



Zero Wastewater Capacitive Deionization (CDI) OTT ID # 1592

APPLICATIONS

Drinking water treatments, analytical laboratory, hospitals, dental clinics, pharmaceutical laboratory.

TARGET PROBLEMS

- Heavy metal contamination in drinking or potable water is a major public health concern.
- Majority of the techniques available not only remove unwanted heavy metal ions (Cu, Pb, Cd, etc.), but also end up removing healthy metal ions (such as Ca^{2+} , Mg^{2+}) in the process.

KEY FEATURES

- **Low Cost**- Low energy consumption and retrofits to the existing pipeline
- **Improved Performance** - Selective high removal of heavy metal ions against healthy ions (Ca^{2+} , Mg^{2+})
- **Healthy Water Standards**- Maintains optimal concentration of healthy ions without affecting taste or odor of the tap water
- **Zero Waste Technology** – Easy collection of lead ions using filters with zero wastewater generation

TECHNOLOGY

Inventors at UW-Milwaukee (UWM) have developed a technology based on capacitive deionization (CDI) that selectively removes lead (Pb^{2+}) from tap water in a single pass mode with zero wastewater emission. This filtration system uses custom made electrodes that allow minimal removal of associated healthy ions (Ca^{2+} and Mg^{2+}), leaving water safe and healthy for consumption from every tap. Various techniques are available in the market that can be effectively used to remove heavy metal ions from the water, but these methods not only remove unwanted metal ions like Cu, Pb, Cd etc., but also end up removing healthy metal ions (such as Ca^{2+} , Mg^{2+}) in the process. CDI is a water purifying technique that has been less explored in heavy metal ion removal compared to other traditional methods. The lead ion precipitate can be collected using filters equipped in the pipeline, thereby leading to zero-wastewater generation during the process.

INTELLECTUAL PROPERTY

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ABOUT THE INVENTOR(S)

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