**Poster # 107: Use of Bi-Polar® ionization technology to combat with the increased PM 2.5 count and aeroallergen indices**

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**Abstract**

**RATIONALE: PM 2.5**

Particulate Matter 2.5 (PM2.5) refers to various invisible solid and liquid particles present in the environment. Aerosols, including PM2.5, are the culprits of many allergic reactions and respiratory syndromes. PM2.5 is present in heavily polluted areas. Based on clinical studies, PM2.5 positively correlates with increased cases of allergic rhinitis, asthma, bronchitis, allergic pharyngitis, etc. Our studies on the aeroallergen composition and indices using the Burkard Spore Trap showed an increase in aeroallergen levels. We used the Bi-Polar ionization technology for remediation of the indoor aeroallergens including the PM2.5, fungal and bacterial spores, and VOCs.

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**Methodology of Aeroallergen Analysis**

The daily aeroallergen data for 20 years showed a gradual shift in flowering season and increased production of pollen and spores leading to an increased allergy and asthma cases.

**Slide preparation from the tape from the Burkard Spore Trap**

- We collected the samples of pollen, fibers, particulate matters, gums, mites and fungal spores from the collection tape from the Burkard Volumetric Spore Trap. The tape was stained with 2% Safranin; it was mounted in Gelvatol. The slides were observed using a BX-40 Olympus scope with DF-74 Digital Camera. The micrographs were analyzed using Image Pro 6.0 software.
- To view the fluorescence of the pollen, wet mounts were made using 2-3 drops of deionized water to prepare the slides.
- Study on the pollen grains for fluorescence:
  - To improve the visibility of the samples architecture 1-2 drops of 2% Safranin stain was added.
  - Pollen collected from anthers of flowers were teased with a clean needle and debris was removed. Half of the slides had 2% Safranin and the other half deionized water. Safranin-stained slides showed better fluorescence.
- The prepared slides were observed, micro-graphed and analyzed with Image Pro 6.0 software.

**Burkard Spore Trap showed an increase in aeroallergen levels**

- **Graph 1** shows a significant correlation between the aeroallergen concentration and the number of allergy patients visited the clinic.
- **Graph 2** shows comparison of the rate of the Natural Decay of the PM 2.5 and the decay rate in using i-Adapt unit.

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**References**