



Odor Control with Aktivox®

Introduction

Aktivox® is a proprietary, powerful, non-chlorinating oxidant that effectively controls odors and corrosion associated with wastewater collection and treatment. Aktivox® reacts virtually instantaneously with sulfides, and other odorous compounds, making it an ideal deodorizer for both solids pressing operations, wastewater pump stations and ponds and lagoons. As an added benefit, Aktivox® provides residual odor control that lasts for hours after addition.

Application Description

Sulfides are produced by both biological and chemical action. They are produced biologically by anaerobic bacteria and chemically by many industries including the chemical, petroleum, paper, and textile industries.

Many systems provide an environment that can promote the growth of a healthy biological community. Hydrogen sulfide formation in wastewater systems occurs primarily in the gelatinous slime layer (biofilm) that accumulates on pipe walls and in the sludge blankets of clarifiers and other solids processing units. The rate of sulfide production is dependent upon the concentrations of sulfate ions, organic matter, and dissolved oxygen, as well as other factors such as pH, temperature,

retention time, stream velocity, and surface area.

Hydrogen sulfide is naturally converted to sulfuric acid which is corrosive towards steel and concrete, therefore its control results in increased life and lower maintenance cost for facilities and piping. In addition, worker safety is of concern as hydrogen sulfide is extremely toxic at levels above 500 ppm which can be reached in confined spaces.

Treatment Alternatives

Sulfide can be removed from a system by precipitation with iron or by oxidization. Various oxidizers including chlorine, hydrogen peroxide, and potassium permanganate are commonly used for oxidation of sulfide. Different treatment strategies are required depending on the application. Aktivox® is preferred where alternative oxidants are not effective such as when rapid destruction of sulfide is important (Figure B), or the formation of halogenated byproducts prevents treatment with chlorine.

Aktivox® reacts preferentially with hydrogen sulfide to form elemental sulfur (Figure A). Aktivox® will form soluble sulfate if applied in excess.

Aktivox®

Figure A: Chemical Reaction

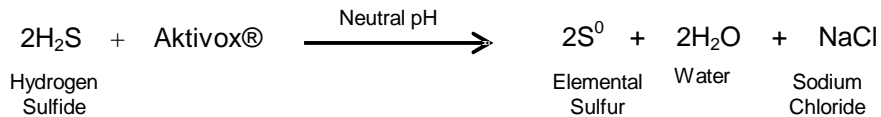
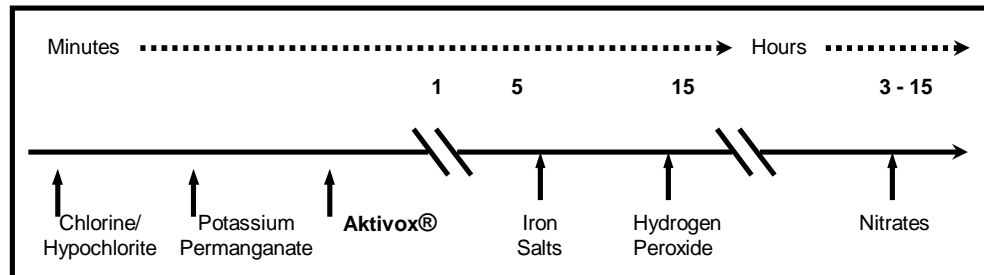
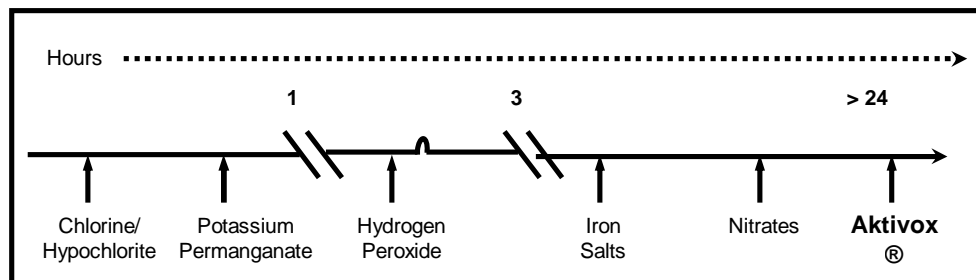


Figure B: Speed of Reaction



**Figure C:
Duration
of
Control**



Typical Applications include:

- Belt filter presses
- Wastewater force mains
- Septage and leachate
- Clarifiers
- Ponds and Lagoons
- Wastewater pump stations
- Gravity collection lines
- Odor scrubbers
- Headworks facilities

Advantages of Aktivox®

- Near instantaneous reaction – Aktivox® is a fast reacting oxidant able to control wastewater odors at or near their source (Figure B). It is effective for use on belt filter presses, headworks structures, or remote pump stations where upstream chemical addition would be costly or impractical.
- High selectivity – Aktivox® reacts preferentially with sulfide and related organic odors. Effective dose ratios are very near stoichiometry (1.3:1 w/w). Unlike hypochlorite, Aktivox® does not react with ammonia nor does it form chlorinated organics.
- Long duration control – As a selective oxidizer, Aktivox® will not readily decompose within wastewater as rapidly as hydrogen peroxide or hypochlorite (Figure C). It can be applied several hours upstream of the point at which the odors occur. Significantly, long-duration control is provided at costs generally less than nitrate.

Feed Requirements

The required dosages will vary with water conditions, the severity of contamination, and the degree of control desired. Typically one gallon of 25% active Aktivox® will eliminate 2.0 pounds of hydrogen sulfide.

Higher dose rates may be required in solids processing operations or where retention times are unusually long.

For industrial applications involving once through systems or systems where treated water may enter a US waterway, the concentration of residual chlorite ion should be monitored and controlled such that it does not exceed the requirements of the NPDES permit. All discharges must be in compliance with local, state and federal regulations.

For more information on dosage requirements specific to your application, contact your OxyChem representative.

Method of Feed

Aktivox® may be applied using basic chemical metering pumps and equipment either at the odor source (as in belt filter presses or wastewater pump stations) or hours before odor generation occurs (as in lagoons, clarifiers and wastewater force mains).

Chlorite Analysis

Residual chlorite ion concentrations should be determined by substantiated methods, which are specific for sodium chlorite. Three such methods are described in detail in *Standard Methods for the Examination of Water and Wastewater*¹.

4500-ClO₂ E Amperometric Method II

Further Information

For more information, contact your OxyChem representative or our Technical Service Department at 1-800-733-1165 option#1.

References

1. *Standard Methods for the Examination of Water and Wastewater*, APHA, AWWA and WEF, Washington, D.C. (20th Ed. 1998).

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