

# Path-Away™ Compared to Chlorine Dioxide Natural Remedy Vs Chemical Remedy

Chlorine dioxide has been proposed for use at many locations globally as a means of fungal control. There are some significant differences between this chemical and the all natural, chemical free Path-Away™ product that we feel you should be aware of.

## Background on Chlorine Dioxide:

***Chlorine dioxide is well established to be harmful to all forms of life. Ranked in the USA as one of the most hazardous compounds (worst 10%) to ecosystems.***

Chlorine dioxide is a gas that does not occur naturally in the environment. It is used to disinfect drinking water and make it safe to drink. Chlorite is formed when chlorine dioxide reacts with water. High levels of chlorine dioxide can be irritating to the nose, eyes, throat, and lungs. Chlorine dioxide is a yellow to reddish-yellow manufactured gas. It does not occur naturally in the environment. When added to water, chlorine dioxide forms chlorite ion, which is also a very reactive chemical. Chlorine dioxide is used as a bleaching agent at paper manufacturing plants, and in public water treatment facilities to make water safe to drink. In 2001, chlorine dioxide and chlorite were used to decontaminate a number of public buildings following the release of anthrax spores in the United States. Chlorine dioxide reacts quickly in water or moist body tissues. Breathing air containing chlorine dioxide gas may cause nose, throat, and lung irritation and can cause irritation in the mouth, esophagus, or stomach.

Studies in rats have shown that exposure of pregnant animals to chlorine dioxide or exposure of pups shortly after birth may cause delays in the development of the brain. The Occupational Safety and Health Administration (OSHA) has set a limit of 0.1 parts of chlorine dioxide or chlorite per million parts of air (0.1 ppm) in the workplace during an 8-hour shift, 40-hour work-week. Data on human exposures indicate that marked irritation occurs on inhalation of 5 ppm (no time specified), and that one death occurred at 19 ppm (Elkins 1959b, as cited in ACGIH 1986/Ex. 1-3, p. 118). Repeated exposures in humans have been linked to bronchitis and pronounced emphysema (Petry 1954/Ex. 1-1163). Clinical studies conducted by Gloemme and Lundgren (1957/Ex. 1-323) revealed that the majority of workers who had been exposed for five years to average concentrations of chlorine dioxide below 0.1 ppm, in combination with about 1.0 ppm chlorine, experienced eye and respiratory irritation and slight bronchitis. Some gastrointestinal irritation was also observed in these workers. Gloemme and Lundgren (1957/Ex. 1-323) attributed all of these effects to elevated short-term exposures involving excursions above the 0.1 ppm level. Ferris, Burgess, and Worcester (1967/Ex. 1-316) have shown that concentrations occasionally ranging as high as 0.25 ppm were associated with respiratory effects in workers concomitantly exposed to chlorine.

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In the final rule, OSHA is retaining the 0.1-ppm 8-hour TWA and adding a 15-minute STEL of 0.3 ppm for chlorine dioxide. The Agency concludes that both of these limits are necessary to protect workers against the significant risk of respiratory, skin, and eye irritation known to occur as a result of short-term exposures above the TWA of 0.1 ppm. OSHA has determined that these adverse effects constitute material impairments of health.

Skin: Prevent skin contact (liquid)

Wash skin: When contaminated (liquid)

Remove: When wet (flammable)

Provide: Eyewash (liquid), Quick drench (liquid)

Eye: Irrigate immediately (liquid)

Skin: Soap wash immediately (liquid)

Breathing: Respiratory support

Swallow: Medical attention immediately (liquid)

## Respirator Recommendations

NIOSH/OSHA

**Up to 1 ppm:**

(APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern

(APF = 10) Any supplied-air respirator

**Up to 2.5 ppm:**

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode<sup>£</sup>

(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern<sup>£</sup>

**Up to 5 ppm:**

(APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against the compound of concern

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern

(APF = 50) Any self-contained breathing apparatus with a full facepiece

(APF = 50) Any supplied-air respirator with a full facepiece

**Emergency or planned entry into unknown concentrations or IDLH conditions:**

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

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## Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern<sup>2</sup>/Any appropriate escape-type, self-contained breathing apparatus

## Symptoms

Irritation eyes, nose, throat; cough, wheezing, bronchitis, pulmonary edema; chronic bronchitis. Chronic health effects : The following chronic (long-term) health effects can occur at some time after exposure to chlorine dioxide and can last for months or years: irritate the lungs; repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath. Permanent lung damage may occur, especially with repeated exposure to the vapors. There is limited evidence that chlorine dioxide may damage the developing foetus.

## Path-Away™ Anti-Fungal Solution

- Natural plant based bioflavonoids.
- Non-hazardous. No special approvals needed for use.
- LD50 = 200,00 mg/kg of live body weight
- Non-volatile.
- Soluble in water.
- Non-flammable.
- Non-explosive.
- Not an irritant.
- Stable.
- Non-hazardous material and can be flushed into ecosystem.
- No respirator use mandated.
- Standard ASHRAE ventilation only.
- Allergy friendly solution.
- Non-corrosive.
- Can be applied by in-house staff with minor training.

# **Path-Away™ Compared to Chlorine Dioxide Natural Remedy Vs Chemical Remedy**

***Path-Away™ Anti-Pathogenic Solution  
is the all natural, chemical free,  
environmentally friendly choice and it is  
safe enough to be approved by the New  
Zealand EPA.***

**HSR100548**

**HSR100549**

Arthur V. Martin. President, CEO

Principal Research Scientist

GICC LLC