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Authorized Dealer

## Wastewater Tank Lining

**Category:** Concrete Tank Lining Protection

**Customer:** Altoona Wastewater Treatment Facility,  
Altoona, PA

**Project:** Stop Corrosive Hydrogen Sulphide From  
Destroying Concrete Substrate

**Product:** Rhino Primer 251™ and Rhino Hi-Chem™ PW

### Problem

Hydrogen sulphide corrosion was destroying the concrete tank walls at this Wastewater Treatment Facility in Altoona, PA. Two tanks, 60' x 24.5' x 11' each, plus several additional sq. feet of old, pitting and rough concrete required a flexible yet durable protective coating. The work also had to be accomplished in a confined space and within the facility's safety protocols.

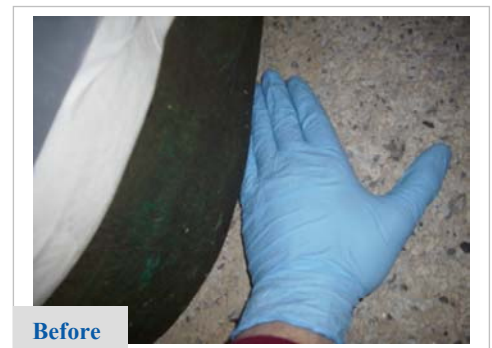
### Solution

The job went out to general bid and was won by Tank Coating Technologies (TCT) of Tilton, NH. To ensure a smooth finish with high chemical resistance, TCT choose Rhino Linings Hi-Chem PW for its protective solution. Hi-Chem PW provided a rapid curing, elastomeric polyurethane formulation with good elongation properties. It also was specifically designed for harsh chemical environments and came with NSF/ANSI 50 and 61 certifications.

An epoxy solution was discarded because it wouldn't provide the flexibility and expanded life span available with the Hi-Chem PW solution. Plus, TCT had a proven track record of successful chemical protection applications in wastewater treatment plants using Rhino Linings Hi-Chem PW polyurethane.

For tank preparation procedures, TCT began by checking the concrete substrate for chloride and PH levels. They then lightly washed the concrete with a neutralizing solution and used a high-pressure 3,000 psi spray as a rinse. The cumbersome task of masking (using paper, plastic and wire trim) and disassembly of piping and detailed areas (to be sprayed and reassembled later) was accomplished by a method designated by TCT as "keepers".

Keepers incorporates steel grating of various types that are mechanically fastened to the walls using a concrete nail gun. This structure increases the mechanical adhesion of the Hi-Chem PW coating especially in the high hydrostatic pressure environment.



Next, TCT filled concrete gaps and bug holes with a fast curing polyurethane caulk. Rhino Primer 251 was applied over the caulked areas with an HVLP gun at a thickness of 5 mils. To solve the problem of identifying pin holes in the concrete, inspections were performed regularly and a black marker was used to indicate where touch up was necessary. Rhino Primer 251 was then applied over the entire area at 180-200 mils.

Periodic thickness measurements were performed using ultrasonic and analog methods to ensure proper priming procedures were maintained. To complete the job, TCT sprayed Rhino Hi-Chem PW polyurethane at 250 mils over the entire tank which monolithically sealed the walls and eliminated the possibility of future corrosive hydrogen sulphide destroying the concrete substrate.

**Results**

One tank was done in November 2007 and the second was completed in February 2009. Both are still operating with no corrosion issues. By selecting Rhino Hi-Chem PW as its protective tank lining, Tank Coating Technologies was able to provide a monolithic, chemical/corrosion resistant solution with an extensive life span.

**Hi-Chem PW Benefits:**

Rhino Hi-Chem™ PW is a two-component, 100% solids (no VOCs, no solvents), exothermic, rapid curing, elastomeric polyurethane lining system specifically designed for excellent chemical resistance.

- Excellent corrosion resistance.
- Excellent chemical resistance.
- Dense chemical structure imparts high impermeability.

**Hi-Chem PW Physical Properties:**

• Hardness (Shore D)	65±5	ASTM D-2240
• Tensile Strength (psi)	2000-2200	ASTM D-412
• Elongation (%)	60-80	ASTM D-412
• Tear Strength, Die C (pli)	190 – 210	ASTM D-624
• Taber Abrasion Resistance	50-60	ASTM D-4060

\* Properties were checked of Hi-Chem PW lining 1/8" (125 mils), (3.18 mm) thick



Industrial applications are highly specialized and specific consultation and training may be required to perform such applications. Rhino Linings® does not provide confined space training and/or expertise in this area. Product MSDS sheets and specific chemical properties should be evaluated before undertaking any application.



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