MARINE & WATERWAY SOLUTIONS

MAKE CHROMIUM Non-HAZARDOUS

MBS® ... A PERMANENT & COST EFFECTIVE SOLUTION TO HEXAVALENT CHROMIUM (Cr^{+6}) CONTAMINATION

The US Department of Health has determined that chromium and certain chromium compounds are known carcinogens, with lung cancer one potential result of chronic inhalation of fine-particle chromium compounds in hexavalent form (Cr^{+6}). Even short-term, high-level exposure to Cr^{+6} can result in skin ulcers and damage to the kidney, liver and gastrointestinal tract.

Chromium and its compounds are primarily used in the manufacture of steel and other alloys, chrome plating and pigment production. However, inadequate disposal of waste containing chromium at industrial sites in past decades has contaminated both the lands and their groundwater, and chromium is now known to contaminate 33% of the hazardous waste sites on the National Priorities List (NPL). Although small amounts of naturally occurring trivalent chromium (Cr^{+3}) are essential for nutrition, the presence of industry-produced Cr^{+6} in water or the food chain is considered to be highly hazardous.

To combat this, the U.S. Environmental Protection Agency (EPA) promulgated stringent regulations regarding leachable concentrations of hazardous metals in August 1998. The new Universal Treatment Standards (UTS) criteria reduced the leachable chromium limit to 0.60 mg/l (from 5.0 mg/l under prior RCRA legislation). This has exacerbated the difficulty and expense of making chromium non-hazardous via traditional chromium contamination remediation methods, which entail a two-step operation that reduces Cr^{+6} to Cr^{+3}, then stabilizes the trivalent form to prevent it from leaching.

Solucorp Industries' patented Molecular Bonding System (MBS®) has been proven to cost-effectively and permanently prevent leaching of chromium compounds contamination in soils, industrial wastes and even radioactive mixed waste ash ... in one-step. Equally important ... MBS does not change the treated material's physical characteristics - MBS does not encapsulate contaminants in solid blocks.

The table below demonstrates the ability of MBS to both reduce and stabilize concentrations of hazardous hexavalent chromium (Cr^{+6}).

MBS TREATMENT RESULTS ON HAZARDOUS CHROMIUM (Cr^{+6}) COMPOUNDS

(< Indicates results below the specific testing laboratory's detection limits)

Contaminated Matrix	Untreated TOTAL Cr^{+6} (ppm)	MBS Treated TOTAL Cr^{+6} (ppm)	Untreated Cr TCLP (mg/l)	MBS Treated Cr TCLP (mg/l)	U.S. EPA's UTS TCLP Limit (mg/l)
Silty Soil	1300.0	**60.0**	111.0	**< 0.02**	0.6
Sandy Soil	980.0	**46.0**	84.0	**0.11**	0.6
Sludge	2320.0	**111.4**	240.0	**< 0.3**	0.6