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Sediments Remediation
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An innovative decontamination technology known as Georemediation™ is currently being pilot-tested by BEM Systems, Inc. (BEM) for the decontamination and beneficial use of NY/NJ Harbor sediments under the State of New Jersey, Office of New Jersey Maritime Resources (NJMR). Georemediation™ technology, patented and developed by Aleph Group of Ithaca, New York and marketed exclusively by BEM, uses a proprietary chemical reagent that degrades and mineralizes organics and immobilizes metal contaminants. The Georemediation™ proprietary reagent contains a mixture of dispersants, clay pillaring agents, oxidative reagents, metal salts and pozzolans. The pozzolans provide increased surface area for oxidative reactions, that is further enhanced by the dispersants and clay pillaring agents which separate the fine slag and sediment particles in the waste. The oxidation of organics is further enhanced by metal salt reagents, which facilitate greater electron transfer. The inorganic contaminants are converted into highly insoluble hydrated precipitates and further immobilized into a crystalline lattice. Georemediation™ treatment process is simple, employs off-the-shelf equipment, and produces no excess contaminated water and/or air emissions. The reagent is slurried and then mixed with the dredged sediments using pug mill, etc. The homogenized material is cured in open curing cells for approximately 30 days. The end-product is environmentally benign, looks and behaves like soil, and can be used as structural or non-structural fill material. Georemediation™ process has been successfully employed at bench, pilot and full-scale levels for a wide range of contaminated wastes such as lead (Pb) contaminated soils from shooting range, TPHC, PAH, PCB, and dioxin contaminated sediments from harbors and lagoons, and oil drilling mud wastes.

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The Contamination of Sediments into the Selected Reservoirs in Northern Bohemia
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At present, because of the general environmental pollution, the water reservoirs and freshwater basin can be deemed storing sites for gas, liquid and even solid wastes. The research of reaction of heavy metals compounds, organic and amorganic components of sediments and their systems with water in natural environment is oriented at the migration of chemical elements within the water-sediments systems. By determining physical and chemical features of pollutants and their interconnections to disclose the conditions of their origination, stability and mobility of individual phases. For the purposes of establishing the degree of contamination of sediments some major water reservoirs in the basin Ohre (Eger) river and drinkable water reservoirs were selected, because the Ohre river basin is situated in the north part of Bohemia, which has been heavily exposed to effects of industrial, power generation and mining activities and the flow of the river is a major recipient of mud carried to the Labe (Elbe) River. Although the current level of atmospheric pollution is largely reduced due to suspended industrial activities in the Czech Republic, installed efficient scrubbers and other end-of-pipe equipment controlling the outputs from chemical industry and due to efficient pollution control in the lignite-powered electric plants, levels of accumulated pollutants into the bottom sediments in the water region from the past are still high. Our results of the research have shown that the bottom sediments are from the point of view of concentration of trace and heavy metals considerably contaminated by anthropogenous activities and they approximate limits of contamination when the use of sediments for potential agricultural purposes will be restricted.