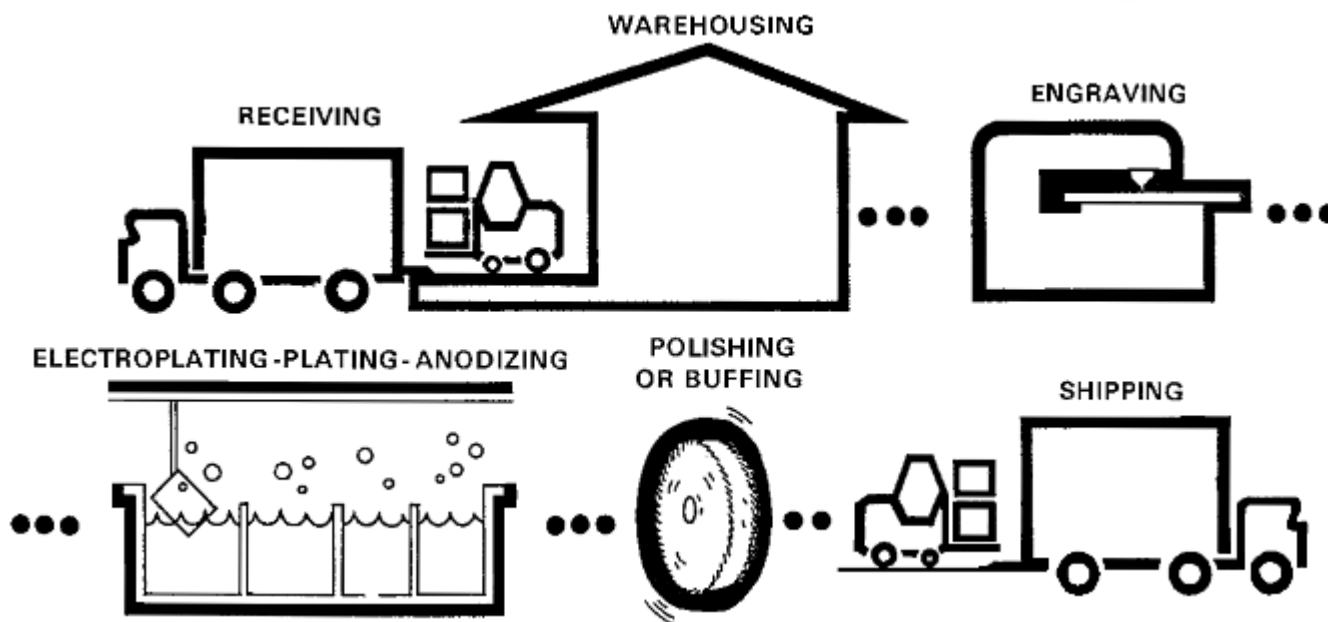
	NORTH CAROLINA DEPARTMENT OF LABOR	No. <b>34-6</b>
	OSH DIVISION	Date: <b>10/2009</b>
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<u>Industry:</u> <b>Fabricated Metal Products</b>	<u>Sub-Group:</u> <b>Engraving, Electroplating, Plating, Polishing, Anodizing and Coloring</b>
<u>SIC:</u> <b>3471 and 3479</b>	<u>NAICS:</u> <b>332812 and 332813</b>


**PROCESS DESCRIPTION:** Engraving involves cutting a metal surface on a special machine. A pattern is used to guide the cutting operation. In the plating process, the part to be plated is cleaned and dipped into a molten bath of desired plating metal. In electroplating and anodizing, electrolysis is used to add or cause a chemical change to the surface of the metal part. The finishing process may be a polishing operation. This may involve fine sanding, fine particle blasting or buffing of the metal surface to the desired surface finish required by customer specifications.


#### PROCESS FLOW:



#### Hazards Analysis

Major Hazards			Other Hazards		
Location	Item	Hazard	Location	Item	Hazard
Receiving and shipping area	Heavy object	Strains, hernias and foot injuries	Electroplating and anodizing area	Chemicals	Inhalation of carcinogens and toxic agents
	Forklifts	Accident, carbon monoxide		Acids	Burns, inhalation

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				Electricity	Electrical shock, electrocution
				Floors (wet)	Slips and falls
Receiving and engraving area	Metal chips  Machinery noise  Machinery, exposed points of operation, power transmission apparatus, rotating parts	Eye injuries, face burns, etc.  Hearing loss  Amputations and crushed limbs	Polishing area	Dust  Machinery, exposed points of operation, power transmission apparatus, rotating parts	Silica inhalation, eye injuries and possible explosive atmosphere  Amputations and crushed limbs
Plating area	Piping, machinery  Caustics	Scalds and burns from molten metals  Burns, inhalation	Throughout	Housekeeping	Slips, trips, fires
<b>Key OSHNC Standards</b>					
<b>Reference</b>	<b>29 CFR 1910 — General Industry Standards</b>				
Subpart D	Walking and working surfaces				
Subpart E	Means of egress				
Subpart I	Personal protective equipment				
Subpart O	Machinery and machine guarding				
Subpart S	Electrical				
1910.95	Occupational noise exposure				
1910.122 - .126	Dipping and coating operations				
1910.147	Control of hazardous energy – (lock-out/tag-out)				
1910.151	Eyewash and Emergency Showers				
1910.178	Powered industrial trucks				
1910.1000	Air contaminants				
1910.1200	Hazard Communication				
<b>Inspection Analysis</b>					

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<p>Parts are received from vendor or customer in bulk quantities. Inspection must cover receiving docks and material handling apparatus.</p> <p>Engraving area equipment shall be inspected for point of operation, rotating parts and power transmission guarding. Personal protection equipment must be evaluated and noise levels checked.</p> <p>The plating area must be inspected for proper ventilation. Personal protective equipment must be evaluated. Protective devices (enclosures) must be used to keep cyanide and acids from mixing. Ascertain whether any carcinogens are being used in electroplating and anodizing areas. Personal protective equipment and eye and body wash facilities must be provided where acids are used.</p> <p>Check code requirements versus wiring provided in this area.</p> <p>The polishing area presents ventilation and point of operation hazards.</p> <p>Housekeeping must be considered in all areas.</p>		
<p><b>Other Pertinent Comments:</b></p>		