

ADSORBENTS FOR WATER TREATMENT

NITROTRAPP[®]

NITRO = NITROGEN = NITRATES

Adsorber Division is a core business of **Watch Water**[®]. One of the largest specialty Water Treatment companies, as it focusses strongly on Filtration and Adsorber products.

These include **Katalox- Light**, **Crystolite**, **Zeosorb**, **Catalytic Carbon**, **Titansorb**, **Ferrolox**, **TRAPPSORB** and among others.

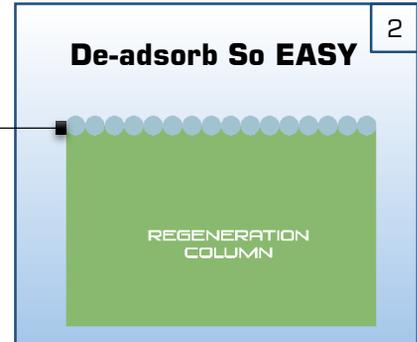
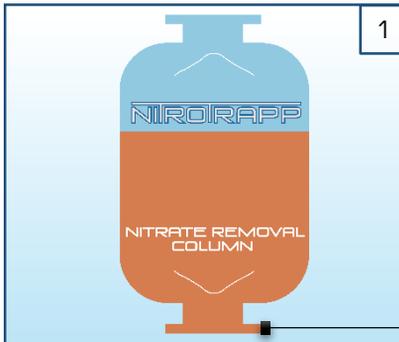
Watch Water[®] **Systems** is headquartered in **Germany** with representation in the **USA**, **Australia**, **central and south America**, **Asia**, and **Africa** with having customers in more than **70 countries**.

NITROTRAPP[®]

World's first **High Capacity Adsorber** plus **De-adsorber to selectively Trapp Nitrates**. It has **5 times** higher capacity than any other commercially available adsorber in the market.

NITROTRAPP[®] is certified and has been specially manufactured to meet **Drinking Water** standards and has passed,

- Taste and Odor tests
- 100% De-adsorption test



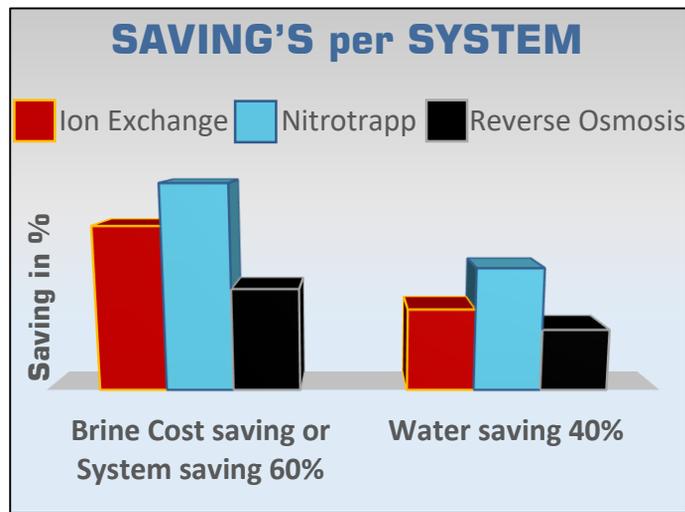
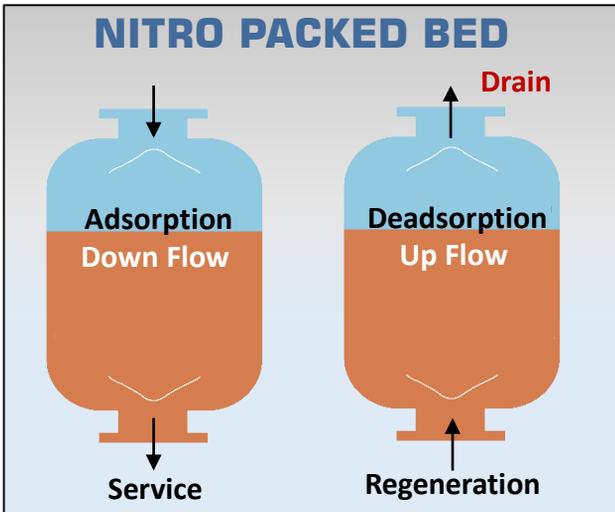
APPLICATION

- Municipal Systems
- Point of Entry
- Point of Use
- Waste Water
- Aquafarm's And Fish Farming
- Nitrate Removal From Drinking Water
- Iodide Removal From Water

And many more...



NITROTRAPP[®] ADVANTAGES



Health Protection

Adsorber division of **Watch Water** has developed the **NITROTRAPP[®]** adsorber and Deadsorber to remove nitrates from water and waste water. Nitrate is the most common contaminant of 21st century related health problems.

Details of Innovation

NITROTRAPP[®] differs from all other nitrate removal systems in the market in several aspects. The custom designed adsorber removes not only nitrates from drinking water, but also provides healthy bicarbonates. *"This can't be achieved simply by any other media, which are based on Ion Exchange or Reverse Osmosis."* Anion exchange for nitrate removal is similar to a water softener, where relatively large amount of sodium chloride are typically used as follow's.

Eight equivalent of sodium chloride (NaCl) to remove one equivalent nitrate from resin Relatively large waste volumes, which are very difficult to dispose. *"Spent brine from water softeners and nitrate removal systems cannot be disposed to waste water plants in the future."* Reverse Osmosis with nitrates will absolutely be forbidden in the future. **What then.....?**

NITROTRAPP[®]

New Method of Purifying Water

The only method of purifying any water containing Nitrates.

1. Passing the water through Adsorber in packed bed vessel to **TRAPP NITRATES** on Adsorber in down flow direction.
2. Periodically regenerating the Adsorber by passing a volume of a very harmless brine solution through the Adsorber in opposite direction to release **TRAPPED Nitrates** into the valuable Fertilizer solution.
3. Rinsing the Adsorber of residual with de-adsorb solution by passing five bed volumes of clean water through the Adsorber. The rinse water is either feed water or purified feed water without nitrates.
4. And now this feed water can be; ground water, surface water, agriculture field drainage, process feed water for food + beverage, process waste water, water from aquarium's or fish farms. The concentration of Nitrates in the feed water can be up to 1000 mg/l or ppm. The concentration of Nitrates in the feed water is reduced to 99% or more. The waste water is 100% commercial fertilizer.



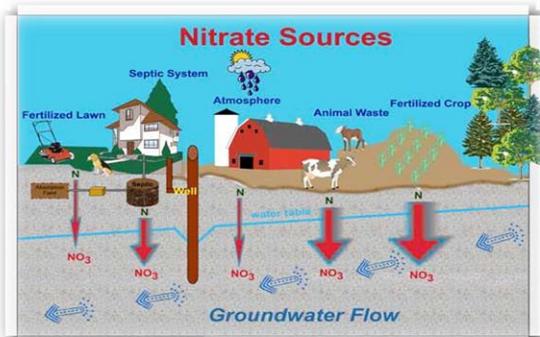
NITROTRAPP[®] - Nitrate Removal

**ENVIRONMENT
Maximum Acceptable
Concentration (MAC)
10mg NO₃⁻/Liter**

Introduction

Many different parts of the world have been facing the problem of **Nitrate** contaminated surface and ground waters. Half of the world population that is three billion people, including 500000 infants are consuming drinking water with **Nitrate** concentrations over the Maximum Contaminant Level (MCL) of the 10 mg NO₃⁻/L.

Significant sources of **Nitrate** in water include nitrate-based chemical fertilizers decaying vegetable and animal and human waste, domestic effluent (sewage sludge disposal and industrial discharge) atmosphere washout, septic systems, pesticides and waste contamination through storm and urban runoff of these synthetic fertilizers are the major contribution to water contamination. All these products can be converted to **Nitrate** through a series of bacterial reactions collectively known as **Nitrification**.



In the Nitrification process bacteria degrade nitrogen-containing compounds and release ammonia. Some bacteria such as Nitrosomonas can oxidize the released ammonia to **nitrite** and other bacteria such as Nitrobacteria further oxidize the nitrite to nitrate.

Application-Nitrate Removal

The only method of purifying any water containing **Nitrates**.

- NR1 product for point of use cartridges
- Ideal for resident Point-of-Entry systems
- Has been specially prepared to use for Municipal systems
- Nitrate removal from drinking water
- Nitrate removal from aquarium and fish farming water
- Nitrate removal from waste water.

Nitrate Health Issues

Nitrate is one of the most common groundwater contaminants in rural areas. It is regulated in drinking water primarily because excess levels can cause methemoglobinemia, or "**blue baby syndrome**" disease, in which blood lacks the ability to carry sufficient oxygen to the individual body cells causing the veins and skin to appear blue. **Nitrate** do indicate the possible presence of other more serious residential or agricultural contaminants, such as bacteria or pesticides.

Cancer. **Nitrate** is converted to **nitrite** after ingestion, This **nitrite** reacts with both natural and synthetic organic compounds to produce N-Nitroso compounds in the human stomach. Many of these N-Nitroso compounds are carcinogenic in humans with high nitrate levels in drinking water may increase cancer risks.





NITROTRAPP[®] - Nitrate Removal

Formulation

NITROTRAPP[®] media is Bead-like-Material that traps **Nitrate** ions from liquid and water.

Nitrotrapp is a deadsorbable or in other words a reversible process in which **Nitrate** ions from insoluble permanent solid medium are exchange for healthy ions. **Nitrotrapp** beads are based on very selective chemical and physical properties of both beads and ions. However, Nitrotrapp with higher selectivity for **Nitrate** and none of the other competitive ions like sulfate, silicates, phosphate or bicarbonates. **Nitrotrapp** beads are selectively manufactured in chloride form but can be regenerated with following available salts

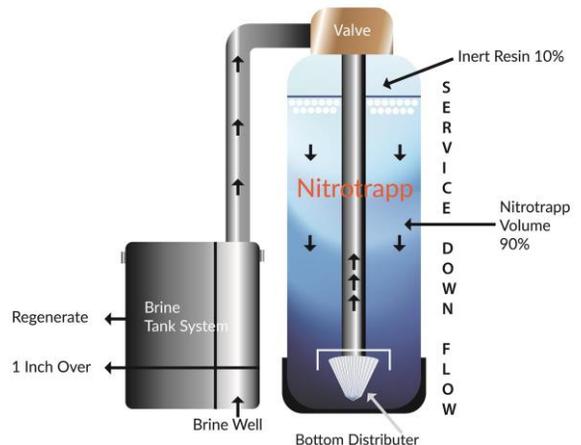
- Potassium Chloride
- Magnesium Chloride
- Magnesium Bicarbonate or
- Potassium & Magnesium Hydroxide

NITROTRAPP[®] has been introduced by **Watch Water Germany** as a **Nitrate** Removal Technology and approved as a best available Technology BAT for **Nitrate** Removal from drinking water. It is not regenerated by sodium chloride there is no need of waste water treatment plant. Total annual costs operation, maintenance and salt of the **Watch Water-Nitrotrapp** system's is calculated to be **18.5 US cents per 1000 gallons** of drinking water. Rejected **Nitrate** after regeneration can be sold as fertilizer for **0.50 cents per Gallon** of Magnesium or Potassium **Nitrate** of nearby farmers or gardens. **Watch Water** has built several fully automated systems with magnesium chloride regeneration for well head treatment of **Nitrate** contaminated wells in the world. Complete systems are constructed in a standard **20 feet** or **40 feet** container and can be delivered to the client side. All projects are customer proprietary and such not referenced. In all sites, **nitrate** concentrations exceeded the MCL and are now being treated to acceptable levels. The waste produced by these systems in a range of **0.1-0.2%** which is quite low and valuable for Agriculture Horticulture.

Operation

NITROTRAPP[®] should be rinsed before service. Rinsing time 10 minutes

- Transfer the **Nitrotrapp** into the pressure vessel. Add sufficient water to cover the **Nitrotrapp** beads by 2-5 inches (5 to 10 cm) allow the water to stand for 10 minutes.
- Go to backwash cycle and allow the **Nitrotrapp** to wash for 5 minutes.
- After backwash the **Nitrotrapp** go for last rinse for approximately 5 minutes to remove any residuals.



System Design

Typical Service Flow			Regenera te	Max temp(C)	Shipping	Package
Liter Nitrotrapp	Flow liters	BV/L	KCL/MgC L	100	Shipping Weight	60 lit Drums
	1	60	5-10%			18 Drums on pallet
	10	600	MgHCO ₃ / MgOH			
16.6	1 m ³	60	3-5%	60 lit Drum 42 kg		
100	6m ³ /h	60				
pH Range		0-14				
pH Range		Operating 4.5- 8.5				

[Please Click here for Systems](#)