

Prevention of a RCRA Hazardous Baghouse Dust At Foundry Facilities

The Industry Waste Problem

Foundries melt a wide variety of scrap metals producing molten material to pour into molds for casting production. In the melting process, dusts are produced from the furnaces that are captured in baghouse units. Some types of scrap contain impurities of heavy metals such as lead, cadmium and chromium that are present in the dusts in various compounds. Depending on the level of leachability of the metals as determined by the Toxicity Characteristic Leaching Procedure (TCLP), the dust waste will require various management approaches that are determined by environmental regulation.

If the dust leaches at levels, which exceed EPA limits, it is designated as hazardous wastes and RCRA Subtitle C requirements then apply for storage, transportation and disposal activities. For many foundries this means manifesting shipments to permitted hazardous waste facilities at costs significantly higher than non-hazardous waste disposal, and often at such distances that require high transportation costs. The end result is that foundries incur large expenditures for properly and safely managing hazardous wastes. There are, however alternative, inexpensive and safe options available to the foundry industry to prevent the generation of RCRA hazardous dust waste.

The Innovative Solution

A large, Midwestern foundry providing grey and ductile iron fixtures for municipalities was faced with the undesirable situation of generating hazardous baghouse dusts from their cupola operation. The baghouse dusts leached lead and cadmium at levels higher than the EPA federal standards of 5.0 and 1.0 mg/l, respectively. They considered several on-site management alternatives such as on-site treatment in tanks and pursuit of treatment permits through the RCRA part B process. With so much of their own involvement required with these alternatives, the foundry turned to The TDJ Group, Inc. for an innovative solution.

The TDJ Group, Inc. performed an on-site assessment of the foundry's operation to determine the most practical and cost-efficient method of managing the baghouse dust. After inspection of their system, The TDJ Group, Inc. recommended a method of waste management that would essentially prevent the generated dusts from exhibiting hazardous characteristics. This was accomplished by implementing a

process change called the Bantox[®] Process, which injects chemical additives into the waste stream. This turnkey system consists of redundant, dual feeders and a pneumatic injection system that accurately feeds Bantox[®] chemistry directly into the cupola, and can also be fed into the ductwork up stream from the baghouse unit. A standard system can be equipped with minimal control features, or fully automated with safety features to prevent system feed malfunctions. After introduction into the system, the Bantox[®] chemicals mix with the dusts to produce a chemically altered waste that minimizes the solubility of any heavy metals.

Benefits of The Bantox[®] Process

The Bantox[®] Process has afforded many direct and indirect benefits to this foundry. First, The TDJ Group, Inc. has obtained state and federal approvals that allow licensees to operate the Bantox[®] Process without having to obtain treatment permits. Therefore, no involvement with these agencies is required to instal and operate the system. Secondly, the Bantox[®] Process uses EPA Best Demonstrated Available Technology (BDAT) chemicals to ensure the dust test non-hazardous for metals via TCLP, and remain non-hazardous permanently under actual disposal environments. TCLP testing data confirmed that the waste was non-hazardous, and 10 years of successful operation continue to reinforce its efficacy. Finally, this foundry avoids the generation of hazardous waste that would need manifesting to a permitted facility.