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OZONE EMISSION FROM USE OF AERO 1000 BM AIR PURIFIER

1. Introduction

The aim of the survey was to determine the possible ozone emission during the use of an air purifier from Desinfinator Oy Ltd. Ozone emission was determined in an emission chamber in a laboratory at the Lappeenranta Regional Office of the Finnish Institute of Occupational Health.

Mr Jussi Rousi from Desinfinator Oy Ltd. was present at the measurements. Ms Henna Kinnari, an occupational hygienist from the Finnish Institute of Occupational Health, conducted the survey.

2. Measurement methods

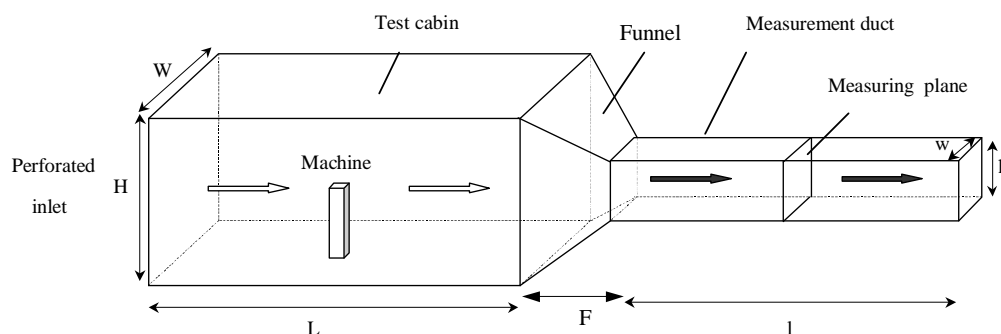
The measurements were conducted on 11 May 2009 in the emission chamber of the Lappeenranta Regional Office of the Finnish Institute of Occupational Health (picture 1) according to the SFS-EN 1093-3 standard. /1/

The measured air purifier model used was AERO 1000 BM from Desinfinator Oy. Ozone emission was measured during the normal use of the machine and also without its activated charcoal filters. The measuring period in both cases was 40 - 50 minutes and included start-up of the machine.

The test took place in a chamber through which the air flow rate was approximately 0.18 m/s (picture 1). The sample site for ozone measurement was in the chamber's discharge channel. The air flow rate in the channel was approximately 1.6 m/s. Ozone concentrations were measured using a Sabio 2030 ozonephotometer. Air flow rate and air pressure were measured using the Furness Controls Limited FC0510 micromanometer. Temperature and relative humidity were measured using Vaisala's MI70 temperature/relative humidity meter. Ozone concentrations (ppm and mg/m³) and emissions (mg/hr) were determined according to standard SFS 3869. /2/

The blank concentration of ozone (normal ozone concentration in the air) in the chamber was 0.032 ppm on the test day. The blank concentration was deducted from the actual measuring results. Temperature in the test chamber during the measurements was 22.8 °C and relative humidity 85%.

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Picture 1. Emission chamber (H=2.4 m, W=2.4 m, L=5 m, w= 0.8 m, h= 0.8 m, l=5 m).

3. Results and discussion

The results of the measurements are presented in the following table:

	normal use	without activated charcoal filters
measured variable	11.5.2009 10:20 - 11:10	11.5.2009 11:20 - 12:00
ozone concentration	< 0.001 ppm < 0.002 mg/m ³	< 0.001 ppm < 0.002 mg/m ³
ozone emission	< 0.002 mg/s < 7 mg/hr	< 0.002 mg/s < 7 mg/hr

No ozone emission was detected at any point of the measurement period. The ozone concentrations were below the detection limit of the method (below quantifiable limits), both during the normal use of the machine and during the use without the activated charcoal filters. Ozone concentration levels were the same as the measured blank levels (normal ozone concentration in the air).

Work Environment Development
Chemical Agents

Tapani Tuomi
Team Leader

Henna Kinnari
Occupational Hygienist

4. References

1. Standard SFS-EN 1093-3, Safety of machinery. Evaluation of the emission of airborne hazardous substances. Part 3: Test bench method for the measurement of the emission rate of a given pollutant.
2. Standard SFS 3869, Air quality. Determination of gaseous emissions.

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