

Ozone Part III: Ozonation as a Remediation Method

Ozone generators used as air cleaners to help remediate odors and reduce VOCs have been in use for a long time. However, there is increasing evidence that indicates that the use of these machines results in unintended side effects that outweigh the advantages of using these devices for remediation. Ozone is a powerful oxidizer and attacks many materials, thereby resulting in rapid deterioration of these materials. This is what makes ozonation effective in addressing odor and other indoor air quality problems.

Although ozone does have an effect on odor-active substances at relatively high concentrations, it also affects other chemicals in the air. A few of these chemical compounds may reach the intended end point of the process, carbon dioxide and water, but most will stop at some intermediate point which often generates different odorous or irritating chemical byproducts. For example, formaldehyde is a common product of ozonation and can present a significant hazard in the right (or wrong) circumstances.

In addition to the effect of ozone on chemicals in the air, there is also collateral damage to materials in indoor surfaces. These materials include paints, O-ring seals, rubber materials, and certain plastics. Dyes, pigments, and inks can be degraded leading to faded colors in materials and artwork. For rubbers and plastics, surface cracking can occur and these effects may not show up until some considerable time later. Essentially, the use of ozone accelerates the material aging process.

Ozone is also a strong respiratory irritant. Considering that hazardous side products also can be generated, caution must be exercised regarding the health of individuals during application and those that will occupy the facility following remediation. The potential hazards and collateral damage associated with the use of ozone machines make it one of the more challenging technologies to use, requiring special care in its application.

About Prism Analytical Technologies, Inc.

Prism Analytical Technologies, Inc. is a leading consultative air testing laboratory in the United States that is devoted to the chemical identification and analysis of contaminants in the air. We are a recognized leader in the development and deployment of ambient air testing methodologies for Fortune 100 and 500 companies, industrial hygienists, and environmental consultants. Prism's science-based technologies and wide range of air testing support help clients solve indoor air quality, process control, industrial, and environmental challenges.