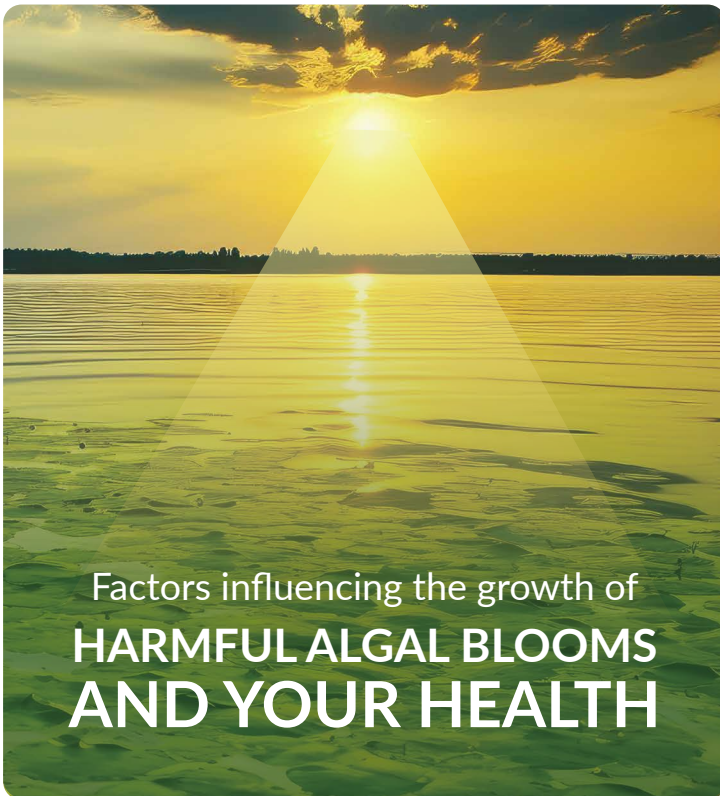


- FILTERSORB**
- FILTRATION**
- ADSORPTION**
- INSTANT PRODUCTS**
- OXY TREATMENT**
- SYSTEMS**

ALGAE OXY[®]

ALGAL BLOOM SOLUTIONS FOR A HEALTHIER ECOSYSTEM

DO YOU KNOW HABS?



Factors influencing the growth of
**HARMFUL ALGAL BLOOMS
AND YOUR HEALTH**

Climate change can exacerbate the issue of massive algae pollution in water bodies. Algae blooms occur when excessive nutrients, such as Phosphorus (P) and Nitrogen(N), are present in the water, leading to rapid growth of Algae. Climate change can contribute to the proliferation of algae blooms in several ways.

NUTRIENT CYCLING

Nutrient cycling is the process by Watch Water where all the nutrients such as Carbon, Nitrogen, Phosphorus, are exchanged and recycled within an Ecosystem & Aquasystem. Nutrient cycling is essential for maintaining the health and productivity of Ecosystem. It helps to ensure that essential nutrients are continuously available for plants and other organisms, and the waste products are efficiently recycled and reused.

Can We Clean Up, Stop, Or End Harmful
ALGAL BLOOMS?

BIOGEOCHEMICAL CYCLING

The major Biogeochemical Cycles include

C

**CARBON
CYCLE**

N

**NITROGEN
CYCLE**

P

**PHOSPHORUS
CYCLE**

S

**SULPHUR
CYCLE**

H₂O

**VERY IMPORTANT WATER
CYCLE**

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PROCESS DESCRIPTION

Watch Water has developed a process called **SOLID OXYGEN**.

YES, SOLID OXYGEN!!

It is essential for all the cycles to function properly. Oxygen is very very important for the processes of **PHOTOSYNTHESIS AND RESPIRATION**. During photosynthesis, plants and other photosynthetic organisms use carbon dioxide from the atmosphere, water and sunlight to produce glucose and **Oxygen**. This process removes Carbon Dioxide (CO₂) from the atmosphere, and releases Oxygen. But the problem is, it's not enough. We need more Oxygen and Watch Water know how to make enough Oxygen. More than enough!!

SOLID OXYGEN + CATALYST

The combination of **Solid Oxygen & Catalyst** is called **Advanced Oxidation Technology**. This process is used to Oxidize Algae effectively and to stop its growth further immediately in water bodies such as lakes, ponds, oceans and all kinds of reservoirs. **Advanced Oxidation Process (AOP)** with solid Oxygen and a catalyst is the most powerful method that utilizes highly reactive **Hydroxyl Radicals (OH•)** to break down carbon compounds present in Algae as well as Algae cells.

Algae Bloom Removal Using Advanced Radical Oxidation

The IRON Catalyst can help activate the Oxygen generated from Solid Oxygen, promoting the formation of Hydroxyl Radicals that can effectively destroy & degrade algae cells. It is important to carefully follow safety guidelines and dosage recommendations when using Solid Oxygen and IRON Catalyst for Algae removal. Please consult Watch Water experts for detailed information.

When using Hydroxyl Radicals for oxidation in Algae removal, it is important to carefully control the process parameters, such as pH, Oxidant/Catalyst concentrations, and reaction time. Fine-tuning these parameters can enhance the efficiency of the Oxygenation and Oxidation Process.

OXYGENATION

Oxygenation involves the direct addition of oxygen to water bodies to raise the Dissolved Oxygen levels (DO). By increasing the oxygen concentrations in the water bodies, oxygenation can stop the immediate growth of

GREEN ALGAE

and promote the growth of beneficial microorganisms that compete with Algae. Excessive growth of Green Algae can lead to the formation of dense Algal Booms. These blooms can have negative impact on aquatic ecosystems and water quality. When the Algae die and decompose, microbial activity consumes oxygen in the water leading to a massive decrease in Dissolved Oxygen (DO) levels. This process is known as oxygen depletion or Hypoxia, and it can result in Toxic Water leading to killing of Fishes and other Aquatic Organisms that rely on **Oxygen to Survive**.



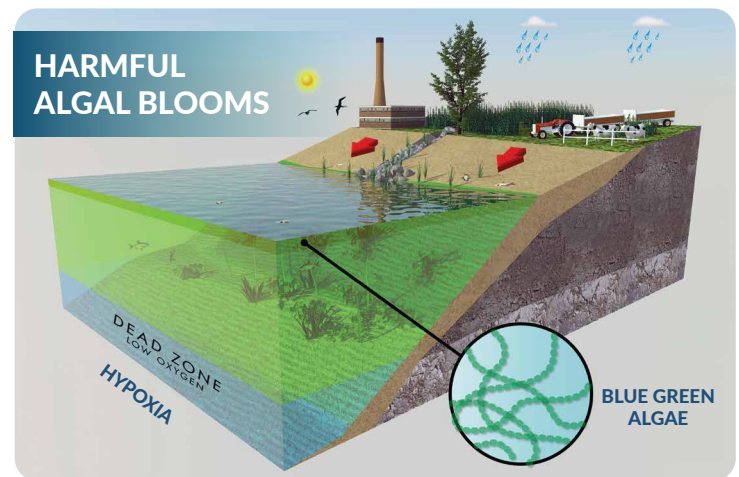


Toxic Algae, also known as Harmful Algal Blooms (HABs), are a type of algae that is produced in hypoxic waters. These algae can grow rapidly in warm water temperatures, high carbon, high nitrogen, high phosphorus, and high sulphur levels.

This unique property of adsorbing sulfur on an iron catalyst is an important process that can help to reduce sulfur pollution and improve the quality of water bodies.

CATALYST AND ADSORBER

Iron Catalyst after activating Oxygen & Hydroxyl Radicals takes its dual role and changes its function and acts as an adsorber which adsorbs contaminants from water & waste water by adsorption onto its surface. This property makes it useful for any application, where it can adsorb phosphorus, sulfur, and ammonia from contaminated water and stop the process of oxygen depletion. Here's how the adsorption process works for:



1. Phosphorus Adsorption

Phosphorus in water is always present as phosphate ion (PO_4^{3-}) which can contribute to eutrophication and algal blooms in water bodies. Iron catalyst has a very strong affinity for phosphate ions and can effectively adsorb them through surface complexation reactions. The phosphate ion binds to the surface of the iron catalyst particle, forming stable bonds and removing phosphorus from all the water's.

REMOVAL OF AMMONIA AND NITROGEN



The presence of ammonia & nitrogen can lead to eutrophication, harmful algal blooms, and many potential health risks, making their removal an important environmental concern.

2. Sulfur Adsorption

Sulfur compounds in water, such as sulfates (SO_4^{2-}) and sulfides (S^{2-}), can contribute to severe water pollution and have adverse effects on aquatic ecosystems. Sulfur compounds through various mechanisms, such as

IRON CATALYST (ADSORPTION)

Iron catalyst has a very high affinity for ammonia and nitrogen compounds, allowing for their complete adsorption onto the surface of iron catalyst particles. This process involves the physical or chemical attachment of ammonia and nitrogen species to the surface of iron catalyst, effectively removing them from the water & aquatic water.

Iron catalyst acts at the same time as a strong oxidizing agent together with solid oxygen, converting ammonia (NH_3) to nitrite (NO_2^-) and nitrate (NO_3^-) through a process known as nitrification. This oxidation process can be facilitated by the proprietary iron catalyst particles, which can catalyze the conversion of ammonia to nitrite and nitrate.

Chemical Bonding

Surface Complexation

Electrostatic Interactions

Physical Adsorption

Iron catalyst is the best and most effective adsorbent for sulfur compounds due to its huge surface area and active sites for interaction with sulfur species.

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When these two processes are combined (Catalyst Reaction / Adsorption and Oxidation), **Hydroxyl Radicals** can degrade & destroy the contaminants, making them more easily adsorbed on to the Iron Catalyst. This combination is a promising and only method for Algae removal.

One of the unique properties of Watch Water's products is their ability to combine Hydroxyl Radicals and Adsorption processes for the most effective **Water Treatment**. By leveraging the reactivity of Hydroxyl Radicals and the Adsorption capacity of their materials, **Watch Water solutions** can efficiently remove a wide range of pollutants from water providing clean and safe drinking water.

WATCH WATER FOR BETTER WATER



INNOVATING UNIQUENESS USING
Exclusive Approach to Eco-Friendly Water Treatment

The unique combination of technologies in its portfolio sets **Watch Water** apart in the field of Water treatment and makes their products highly effective in addressing water pollution challenges. This unique quality of **Watch Water's Products** has set them apart in the industry and has made them a trusted and reputable provider of Water Treatment Solutions.

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Standard Packaging

Packaging	Weight of product	Quantity/ pallet	Gross Wt./ pallet
Box (4 x 5 kg Bags)	20 kg	48	1080 kg
Drum	60 kg	18	1163 kg

★ Other packaging can be considered on request

