Operating Instructions
Chlorine Monitor
(Part Number: 380004)

Introduction
Chlorine is a greenish-yellow gas with a pungent, irritating odor. Generally, chlorine is a potent respiratory system irritant. Mild exposures to chlorine cause burning of eyes, nose and mouth. Exposure to high concentrations (e.g. 1000 ppm) is likely to be fatal. The NIOSH REL (recommended exposure limit) for chlorine is 0.5 ppm (ceiling), whereas the OSHA PEL (permissible exposure limit) is 1 ppm (ceiling).

Chlorine is an important chemical commodity widely used in the production of safe drinking water. It is also extensively used in the production of paper products, dyestuffs, textiles, petroleum products, chlorinated solvents, etc.

Principle of Operation
The ChromAir passive monitor is a patented direct-read autogenic exposimeter. The device is constructed from six cells attached on one side to a flat indicator layer and on the other side to a series of different diffusive resistances. Chlorine gas diffuses to the cells through the different diffusive resistances and reacts with the indicator layer, producing color change from yellow to orange. The color produced on the indicator layer is a direct measure of the exposure dose. Visual color comparison is achieved by observing the formation of the orange threshold color on the individual cell and reading the corresponding exposure dose.

Physical Specifications:
- Dimensions: 10.5 cm x 5.5 cm x 0.25 cm
- Weight: 11 g
- Refrigerated shelf life: 2 years
- Color change: yellow to orange

Sampling Parameters:
- Exposure range: 0.4 - >13 ppm•hr
- Maximum recommended sampling time: 2 days
- Minimum recommended sampling time: 15 minutes
- Relative humidity range: 35% - 85%
- Face velocity range: 5 - 150 cm/sec
- Temperature range: 10ºC - 35ºC (59ºF - 95ºF)
- Mean coefficient of variation: ±10.6
- Bias at ambient conditions: 3.7%
- Light effect - UV (direct sunlight): no effect
- Light effect - visible: no effect
- Known Interferences: bromine, iodine and hydrogen chloride

Operating Instructions
1. Allow the badge to warm to room temperature prior to removing the badge from its protective pouch.
2. Enter all pertinent information on the label before monitoring is started (i.e. name, location, date and start time).
3. For personnel monitoring, attach the badge near the user's breathing zone (i.e. collar) with the front side exposed to the surrounding atmosphere.
4. For area monitoring, attach the badge to a stand and mount in a centralized area with the front side exposed to the surrounding atmosphere.
5. Check the back side of the badge periodically to determine the exposure dose (ppm•hr).
6. To read the badge, locate the highest level cell with orange threshold color.
7. To read the badge with the color comparator, after sampling, return badge to its original pouch and let stand for one hour to allow complete color development. Read the badge no later than 24 hours after exposure.
8. To obtain the average concentration (ppm) in the surrounding atmosphere, divide the exposure dose (ppm•hr) by the exposure time in hours. EXAMPLE: If the sampling time is 2 hours and the badge reads 4 ppm•hr, the average concentration is determined by: 4 ppm•hr 2 hr Therefore the average concentration is 2 ppm.

WARRANTY EXCLUSIONS AND LIMITATION OF LIABILITY
IF THE USER DOES NOT ACCEPT THE FOLLOWING TERMS, THE USER SHOULD NOT USE THE CHROMAIR BADGES AND COLOR COMPARATORS.

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Warning: Keep out of reach of children, if ingested seek medical attention immediately.

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