BANTOX® & BLASTOX®

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BLASTOX® STABILIZATION REACTIONS

The EPA has published a list of what it deems the Best Demonstrated Available Technologies (BDAT) for the stabilization of D008 and P+U Lead Wastes. Lead-based paint debris are included in this classification. BDAT stabilization technologies include "lime/fly ash mixtures, cement, concrete mixtures, or other proprietary or non-proprietary formulations". Blastox® uses these chemistries.

The leachability of lead is affected by two factors: the chemical form of the lead, and the pH of the leachate. (Temperature can also slightly affect lead leachability, but the affect is minimal). The leachability of lead can be 'masked' or *temporarily* minimized by plating or pH buffering reactions. A plating reaction is one which the lead plates (adheres) to the surface of pure iron. Lead will not plate to iron oxide (rust). Once iron is exposed to environmental conditions that initiate the formation of iron oxide, the lead plating reactions reverse themselves and the lead becomes available for leaching. Lead solubility can also be minimized by controlling the pH of the leaching solution. Once the buffering effect is overcome, however, lead may become available for leaching.

Blastox® utilizes an initial pH adjustment followed by additional stabilization reactions that produce a long term stable waste. The three stabilization reactions are summarized here:

1. The addition of Blastox® creates an alkaline matrix in which lead is stable. This elevated pH instantaneously stabilizes the lead.
2. Silicate reactions change the chemical form of the lead from a lead oxide, carbonate, or hydroxide to a lead silicate which is insoluble.
3. Hydration reactions encapsulate the waste into a cementitious mass which limits the gravitational flow of water.

The above reactions occur simultaneously and all are equally important in the stabilization of lead waste. The silicate and hydration reactions promote the long term stability of the waste. The end result of the three reactions is an encapsulated, insoluble lead silicate. The change in alkalinity (pH) is a by-product of the silicate and hydration reactions and is not the primary stabilizing reaction. The resulting lead silicate will not leach into acidic, neutral, or basic solutions. The reactions are not reversible. If Blastox® is present, the lead will be converted to a lead silicate and become insoluble.

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