

Lanthanum Chloride and Cerium/Lanthanum Chloride (CLC)

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Ecologix Environmental Systems offers two rare earth chloride solutions that are used for phosphate abatement: lanthanum chloride and cerium/lanthanum chloride (CLC). Both solutions are very effective at removing phosphates from water due to their high affinity for phosphorus and wider effective pH range. Each product reacts with phosphorus in a 1:1 molar ratio, which reduces the amount of solution needed to achieve the desired phosphate level and produces less sludge.

Ecologix sells lanthanum chloride to customers in the zoo, aquarium, and swimming pool industries. One zoo that uses lanthanum chloride has had excellent results in their sea lion exhibit. The solution removed enough phosphorus to reduce algal growth and served as a filter aid, resulting in clearer water in the tank. Another customer purchases lanthanum chloride to control algal growth in swimming pools.

CLC is a newer product than Lanthanum Chloride. It has been used in the wheat, gluten and starch industry. CLC is used to treat the water leaving these production facilities.

Toxicity

The rare earths as a group tend to have LD50's above 3,000 mg/kg, classifying them as moderately or slightly toxic.¹ Even though rare earth elements may cause skin and eye irritation, they are generally poorly absorbed through the gastrointestinal tract, skin and lungs.¹ The acute toxicity of both cerium and lanthanum has been studied and was found to be low.¹ As of 2014, the EPA has not classified any rare earth elements as carcinogens.¹

The EPA has derived Provisional Peer Reviewed Toxicity Values (PPRTV) for lanthanum and cerium compounds. PPRTV is a toxicity value derived after a review of relevant scientific literature using the same methods used by the EPA Integrated Risk Information System (IRIS) Program.² Based on data they acquired from the U.S. Army Public Health Center (USAPHC), the toxicity values for lanthanum compounds and cerium compounds for air military exposure limits are as follows: