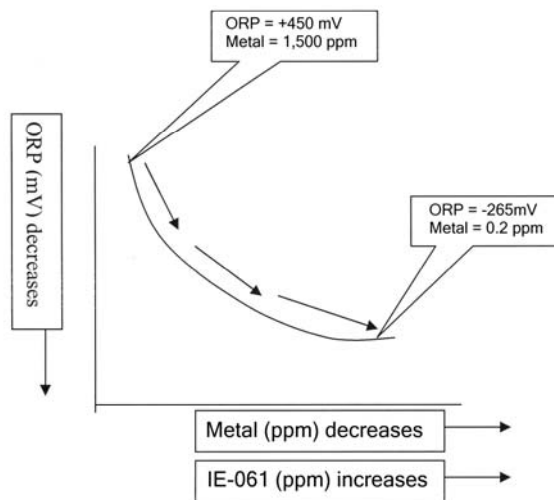


ORP Controller

The removal of metals is often accomplished using only the FloccinAgents™. Typically all insoluble metals are encapsulated and removed in the floc formation. If higher levels of heavy metals removal is desired, the addition of the IE-061 prior to the FloccinAgent™ is required. The IE061 precipitates the metals as well as chelated metals, from solution, so that the FloccinAgents will effectively remove them.

The IE-061 is added at a dosage that is 20-50% above the level of the total metals. Quantifying and controlling each application uses an ORP probe and meter to measure the ORP as the IE-061 is added and a predetermined ORP set point is set to control the precipitation process.

Graph of ORP Versus Metal Concentration and IE-061 Concentration



Performing jar tests to determine the ORP minimal asymptote is the set point for the ORP controller. Once this is determined, then the system can operate automatically in batch or continuous operation. It is important to note that chrome does not need to be reduced and the removal efficiency of the IE-061 is more efficient with less cost than traditional hydroxide precipitation. The IE-061 is available in 5, 55, or 275 gallon containers and requires a metering pump for automatic dosing applications.

After precipitation, the FloccinAgents™ are added, mixed and form a floc that encapsulates the metals. Most sludge pass the EPA sludge testing protocols (TCLP, STLC) and do not leach their metals. This provides a great level of assurance to the industry as it minimizes the long-term liability of disposal of metal leaching sludge.

The equipment that we manufacture and are used in this precipitation process is our CFU, ABU, and MBU units. These units all have the ORP precipitation control process as an option to these precipitation and liquid/solids separation systems.