

Christopher Himes, New Garden Township Manager  
299 Starr Road  
Landenberg, PA 19350  
610-268-2915 ext. 102  
chimes@newgarden.org

Dear Christopher Himes,

I am writing to share the results of the air quality study for New Garden Township, which was conducted from February 2023 through February 2024, within the residential community (39°48'29.6"N 75°45'56.9"W). This contract was executed on February 11, 2022, and was requested to address air quality concerns within New Garden Township.

The executive summary indicates the major findings and recommendations of the pilot study for your consideration. The full report contains detailed information regarding the sampling process, health hazards, regulation standards, sampling methods, result interpretations, discussion, and conclusions.

### **Executive Summary**

Three ambient air samplers were deployed within 600 feet of suspected sources of toxic gases surrounding mushroom farms in February 2023 and collected data through February 2024. These devices were located on residential properties. Each sampler tested outdoor air continuously during the year for hydrogen sulfide, methane, and ammonia.

The devices did not detect concentrations of methane or ammonia at either of the three locations. The devices detected concentrations of hydrogen sulfide at variable amounts.

The sampler at location A reported concentrations as high as 100 ppm.

The sampler at location B reported concentrations as high as 1.2 ppm.

The sampler at location C reported concentrations as high as 6.5 ppm.

The Pennsylvania Department of Environmental Protection Ambient Air Quality Standard of 0.1 ppm averaged over a period of 1-hour or 0.005 ppm averaged over a period of 24-hours had been violated in several occasions during the year and indicated residential exposure has occurred.

Caution should be exercised when interpreting the high value at location A (see Discussion section) since the device results during August 2023 through December 2023 did not follow typical gas dispersion patterns and may be unreliable.

The Occupational Safety and Health Administration permissible exposure limit of 20 ppm as a time-weighted average and National Institute of Occupational Safety and Health recommended exposure limit of 10 ppm as a time-weighted average were exceeded at location A.

### **Recommendations**

1. Evaluate the sources of the gas releases and quantify the concentrations released from the source within the fresh mushroom production sites.
2. Remedy deficiencies in business operating procedures in comparison to the *Best Practices for Environmental Protection in the Mushroom Farm Community* published by the Pennsylvania Department of Environmental Protection (2012).
3. Inform residents and other stakeholders of chronic exposure to hydrogen sulfide and consequences to health.
4. Consult with a Professional Engineer and Certified Industrial Hygienist to evaluate business procedures and associated releases of gases.
5. Consult with health officials to determine the impact that chronic exposure has on resident's health and wellbeing.

Mr. Himes, thank you for the opportunity to investigate this health and nuisance concern in New Garden Township. If you have any questions after reviewing this report, please do not hesitate to call or email me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lorenzo Cena', with a stylized, cursive script.

Dr. Lorenzo Cena, Ph.D., M.S.  
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