United States
Environmental Protection
Agency

Office of Water (WH 550G)

EPA 570/9-91-036G
January 1992

EPA

Best Management Practices For Protecting Ground Water

For Printed Circuit Board Manufacturers Using Shallow Industrial Waste Disposal Wells

(Class V Well BMP Fact Sheet Number 2E)

EPA recognizes that certain industrial waste disposal practices using drainage wells may pose unacceptable risks to Underground Sources of Drinking Water. These operations allow the discharge of various wastes to a drainage system neither designed for nor capable of treating them. Accordingly, BMPs for Industrial Disposal Wells focus on well closure and alternative disposal methods. We have also included BMPs for waste minimization to help facilities reduce waste disposal costs, regardless of the disposal method they use. In addition local, county, and State regulations may prohibit use of these wells. Note: these practices are recommendations only. For more information, contact the person named below.

The BMPs listed below apply to printed circuit board manufacturers. Fact Sheet Number 2 in this series lists BMPs that are applicable to Industrial Disposal Wells in general (including those used by printed circuit board manufacturers), particularly for closure and alternative disposal.

Waste Minimization

- Substitute aqueous processable resists for solvent processable resists where feasible
- Replace chemical board production with computer-driven mechanical etching processes for low-volume board production, such as for prototypes
- Replace chromic-sulfuric acid etchants with ferric chloride or ammonium persulfate where possible
- Use thinner copper foil to clad laminated boards, where feasible
- Decant and filter photoresist stripper to extend stripper life
- Extend plating bath life and recover metals and additives through treatment
  - — For example, use electrolytic dummying to remove excess copper
  - — Other methods include high surface area electrowinning/electrorefining, ion exchange, ion transfer, evaporators, and reverse osmosis
- Recycle spent chromic acid using an electrolytic diaphragm cell or other method

United States
Environmental Protection
Agency

Office of Water (WH 550G)

EPA 570/9-91-036G
January 1992

EPA

Best Management Practices For Protecting Ground Water

For Printed Circuit Board Manufacturers Using Shallow Industrial Waste Disposal Wells

(Class V Well BMP Fact Sheet Number 2E)

EPA recognizes that certain industrial waste disposal practices using drainage wells may pose unacceptable risks to Underground Sources of Drinking Water. These operations allow the discharge of various wastes to a drainage system neither designed for nor capable of treating them. Accordingly, BMPs for Industrial Disposal Wells focus on well closure and alternative disposal methods. We have also included BMPs for waste minimization to help facilities reduce waste disposal costs, regardless of the disposal method they use. In addition local, county, and State regulations may prohibit use of these wells. Note: these practices are recommendations only. For more information, contact the person named below.

The BMPs listed below apply to printed circuit board manufacturers. Fact Sheet Number 2 in this series lists BMPs that are applicable to Industrial Disposal Wells in general (including those used by printed circuit board manufacturers), particularly for closure and alternative disposal.

Waste Minimization

- Substitute aqueous processable resists for solvent processable resists where feasible
- Replace chemical board production with computer-driven mechanical etching processes for low-volume board production, such as for prototypes
- Replace chromic-sulfuric acid etchants with ferric chloride or ammonium persulfate where possible
- Use thinner copper foil to clad laminated boards, where feasible
- Decant and filter photoresist stripper to extend stripper life
- Extend plating bath life and recover metals and additives through treatment
  - — For example, use electrolytic dummying to remove excess copper
  - — Other methods include high surface area electrowinning/electrorefining, ion exchange, ion transfer, evaporators, and reverse osmosis
- Recycle spent chromic acid using an electrolytic diaphragm cell or other method