

CHLORINE DIOXIDE FACT SHEET

North Carolina Division of Public Health • Occupational and Environmental Epidemiology Branch

Chemical Information

- Yellow to red gas or a red-brown liquid that is not naturally found in the environment
- Unpleasant odor similar to chlorine
- Toxic via inhalation and ingestion routes
- Used to disinfect drinking water and as a bleaching agent in paper manufacturing

Regulatory Standards

- The Environmental Protection Agency (EPA) Acute Exposure Guideline Level 1 (AEGL - 1) for chlorine dioxide is 0.15 ppm for an 8-hour period.

Hazards Identification

Acute Exposure:

- Ingestion can cause irritation in the mouth, esophagus and stomach.
- Inhalation can irritate the nose, throat and lungs.
- Contact can irritate the skin and eyes.

Chronic Exposure:

- Repeated exposure can cause bronchitis.
- Chlorine dioxide is not considered a human carcinogen.

Stability & Reactivity

- Rapidly decomposes in air if present at high concentrations.
- Sunlight will cause chlorine dioxide to dissociate into chlorine gas and oxygen.
- Reacts quickly with water to form chlorite ions.

Handling & Storage

- Due to the volatile and hazardous nature of chlorine dioxide, it is produced where it is used.
- Store in non-translucent container in cool, well-ventilated area.
- Avoid storage near combustible or reactive materials.

Glossary

The Environmental Protection Agency (EPA) defines Acute Exposure Guideline Levels (AEGLs) as threshold exposure limits for the general public that are applicable to emergency exposure periods ranging from 10 minutes to eight hours. The three AEGLs are defined as follows:

AEGL-1 – airborne concentration of a substance at which the general population could experience notable discomfort, irritation or certain asymptomatic non-sensory effects.

AEGL-2 – airborne concentration of a substance at which the general population could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL-3 – airborne concentration of a substance at which the general population could experience life threatening health effects or death.

