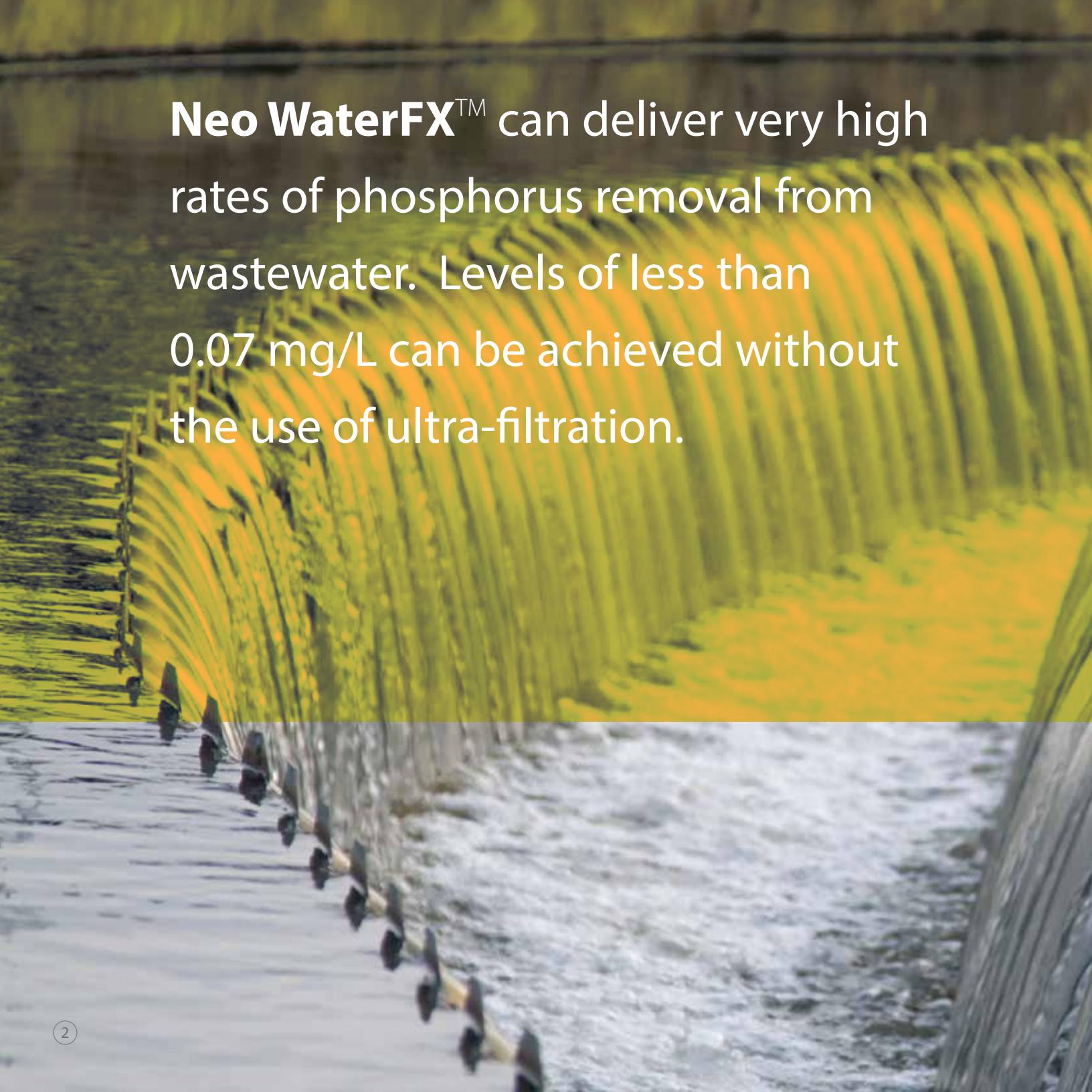




*A better way  
to remove phosphorus,  
improve dewatering,  
and reduce sludge  
volumes.*

[NeoWaterTreatment.com](http://NeoWaterTreatment.com)

**neo**  
Performance Materials



**Neo WaterFX™** can deliver very high rates of phosphorus removal from wastewater. Levels of less than 0.07 mg/L can be achieved without the use of ultra-filtration.



**Neo WaterFX is a lanthanide salt solution developed specially for rapid and stable precipitation of phosphorus in municipal and industrial wastewater facilities.**

**The product can be applied in primary, secondary, and tertiary treatment, and has successfully removed phosphorus in trickling filters, rotating bed contactors, sequencing batch reactors, clarifiers, media filters, and membrane bioreactors (MBRs).**

**Neo WaterFX's targeted reaction with phosphorus greatly reduces the amount of product needed to achieve the desired final phosphorus level in the plant effluent waste stream. As a result, less chemical sludge is generated in the treatment process.**

**In most cases, Neo WaterFX improves dewatering and results in higher percent solids.**

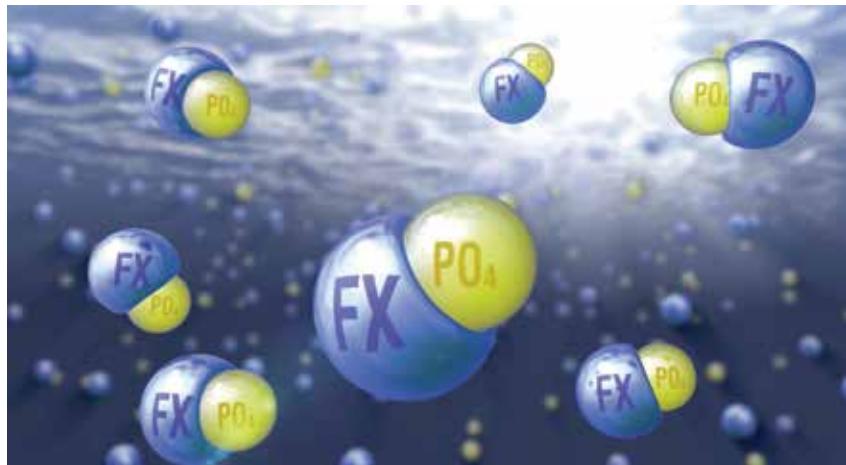
**Municipal plants using Neo WaterFX have repeatedly passed whole effluent toxicity testing at 100% effluent concentration.**

# How Neo WaterFX™ Works

**Neo WaterFX** works differently, and much more efficiently, than traditional water treatment chemicals like ferric chloride or aluminum sulphate. **Neo WaterFX** preferentially reacts with phosphorus to form a strong crystalline ionic bond with phosphorus, creating an insoluble precipitate:  $\text{REPO}_4 \cdot \text{H}_2\text{O}$  (Rhabdophane). **Neo WaterFX** achieves phosphorus removal at a 1:1 molar ratio of RE:PO<sub>4</sub>.

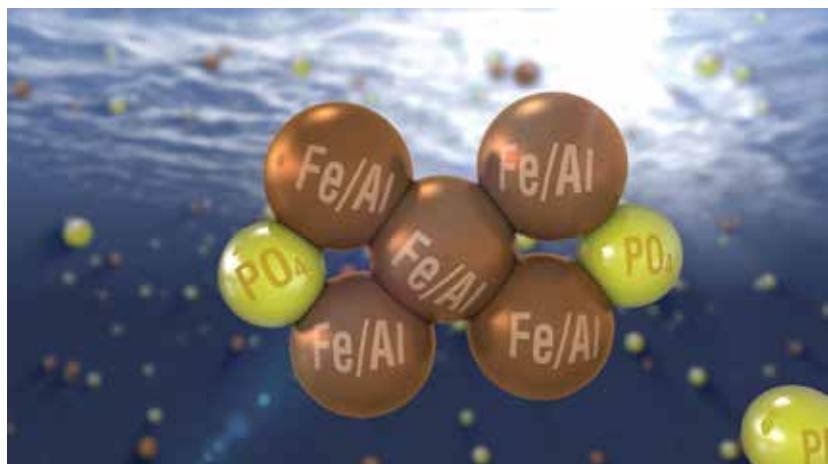
In contrast, traditional metal salts like iron- or aluminum-based products do not bind to phosphorus very efficiently or very tightly. They form M<sup>+</sup>OOH and M<sup>+</sup>(OH)<sub>3</sub> intermediates, to which phosphate adsorbs to the surface. This is a function of surface chemistry, instead of a strong ionic bond. At P concentrations of 1 mg/L or greater, the ratio of metal salt to P removal is approximately 5:2. However, as P concentration decreases, this ratio increases significantly. At P concentrations of 0.1 mg/L, the ratio can be 10:1 or higher.

Because **Neo WaterFX** removes phosphorus more efficiently, much less of the product is needed to obtain excellent phosphorus removal results compared to competing products.



Neo WaterFX binds tightly to phosphorus through a strong crystalline ionic bond, and achieves removal at a 1:1 molar ratio of RE:PO<sub>4</sub>. As a result, much less Neo WaterFX is needed than traditional metal salts to obtain excellent phosphorus removal.

## *Traditional Metal Salts*



Iron- or aluminum-based products form M<sup>+</sup>OOH and M<sup>+</sup>(OH)<sub>3</sub> intermediates, to which phosphate adsorbs to the surface. At phosphorus concentrations of 1 mg/L, P removal occurs at approximately a 5:2 ratio of Fe/Al to P. At P concentrations of 0.1 mg/L, the ratio can be 10:1 or higher.

# Extensive wastewater treatment plant trials have proven the following benefits of using Neo WaterFX:

- Achieves < 0.07 ppm-P with no added capital equipment such as tertiary filters.
- Improves dewatering in filter presses and centrifuges.
- Reduces sludge volume due to less chemical contribution to sludge.
- Improves clarifier solids coagulation.
- Eliminates or greatly reduces the need for alkalinity supplementation when compared to high usage of low pH iron- or aluminum-based products.
- Eliminates the need for heated storage and pipe tracing due to its -40°F freezing point.
- Enables plants to meet low phosphorus discharge levels while avoiding increased aluminum release.
- Inhibits struvite build-up.
- Is non-hazardous and safer to work with than iron- and aluminum-based products.
- Can be applied in primary, secondary, and tertiary treatment, and has successfully removed phosphorus in trickling filters, rotating bed contactors, sequencing batch reactors, clarifiers, media filters, and membrane bioreactors.
- Municipal plants using Neo WaterFX have repeatedly passed whole effluent toxicity testing at 100% effluent concentration.
- Product is available in bulk tanker trucks and 275-gallon totes containing 1,500 kg of solution.



*Neo WaterFX helps wastewater facilities achieve greater water clarity than competing products, as well as faster coagulation, improved sludge dewatering, better digester performance, and no staining or discoloration of facility structures.*



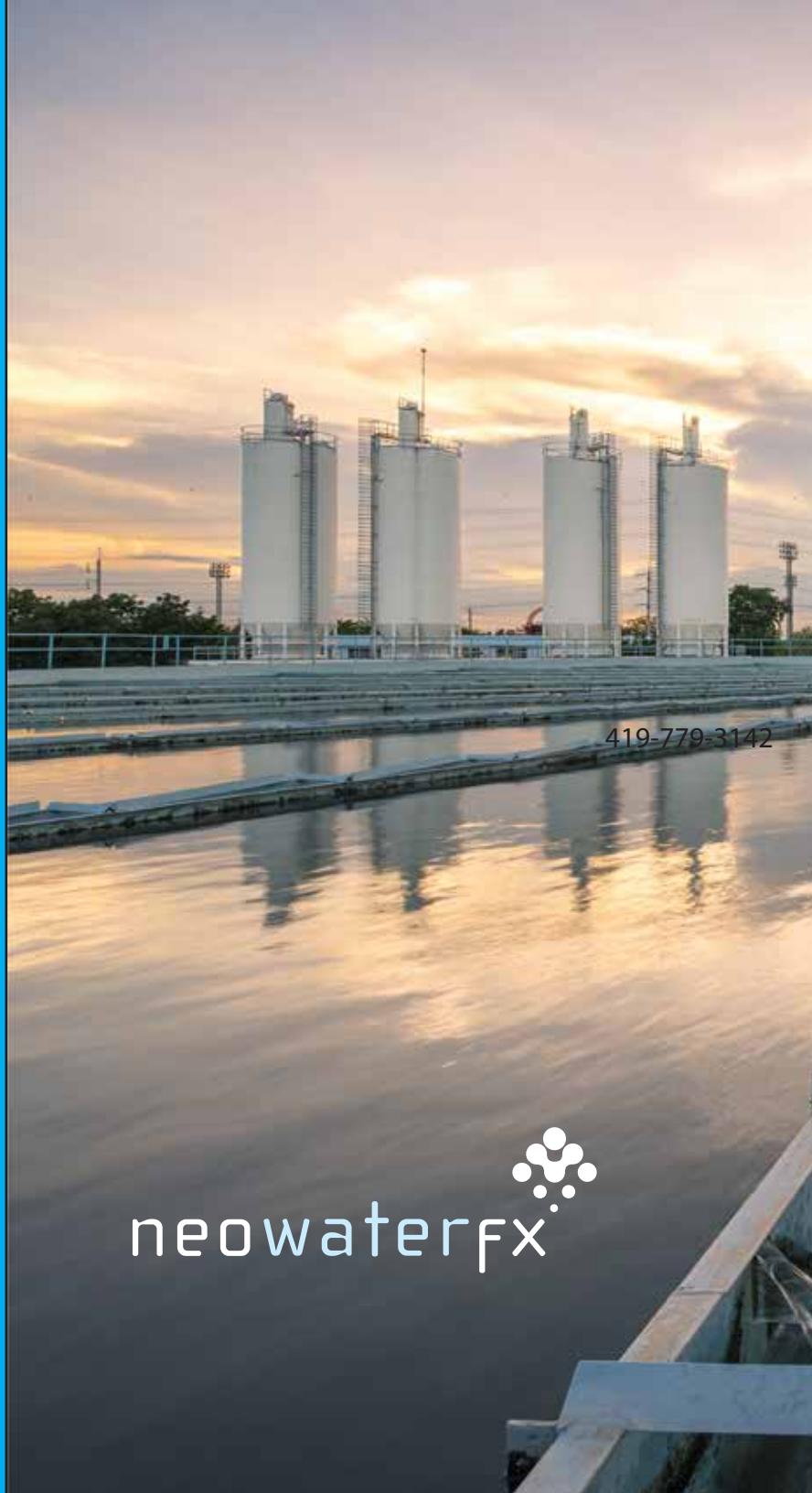
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