

Chemical Translators: Alternative Limits

Wastewater Treatment Plants (WWTP) must obtain a permit from the Mississippi Department of Environmental Quality (MDEQ) for the discharge of treated wastewaters to surface waters of the state. In some instances the analytical studies conducted indicate the need for numerical limitations within the National Pollutant Discharge Elimination System (NPDES) permit. These limits are based on total recoverable metal analysis. However, in 1993 the Environmental Protection Agency (EPA) recognized that the dissolved fraction of a metal better represents the biologically active portion of the metal than is the total or total recoverable fraction. Based on this analysis, the EPA Office of Water recommended that dissolved metal concentrations be used for the application of the metals aquatic life criteria and State water quality criteria.

Regulations (40 CFR 122.45(c)) require permit limits expressed as total recoverable metals in many instances. Typically, the permit limits, then, represent the dissolved fraction criteria as totals. However, a translator value may be found through additional calculations upon request by the permittee. The value determined from use of the translator value will be the fraction of metal in the effluent that can be dissolved in the receiving water.

A translator can be one of three forms: 1) assumed to be the equivalent criteria conversion factors previously established for total recoverable; 2) developed as a ratio of dissolved to total recoverable metal concentrations; or 3) developed through the use of a partition coefficient that functionally relates to the number of metal adsorbing constituents in the water column.

The use of translator values more accurately reflects site specific conditions. Therefore, permit conditions can be developed that are more appropriate to your facility operations and should be more easily complied with during normal operating conditions.

Department staff intends to prepare a short series of brochures to discuss specific aspects of alternative limitations using translators.