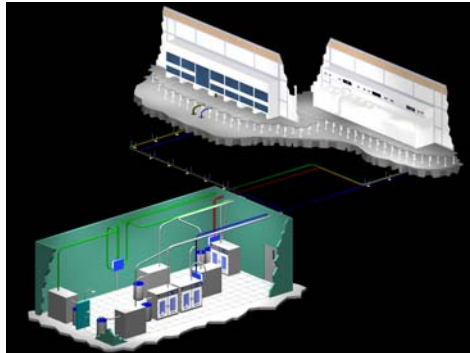


# Bulk Chemical Delivery

**Owner: The Largest Semiconductor Manufacturer In The World**  
**Location: Aloha, Oregon**

Since 1985, Evergreen Engineering has designed Aqueous and Solvent Bulk Chemical Delivery Systems for three (3) successive Semiconductor Manufacturing Fabs at this site. All projects were retrofits within operating facilities, and required detailed design to assure adherence to Building Codes, to assure personnel safety and to assure that construction impacts to production were mitigated or eliminated.



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## Aqueous Chemicals included:

- Hydrogen Peroxide – H<sub>2</sub>O<sub>2</sub>
- Ammonium Hydroxide – NH<sub>4</sub>OH
- Ammoniacal Etchant
- Hydrofluoric Acid – HF
- Hydrochloric Acid – HCL
- Ethylene Glycol – EG
- Ethylene Glycol/HF Mix – Dilcln
- Potassium Hydroxide - KOH
- Nitric Acid – HNO<sub>3</sub>
- Buffered Oxide Etch – BOE
- Tetramethyl Ammonium Hydroxide – TMAH
- Sulfuric Acid – H<sub>2</sub>SO<sub>4</sub>
- Phosphoric Acid – H<sub>3</sub>PO<sub>4</sub>
- Aluminum Sulfate

## Solvent Chemicals included:

- N-Methyl-2-Pyrrolidone – NMP
- Poly Resist – Poly R
- Poly Develop – Poly D
- Isopropyl Alcohol – IPA
- Ethyl Lactate – PBR
- PRS 3000
- PRS 2000
- Tetra Ethyl Ortho Silicate - TEOS

## All projects involved the following Services:

- Code Analysis
- Allowable Quantity Study
- IDLH Calculation at Point of Discharge
- Prelim and Detail Design
- Prelim and Final Agency Reviews
- Services During Construction



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