



## The Nitrate Elimination Co., Inc.

### TO PLACE AN ORDER:

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## How the Nitrate Assay Works

Enzyme proteins are highly efficient natural catalysts that accelerate very specific chemical reactions in living systems. Enzymes are biodegradable natural products, so there is little threat to the environment when enzymes and their natural substrates are used for environmental testing. NECi Nitrate Test Kits (NTK) are designed around the enzyme Nitrate Reductase (NaR) which catalyzes the reduction of nitrate ( $\text{NO}_3^-$ ) to nitrite ( $\text{NO}_2^-$ ). Most nitrate testing relies on the toxic heavy metal cadmium to catalyze the reduction of nitrate. Because NECi NTK's contain no cadmium or other toxic chemicals, they are safer to use.

NADH – a B vitamin containing molecule – is the biological electron donor. Each molecule of NADH passes two electrons to the enzyme, which in turn passes them on to the nitrate. The nitrate loses an oxygen atom as water, to become nitrite. The resulting nitrite reacts with the Color Reagents in the kits to form a pink product easily detected by the eye. The intensity of the color is directly proportional to the amount of nitrate present in the tested water or other type of sample; the more nitrate present, the deeper pink the color will be. The pink color can be “read” by eye against a color chart or a set of nitrate standards, or it can be determined quantitatively by using a colorimeter or spectrophotometer to determine absorbance at 540 nm.