ALGAECIDE

Treatment Method for Swimming pools – Filtration and decorative fountains, wastewater lagoons, storage reserviors, Ornamental lakes, Ponds and and water features on Golf courses with

I-SOFT OXYDES & KATALOX LIGHT

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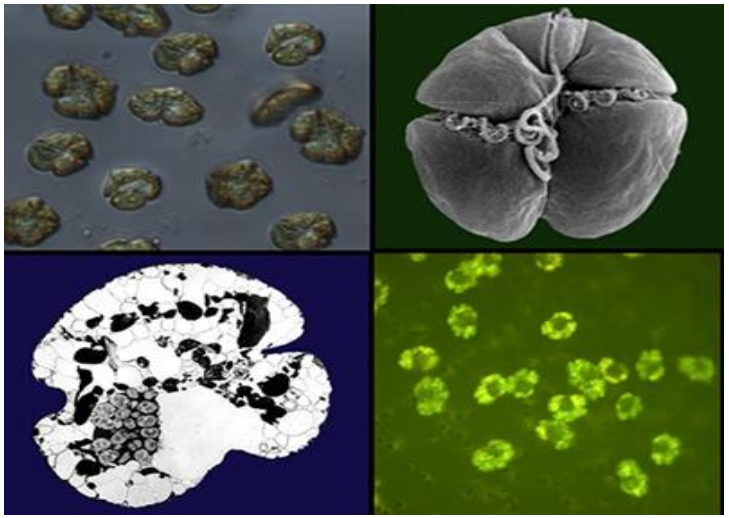
Algaecide Treatment for Water

Outbreak of algae plague is a huge problem for almost every outdoor water systems in cleaning wastewater lagoons, storage reservoirs, decorative fountains, swimming pool, cooling water, irrigation canals, ornamental lakes, ponds, and almost every water featured on Golf courses. Golf players and owners of golf courses do nor like to see algae infestation in water features because it is unsightly and conveys the impression that the courses are very poorly maintained.



Algaecide Treatment for Water

Not only the negative aesthetic effects of dirty colored or turbidity in these waters, algae can cause a host of operational problems. For example, an algae infested waste water lagoon, ponds, reservoirs fail to meet discharge permits because the level of organics and suspended solids are too high. Algae masses can reduce, impede the flow of all irrigational canal water, algae can disrupt the water distribution system by clogging canal gate valves, pump intakes, screens, filters, sprinkle heads, irrigation drip tape and emitters. All these problems are related to huge costs.

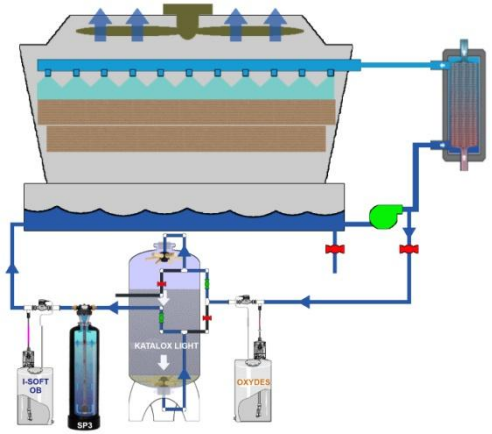
Algaecide Treatment for Water

In cooling waters **Part IV** as you have learned algae can plug water distribution systems, causing uneven water flow through towers which reduces the cooling efficiency and increases the high operational costs.

Phosphates
Phosphonates
Is the
Only

Cause of Algae. ⟶ **EUTROPHICATION**

“ A POLLUTION IN WATER”



EUTROPHICATION

“ The process by which a body of water acquires a high concentrations of

NUTRIENTS

especially phosphates and phosphonates”. These typically promote excessive growth of algae. As the algae die and decompose high levels of organic matter and the decomposing organisms deplete the water of available oxygen causing the death of other organism, such as fish.

Eutrophication is caused by water treatment chemicals and all detergents which have greatly sped up the process. Another cause of cultural Eutrophication are fertilizers and sewage discharge.

NUTRIENTS

"Element or compound essential for animal and plant growth. Common nutrients including nitrogen, phosphorus and potassium". Case study [US geological survey, 2007]

High contents of these nutrients can degrade water quality. Excessive nutrient concentrations are named "**Hypoxia"**

1. **Hypoxia** Occurs when oxygen concentrations fall below the level necessary to sustain all animal life. Hypoxia results when oxygen consumption primarily through decomposing organic material, exceed oxygen production through **I-SOFT- OXYDES** and **KATALOX-LIGHT** increase the oxygen level in all dead waters (Anoxic) water.
2. **Anoxic:** "Describe water in any form that has no Oxygen (dissolved-oxygen) that is less than 0.5 milligrams per liter". Case study [US geological survey, 2010]

Electron Acceptors

I-SOFT-OXYDES + **KATALOX-LIGHT** is able to give life to Aerobic bacteria which require oxygen to degrade organic compounds. They transfer electrons from organic material to oxygen, which is termed the

Electron Acceptor

"Process whereby microorganisms use oxygen as an electron acceptor to generate Energy". This process is known as " AEROBIC RESPIRATION".

RESPIRATION

$$CH2O + O_2 \longrightarrow CO_2 + H_2O$$

Cells + Oxygen → Carbon dioxide + Water

In the presence of light, respiration and photosynthesis can occur simultaneously in **ALGAE**. Algae use sunlight, carbon dioxide, nitrogen and phosphorus to generate new **ALGAE CELLS** and release oxygen during the day time. At night the **ALGAE** respire and use oxygen and release carbon dioxide. Anaerobic reactions occur in the surface layer which release Hydrogen Sulfide and methane. De-nitrification (AN ANOXIC REACTION) occurs in the sludge layer and releases nitrogen gas.

Electron Acceptors

(Electron Acceptors; continues from slide 7)

There are four major sources of oxygen “ELECTRON ACCEPTORS” available to bacteria in almost every outdoor water systems (Page 2) including waste water lagoons and ponds. The four major sources (free molecular oxygen, nitrate, sulfate and carbon dioxide).

Oxygen source	Reaction	Redox potential	Redox potential status
O_2	Aerobic Metabolism	> 200 MV	aerobic
NO_3	De-nitrification	+200 mV	anoxic
SO_4	Sulfate reduction	0 MV	anaerobic
SO_2	Methane	-200mV	anaerobic

As shown above with the Redox potential where each can be used by bacteria.

Treatment

Algae can deprive almost every outdoor water systems as explained on (Slide 2) including ornamental lakes of dissolved oxygen by being a food supply (Nutrients) for oxygen consuming bacteria – **ABSENT** of oxygen vital to sustain fish and other vital to sustain fish and other aquatic fauna, the process of **EUTROPHICATION** (slow death) commences.

In order to combat all these types of trouble some ALGAE growth, Watch Water has developed a treatment system called

I-SOFT OXYDES + KATALOX-LIGHT

(**ISO**) + (**KL**)

This system has two main treatment categories.

1. **Oxidation**
2. **Filtration**

Treatment

(Treatment; continues from slide 9)

Strong Oxidation with Catalyst which destroy algae blooms and algae stat which prevents the ALGAE from taking a foothold in the first place without using any toxic algaecides like copper sulfates, quaternary and poly-quaternary ammonium compounds they are very slow acting and take several days to show any effectiveness.

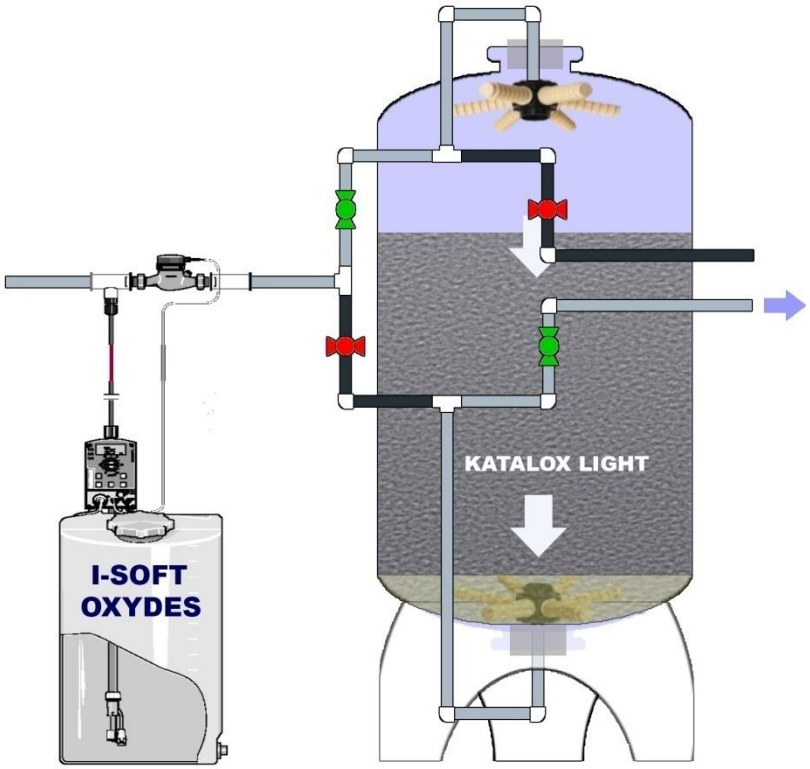
Atrazine family or herbicides have been shown to be endocrine disrupting chemicals and have been linked to hermaphrodization in frogs exposed to the herbicides.

Atrazine compounds are classified as possible human carcinogens because they have been found to cause tumors in rodents.

I-SOFT OXYDES with Instant hydrogen peroxide and **KATALOX-LIGHT** as a catalyst is the Only alternative to combat ALGAE instead of using all useless “Non-Oxidizing Biocides”. All out door water systems (slide-2) systems designed for ALGAE CONTROL uses **ISO + KL** have all been reported to be the most effective against the ALGAE.

Stand –alone System

Based on I-SOFT OXYDES + KATALOX- LIGHT



Is available from 0.5 m^3/hr (2.2 gpm) up to 500 m^3/hr (2201 gpm). Applying 50 kg for (110.23 lb) 4 million liters of water (1.05 million gallons) best results have to be achieved to destroy blue-green ALGAE (Cyanobacteria) in lakes, ponds and drinking reservoirs. At this dosing rate water is crystal clear without any disinfection by products. There is no turbidity, no color noticed. There are absolutely no limitations to control any amount of ALGAE , not to be toxic to fish and other aquatic wild life, kill the ALGAE rapidly and not cause the water to foam.

Benefits of using ISO + KL System

- ✓ Most effective against a broad spectrum of ALGAE
- ✓ No disinfections by products (DBP)
- ✓ Not cause any precipitation and not causing turbidity
- ✓ Not require the use of expensive – Non Oxidizing Biocides
- ✓ Not have endocrine disrupting properties or be possible human carcinogen

Composition

I-SOFT-OXYDES and KATALOX LIGHT are blended as two different products (Read **ISO + KL**, PART No II)

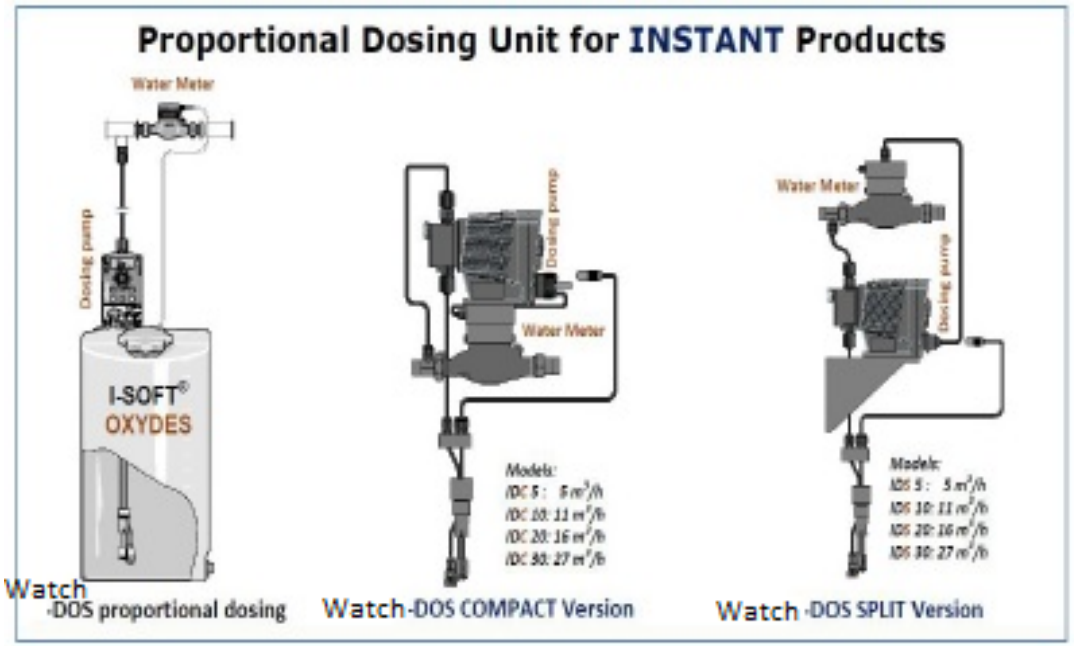
Short Description Manual Application

The I-SOFT-OXYDES that is preferably material that has been dried as Instant powder that is easily soluble in water, its free flowing and its solid hydrogen peroxide compound makes it very unique to use for all applications as on (Page-2). These two solid compounds **ISO + KL** can be mixed by any suitable means. The preferred mixing method should allow uniform distribution of the two compounds. The ration is **ISO:KL = 95:5**

Method of Use

The Instant **I-SOFT OXYDES** compound should be blended together with **KATALOX-LIGHT** in proportions ranging between 95% (**ISO**) to 5% (**KL**). This composition is enough to destroy and control algae growth in bodies of water that a great reaction can be observed in less than one day.

Applications such as Decorative Fountains, Swimming Pools, it is advised to use **KATALOX-LIGHT** filter and **I-SOFT OXYDES** chemical feeding device through which the water is pumped and dissolve the composition.



Watch-DOS is just a great dosing equipment.

Method of Use

(Method of Use; continues from slide 13)

Manual broadcasting is particularly advantageous because no special equipment is needed. To use in any application such as waste water lagoons, storage reservoirs, irrigation canals and ponds, ornamental lakes, ponds, lagoons and almost every water features on Golf Courses.

A further advantage of manual feeding or spraying is that the **ISO + KL** can be applied directly in contact with algae masses that are floating on the surface of the water. A scoop can be used to sprinkle the **ISO + KL** in explained ratio of **ISO:KL = 95:5** to the areas where it is needed.

Method of Use

(Method of Use; continues from slide 13)

Since the floating algae tends to accumulate at the edges of lakes, ponds, reservoir or lagoons. **ISO + KL** can be sprayed with scoop from the water edge. For very large areas of ponds, lakes and lagoons, depending on the depth, waders or a boat may be used to assist in delivering the **ISO + KL** (95% + 5%) ratio to the areas needed to be cleaned from all algae. The dosage rate depends on the amount of algae growth in the water to be treated.

We recommend the dosage rate as follows:

1000 grams of **ISO + KL** for **25000 liters** of water

Or **2.2 lb** of **ISO + KL** for **6700 gallons** of water

Method of Use

(Method of Use; continues from slide 13)

The frequency of the treatment also depends on the amount of algae growth in the water to be treated. Depending on conditions such as Temperature and exposure to Sunlight, certain waters will require more frequent treatment to control the ALGAE. The water should be treated whenever the ALGAE start to re-infest the water. You will find that this unique **ISO + KL** composition and combination will show exceptionally great results. It perhaps is the best invention in the water treatment industry. Dry hydrogen peroxide with great results providing supersaturated microscopic bubbles of **Oxygen** in water.

Conclusion

Hardness stabilization, Dispersers
&
Dry Oxygen

In combination of **I-SOFT OXYDES** and **KATALOX-LIGHT** when applied directly to ALGAE masses floating on water surfaces, the Dry Hydrogen peroxide get so active in a very stabilized form that is released as a strong oxidizing agent that attacks the algae by rapidly turning it to grey. On performing strong biocides action, hydrogen peroxide gives up oxygen in microscopic bubbles that develop around the algae The effervescent actions of the microscopic bubbles disrupt the ALGAE such that large clumps often break free from the main mass that sink to the bottom of the ponds or applications (page 2) within few days of **ISO + KL** Treatment

END OF PART V **Thanks**