

Pesticide Removal Rates

Safe guarding the public water supply has become an important issue.

Potable water supplies may be rendered unfit for human consumption by the addition of small amount of pesticides, heavy metals, bacteria, and radio active nucleotides. **Electrocoagulation** effectively treats pesticides, heavy metals, bacteria, and radioactive nucleotides, making them separable with simple surface filtration, decantation, or clarification.

The common pesticides are removable as follows:

Organochlorine Pesticides (mg / l)

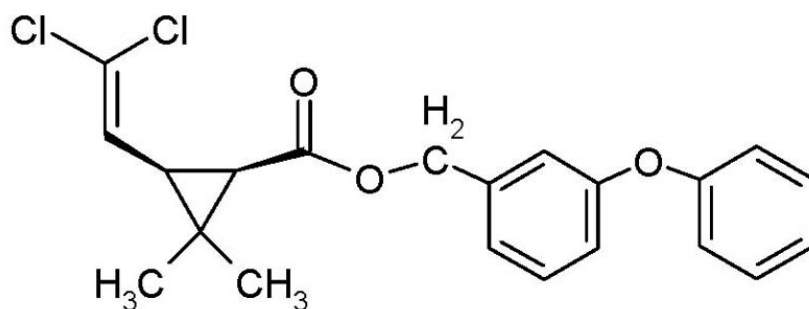
| | <u>Raw</u> | <u>Treated</u> | <u>Sludge</u> | <u>% Removal from Water</u> |
|--------------------|-------------|----------------|---------------|-----------------------------|
| a' – HCH | 0.09 | <0.001 | 0.061 | 98.9% |
| b' – HCH | 0.1 | 0.001 | 0.116 | 99+ % |
| lindane (γ' - HCH) | 0.14 | 0.001 | 0.113 | 99+ % |
| Aldrin | 0.06 | 0.001 | 0.040 | 98.4 % |
| p.p. DDT | 0.26 | 0.002 | 0.236 | 99+ % |
| TOTAL OC's: | 0.71 | 0.006 | 0.666 | 99+ % |

Organobopphoporus Pesticides (mg / kg):

| | <u>Raw</u> | <u>Treated</u> | <u>Sludge</u> | <u>% Removal from Water</u> |
|--------------------|---------------|----------------|---------------|-----------------------------|
| Propetamphos | 80.87 | 0.36 | 14.51 | 99+ % |
| Diazinon | 34 | 0.21 | 14.14 | 99+ % |
| Chlorieviphos | 5.87 | 0.03 | 0.7 | 99+ % |
| TOTAL OP's: | 120.73 | 0.62 | 28.78 | 99+ % |

Synthetic Pyrethroid Pesticides (mg / kg):

| | <u>Raw</u> | <u>Treated</u> | <u>Sludge</u> | <u>% Removal from Water</u> |
|--------------------------|------------|----------------|---------------|-----------------------------|
| Cypermethrin | 1.3 | 0.07 | 7.8 | 94.6% |
| TOTAL Pyrethroid: | 1.3 | 0.08 | 8.22 | 93.8% |



The heavy metals are removable as follows:

| Item | Raw concentration | After electrocoagulation | Removal |
|-------------|--------------------------|---------------------------------|----------------|
| Arsenic | 0.3 mg/l | <0.01 mg/l | 96.7% |
| Cadmium | 0.13 mg/l | <0.004 mg/l | 96.81% |
| Chromium | 139 mg/l | <0.1 | 99+ % |
| Cobalt | 0.12 mg/l | 0.021 mg/l | 82.71% |
| Copper | 0.79 mg/l | <0.002 | 99+ % |
| Iron | 68.3 mg/l | 0.194 mg/l | 99+ % |
| Lead | 0.34 mg/l | <0.025 mg/l | 92.85% |
| Magnesium | 13.15 mg/l | 0.044 mg/l | 99+ % |
| Manganese | 1.06 mg/l | 0.0184 mg/l | 98.27 % |
| Mercury | 1.15 mg/l | <0.03 | 97.39 % |
| Molybdenum | 0.18 mg/l | 0.04 mg/l | 80.6 % |
| Nickel | 183 mg/l | 0.07 mg/l | 99+ % |
| Uranium | 10.8 mg/l | 0.1 mg/l | 99+ % |
| Vanadium | 0.26 mg/l | <0.002 mg/l | 99+ % |
| Zinc | 221 mg/l | 0.14 mg/l | 99+ % |

Bacteria is removable as follows:

| Item | Raw concentration | After electrocoagulation | Removal |
|-------------------------|--------------------------|---------------------------------|----------------|
| Bacteria | 110,000,000 cfu | 2,700 cfu | 99+ % |
| E coli Bacteria | >2,419.2 mpn | 0.0 mpn | 99+ % |
| Enterococcus Bacteria | 83 mpn | <10 mpn | 82.87 % |
| Total Coliform Bacteria | 2,419.2 mpn | 0.0 mpn | 99+ % |

Radioactive nucleotides are removable as follows:

| Item | Raw concentration | After electrocoagulation | Removal |
|---------------|--------------------------|---------------------------------|----------------|
| Americium-241 | 71.99 pCi/L | 0.57 pCi/L | 99+ % |
| Plutonium-239 | 29.85 pCi/L | 0.29 pCi/L | 99+ % |
| Radium | 1093 pCi/L | 0.1 pCi/L | 99+ % |
| Uranium | 10.8 mg/l | 0.1 mg/l | 99+ % |