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### **Introduction:**

Ozone is a bluish gas with a pleasant, characteristic odor in concentrations of less than 2 ppm. In higher concentrations, the odor is pungent and irritating. Ozone is a severe irritant to the eyes and the mucous membranes. Long-term exposures will cause pulmonary edema (abnormal fluid build-up in the lungs) and chronic respiratory disease. OSHA and NIOSH exposure limit for ozone is 0.1 ppm (TWA).

Ozone is used as a disinfectant of air and water. It is also used to bleach waxes, textiles and oils.

### **Principles of Operation:**

The SafeAir ozone badge is a monitoring system designed to indicate the presence of ozone at concentrations below the permissible exposure limit. The SafeAir ozone badge detects the presence of ozone by forming a color change in the shape of an exclamation mark inside the triangle. This indication is produced by a color-forming reaction which occurs when ozone reacts with a flat indicator layer.

### **Operating Instructions:**

1. Remove the pouch from the refrigerator and allow it to warm to room temperature.
2. Remove the badge from its protective pouch.
3. Remove activation label before monitoring.
4. For personnel monitoring, attach the badge near the user's breathing zone (i.e. the collar) with the front side exposed to the surrounding atmosphere.
5. For area monitoring, attach the badge to a stand and mount in a centralized area with the front side exposed to the surrounding atmosphere.
6. The exclamation mark appears within the triangle when ozone is present. Please note that the exclamation mark will appear underneath the printed exposure dose (sensitivity).
7. To obtain the average concentration, divide the exposure dose (0.05 ppm·hr) by the exposure time in hours (hr).

### **Storage:**

The SafeAir ozone badge should be refrigerated in its sealed bag at all times.

### **Benefits:**

1. **Accurate Detection:** The SafeAir ozone badge is designed to react selectively with ozone with minimum interference from other substances.

2. Applications: the SafeAir badge may be used for personnel screening and for area monitoring or area mapping.
3. Ease of use: The SafeAir badge is a direct-read device that gives immediate, on-site results.

**Physical Specifications:**

Dimensions	74 x 41 x 1 mm
Weight	1.5 g
Refrigerated shelf life	1 year
Color change	Blue to white

**Sampling Parameters:**

Exposure level	0.05 ppm · hr
Minimum detectable limit (8 hours)	0.006 ppm
Maximum recommended sampling time	48 hours
Minimum recommended sampling time	15 minutes
Relative humidity range	30% - 80%
Face velocity range	10 – 150 cm/sec
Temperature range	60°F - 90°F
Light effect – UV (direct sunlight)	Not recommended
Light effect – visible	No effect
Color stability	4 weeks

**Applications:**

The SafeAir ozone badge may be used for personnel or area monitoring for exposure times ranging from 15 minutes to 48 hours.

**Cross Interferences:**

Chlorine does not affect the performance of the monitor. Hydrogen peroxide is a known interference. Up to 0.3 ppm nitrogen dioxide shows no interference. Exposure to 0.5 ppm nitrogen dioxide for 5 hours causes false positive readings equivalent to 0.04 ppm ozone; exposure to 1 ppm nitrogen dioxide for 3 hours causes false positive readings equivalent to 0.04 ppm of ozone. No further interferences are known.