

ENVIRONMENTAL FOOTPRINT COMPARISON TOOL

A tool for understanding environmental decisions related to the pulp and paper industry



CHLORINATED
COMPOUNDS

EFFECTS OF DECREASED RELEASE OF BOD/COD & TSS ON CHLORINATED COMPOUNDS

AOX Removal

AOX (adsorbable organic halide) removal efficiency during conventional wastewater treatment is not affected by process modifications such as low to moderate levels of ClO_2 substitution in the bleach plant (Barton and Drake 1993), or the installation of oxygen delignification and complete ClO_2 substitution (Hasagawa and Barton 1997). Though the specific mechanisms of AOX removal may vary with the configuration of waste management systems, well-treated effluent levels tend to be proportional to influent levels, as illustrated in Figure BX below. Apart from process changes that alter bleaching practices, reducing the discharge of BOD and TSS to treatment would not be expected to have a significant impact on either the potential to generate or to discharge chlorinated organic compounds.

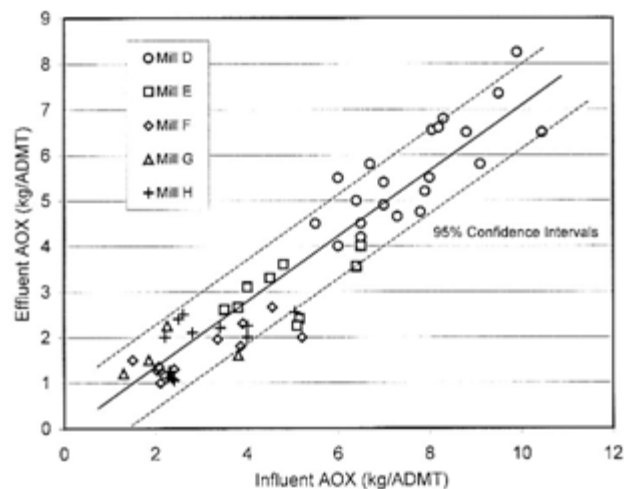


Figure BX. Relationship between Influent and Effluent AOX for Wastewater Treatment (Source: Bryant et al. 1992)

Reduced discharges of BOD/COD and TSS to water might also be approached with the installation of additional treatment system capability or components. Anaerobic/aerobic sequences for enhanced AOX removal have been explored, as have the merits of aerated stabilization basins (ASBs) with longer retention times and high rate activated sludge systems having longer sludge residence times. Removal mechanisms that have been suggested include volatilization, precipitation and settling, sorption on separated biomass, and chemical and biological degradation (Eckenfelder 1999). Specification of optimal design and operating conditions to maximize AOX and conventional pollutant removal remains elusive. It is possible that some tertiary treatment systems (e.g., flocculation for removal of dispersed solids or dissolved/colloidal organic compounds (such as color) may have co-benefits in reducing AOX. Because the approach to upgrading treatment system capability or adding treatment components is site-specific, associated reduction in chlorinated compound discharges or compromises in conventional pollutant removals, if any, will also be site-specific. At present, there do not appear to be full-scale treatment systems in use that are expressly designed for removal of chlorinated compounds.

Effects of Decreased Release of BOD/COD & TSS on Chlorinated Compounds

AOX Removal

References

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