

## **Sustainable Hard Chrome**

*A breakthrough Technology,  
Environmentally Safe Hex-Chrome Plating Is Now Possible.*

### **Exceeding the Regulations in a Cost-Effective Manner**

American industry needs to promote the essential value of conventional hexavalent (hex.) hard chrome plating. The process is vital to our economy and our defense. The hex-chrome process has been perfected and the bugs have been worked out a long time ago. There's no economic value in replacing hexavalent hard chrome.

**Hex-chrome can now be used in a way that exceeds all EPA and OSHA regulations  
by a Very Wide Margin!**

*The secret lies in how its applied.*



Chromic acid has been under attack for decades due to old-school techniques used to deposit hard chrome. Because of this, the EPA and OSHA were forced to tighten their regulations on hex-chrome because of the way it was being misused.

**In Business Since 1931**

Many feel the current regulations are too stringent, technically impossible and too costly to meet. This caused at least a 50% reduction in the number of USA hard chrome plating operations since the regulations were first established. A tragic loss to our industry due to the vital need for this process.

Some chemical suppliers saw an opportunity to develop more expensive options. This led to promoting a number of so-called 'replacement coatings' such as HVOF, trivalent chrome, electroless and electroplated nickel alloys, etc.

All of these 'replacements' are **more complex, more difficult** to control and **more expensive** to apply. In fact, these replacement processes have their own environmental and worker safety issues. Some even generate significant hazardous waste that's not recoverable.

*Yet, none of the replacements have the same desirable properties that conventional hard chrome has. None of them are as economical to apply, or easy to control, nor as easy to zero discharge.*

This leaves hexavalent chrome as the overall champion if an economical and wear-resistant surface is needed. **No other coating even comes close in durability, low cost, ease of application and simplicity of environmental protection.**

The 'secret' to using hexavalent chrome safely and responsibly lies in the how the plating system is designed and operated. Old-school methods do not work in today's environmental and worker safety climate. There are seven distinct steps that a hard chrome plater can use to achieve 'Safe Chrome Plating'. It's now possible to not only comply with the regulations, but to exceed their limits by a very wide margin.

Plating Resources, Inc. of Cocoa, Florida recently developed a unique method known as the 7-Step Process for both EPA and OSHA compliance. This technology was recently applied to a large hexavalent hard chrome operation that plates hydraulic rods using 20,000 amps.

**The result of using this 7-Step Process is so amazing that it sounds almost impossible to achieve.**

- *The EPA stack discharge was essentially Zero (< detectable amounts).*
- *The employees were more than 55 times below OSHA's PEL for hex. Cr.*
- *The shop, hoods and areas around the tank stayed clean.*
- *And, there's no need to use a fume suppressant!*

Eliminating the need for a fume suppressant is significant because they were able to avoid pitting and organic contamination while at the same time saving on their chemical costs.

This shop also utilizes Zero Discharge Recovery where all rinse tanks, ventilation wash-down and any unintentional spills are collected for reuse. Waste treatment isn't needed and there are no sewer connections.

**The savings realized from these 7-Steps lowers operational costs which more than pays the cost of adopting this technology.**

In addition, this shop doesn't have to worry about environmental inspections and fines, or how much further the hexavalent chrome regulations might be tightened in the future. They are already applying the techniques needed for responsible chrome plating and are doing so in a safe and economical way. Here is a recap of their EPA and OSHA test results.

<b>Test Parameters</b>	
Plating Baths:	Hexavalent chrome, 30 oz/gal.
Hard Chrome Tanks:	2
Part Type:	Hydraulic rods
Total DC Amperes:	20,000
Testing Time:	8 hours – all at 20,000 amperes

<b><u>EPA Cr Stack Discharge Test Results</u></b> (per NESHAP/40 CFR, Part 63, Sub Part N)	
<u>Location:</u>	<u>Results</u>
Test ports on the roof-top vent stack:	<b>Below any detectable amount.</b>
1) A reading of 'below detectable amounts' is essentially Zero Cr emissions.	
2) Test conducted by an EPA approved environmental laboratory.	

<b><u>OSHA Chrome PEL Test Results</u></b> (5.0 mg/cm <sup>3</sup> max. PEL)	
<u>Worker &amp; Location</u>	<u>Times below OSHS's PEL</u>
Tank Worker:	55.6
Shop Worker:	156.3
Chrome Tank Hood:	1,250.0
Shop Floor by Tanks:	185.2

The hex-chrome plater is finally assured of compliance regardless of how much further the discharge numbers are restricted. Most importantly, they will see increased efficiency and throughput while providing high-quality hard chrome deposits at reduced costs for years to come. Please contact us for information on how your business can adopt these 7-Steps.

***God gave us chrome for a purpose – it's up to us to apply and use it responsibly.***