was RH=53%

Pump calibration and duration of sampling:

Air sampling pumps were calibrated before and after sampling. The following volumes of air were collected

Client Sample ID #	Pump ID #	Pre-Calibration L/min	Post-Calibration L/min	Duration min	Air Volume L
Sample 1	55	2.03	2.03	120	244
Sample 2	74	2.03	2.08	127	261
Sample 3	55	2.03	2.03	134	272
Sample 4	74	2.03	2.08	128	263
Sample 5	55	2.03	2.03	114	231
Sample 6	55	2.03	2.03	120	244
Sample 7	74	2.03	2.08	120	247
Sample 8	74	2.03	2.08	106	218
Sample 9	55	2.03	2.03	106	215

Experimental Results:

Laboratory results are provided on the certificate of analysis.

To achieve the desirable sensitivity samples were collected for 2 hours. Once the first sample was collected the cassette was replaced with a fresh one. This was repeated for the duration of 8 hours.

Client Sample ID #	Time slot Start/end	Location L	Hydrogen Peroxide	
			µg/sample	ppm
Sample 1	17:55/19:55	Center	<2	<0.006
Sample 2	18:54/21:01	Center	<2	<0.006
Sample 3	19:55/22:09	Center	<2	<0.005
Sample 4	21:03/23:11	On device	<2	<0.005
Sample 5	22:10/0:04	Center	<2	<0.006
Sample 6	0:07/2:07	Center	5	0.015
Sample 7	0:07/2:07	On device	<2	<0.006

In a different experiment, 2 more samples were collected on the device operating in a 12L enclosure.

Client Sample ID #	Duration min	Location L	Hydrogen Peroxide	
			µg/sample	ppm
Sample 8	106	On device	<2	<0.007
Sample 9	106	On device	<2	<0.007

Conclusions:

- Hydrogen peroxide concentration in air didn't exceed 0.007 ppm in all but one experiment.
- One sample (#6) shows concentration of Hydrogen Peroxide at 0.015ppm. It is possible that this positive result is an artefact, since the duplicate sample #7 collected at the same time, does not detect any noticeable concentration of the hydrogen peroxide.
- Detected concentrations of the Hydrogen Peroxide are 50-100 times lower than Occupational (Industrial) exposure limit of 1 ppm as defined in: Ontario Canada (2019, Occupational Exposure Limits for Ontario Workplaces, Regulation 833); USA (2019, OSHA PEL, OSHA Annotated Table Z-1)

Revisions:

- 1) Client's reference is added as per client's request



Analyst: Mark Hughes, Lab Tech.



Reviewer: Stepan Reut, Ph.D.