Chlorine Dioxide Gas Decontamination of Exhaust HEPA Filter Units

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Abstract

The Mini Chlorine Dioxide System (MCS) utilizing Chlorine Dioxide Gas (CD) is a more efficient and safer method of decontaminating Exhaust HEPA Filter Units. In the past, the Formaldehyde method was cumbersome, time consuming and frequently ineffective. With formaldehyde, a human suspect carcinogen, one would possibly have to build enclosures and/or use booster fans, as well as wait for several hours of contact time, before being able to access the HEPA unit for certification or repair. Improper neutralization of formaldehyde also left behind significant residues. The MCS offers a simpler, safer, and quicker decontamination of exhaust HEPA units. With the MCS, setup, contact, and breakdown are achieved in less than 3 hours. In addition, CD poses a lower health risk to personnel and leaves no harmful residue behind. Biological indicator validation (reduction of 10^6 Bacillus atrophaeus) demonstrates the effectiveness of the MCS decontamination procedure.

Materials and Method (cont.)

Perform CD Decontamination
- Perform CD decontamination as if performing on a BSC using the MCS
- Install the Temp/RH and BI Holder on the upstream port
- Affix the MCS via supply and return hoses
- Use the proper number of CD tablets as per the calculated volume of the unit, include ductwork up to dampers
- Run the MCS decontamination cycle
- At the completion of the contact time (90 minutes) you may scrub or direct vent

If a risk assessment deems it necessary, exhaust HEPA filter units may need to be decontaminated prior to internal maintenance, repair, or certification. This double HEPA filter bank was decontaminated with a MCS prior to its annual certification at the University of Georgia by Southeastern Certification, Inc. Although the bag-in/bag-out feature is present on this unit, facility protocol requires decontamination and a pressure decay test as well.

Discussion and Conclusion

Using the MCS procedure for decontaminating a BSC has proven to be just as effective on Exhaust HEPA Filter Units. The only difference between the two procedures is that the MCS is run throughout the entire 90 minute decontamination cycle in order to achieve more effective movement of CD gas throughout the HEPA unit. Labor savings, increased safety, and simplicity of the Mini Chlorine Dioxide System make it a more desirable way to decontaminate Exhaust HEPA Filter Units.

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