

# **POLYELECTROLYTE USE IN THE DREDGING INDUSTRY: SAFETY ASPECTS AND ENVIRONMENTAL BENEFITS**

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## **ABSTRACT**

Since their introduction over 40 years ago, synthetic, organic coagulants and flocculants have become commonplace in a whole host of industrial applications. They are indispensable in water-treatment where they are used in primary clarification and sludge dewatering. The paper industry benefits enormously from their use in the production process where they have contributed to increased machine speeds and a reduction in fiber and filler loss. Other client industries include textiles, oil exploration and refining, mineral extraction and cosmetics. In many cases, they are instrumental in the compliance of industrial processes with strict environmental quality standards.

Numerous studies demonstrate the safe use of these products for both human health and the environment. Their safety has been confirmed by the fact that they are widely used in applications regulated by the Environmental Protection Agency and the Food and Drug Administration, such as the treatment of drinking water, sugar clarification and the production of food-contact paper. There have been no documented negative environmental effects resulting from their long-term use in municipal waste-water treatment plants, quarries or sand pits.

Over the last decade, there has been a significant increase in the use of these polymers within the dredging industry. The main drivers for their use are the contamination of sediments, the need to treat water prior to discharge to natural water courses and the lack of space for settling and drying. Manufacturers' product stewardship programs have been adapted to serve the needs of the downstream users and local authorities.

The use of polyelectrolytes brings major environmental benefits to dredging applications, especially small-scale ones. These products assist in minimizing the impact on the landscape and aqueous environment, and in reducing energy and landfill requirements. Their use does not constitute a long-term risk for the fauna or flora and under normal operating conditions there is no potential environmental risk since any concentrations discharged to the natural environment will always be under the no-effect concentration.

**Keywords:** coagulants, flocculants, water-treatment, sludge, dewatering, settling.

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