# Particulate matter in the indoor environment of selected museums through the covid-19 period

**Petros Aristotelous[1], Zorpas Antonis[1], Agapios Agapiou[2], Marinos Stylianou[1,2]**

[1]Faculty of Pure and Applied Sciences, Environmental Conservation and Management Programme, Open University of Cyprus, P.O.Box 12794, 2252, Latsia, Nicosia, Cyprus
[2]Department of Chemistry, University of Cyprus, Nicosia, Cyprus

**Corresponding author:* **e-mail address:** petrak9@hotmail.com

## Introduction:

- Poor air quality is not only one of the largest environmental risks to public health, but airborne pollutants affect also our cultural heritage.
- Various outdoor-originated (e.g. traffic, industrial fumes) and indoor-emitted air chemicals (e.g. building materials, solvent-based paints, detergents, insecticides, human activities, etc.) negatively affect the indoor air quality (IAQ)

**Figure 1** Museums and governmental buildings in Cyprus

## Materials and methods:

- Field measurements were developed through a field sampling campaign where measurements were implemented to governmental offices, museums and other cultural buildings.
- Indoor and outdoor air sampling (PMs) were performed to assess the IAQ environment (PM10, PM2.5 and PM1.0)

**Figure 2.** Portable particulate matter meter - Dust Trak Model 8532.

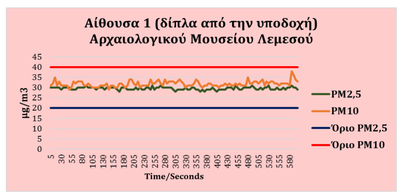
**Case study**

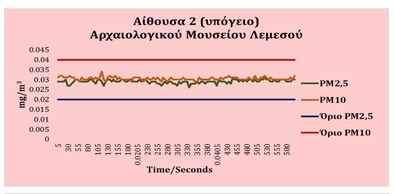
- Limassol Archaeological Museum
- Medieval Castle of Cyprus (Limassol Castle area)
- Ioannou Tower (Public Service Office Building)
- Folklore - Agricultural Museum of Fasoula, Limassol

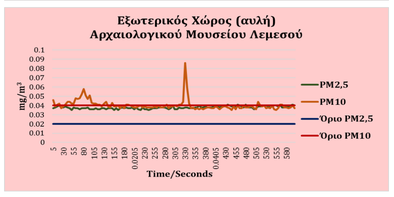
**Figure 3.** Maps demonstrating the sampling points (Cyprus)

## Results:

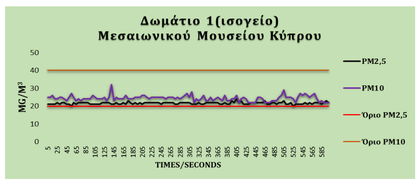
Limassol Archaeological Museum

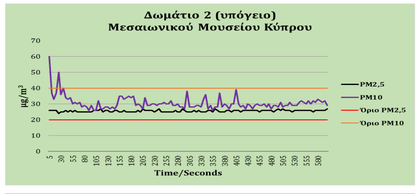


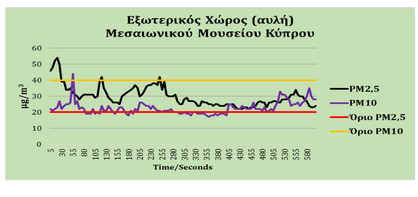



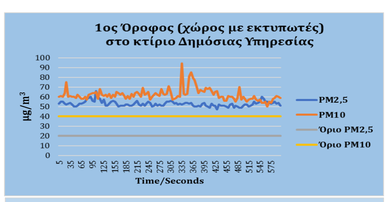

Medieval Castle of Cyprus (Limassol Castle area)

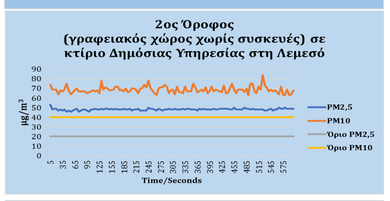


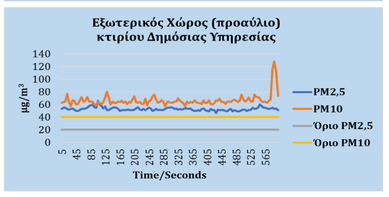



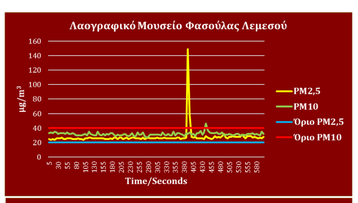

Ioannou Tower (Public Service Office Building)

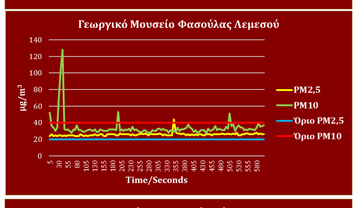



Folklore - Agricultural Museum of Fasoula, Limassol





## Conclusions:

- The outdoor environment can significantly affect indoor air quality.
- Indoor activities and the presence of individuals can lead to increased concentrations of indoor pollutants.
- The first measurements were higher than the second measurements in all the areas, because of the dust in the atmosphere. second measurements were made during a period of a curfew due to the COVID-19 pandemic.
- In the offices of the Public Service the first measurements (higher) were made in a normal working period, while in the second measurements (lower) there was a 50% staff attendance (due to COVID-19).
- At the Medieval Museum of Cyprus, the first measurements were higher as they were made in the presence of a (minimum) audience, while the second measurements were made in a lockdown period.
- At the Limassol Archaeological Museum, both measurements were made in a lockdown period, without the presence of an audience, so the results of the two measurements are approximately at the same levels.
- From the various studies conducted in the last year (pandemic period) it is concluded that the pandemic has led to a reduction in pollutants.

**CORFU 2022**
**9th International Conference on Sustainable Solid Waste Management, 15-18 June 2022**