



MISTER CLEAN

RICHARD FORSYTH, an Associate Director with GMP quality in Merck & Co. Inc., discusses the cleaning validation process, visual residue limits and disposable technologies.

Please explain the cleaning validation process?

Basically, you want to make sure that there's no objectionable cross-contamination from one batch to another, so that your manufacturing equipment is clean of any objectionable residue. So we have to validate that cleaning process; you have to develop a cleaning process and then show that it is rugged enough that it's going to handle all of your cleaning needs. We identified a worst-case formulation for our manufacturing processes and ran through the manufacturing process, cleaned the equipment and then tested the equipment for removal of residue. Once we did that three times, then we considered our cleaning processes to be validated. So it's a matter of actually running through the cleaning processes and taking samples and generating data to show that you can clean your manufacturing equipment on an ongoing basis to a level that provides you confidence that there's no objectionable carryover.

What types of advances has the industry seen in the cleaning validation process recently?

Well, there's been new instrumentation to look at. Typically, we use high performance liquid chromatography (HPLC), but there's been (total organic carbon) TOC cleaning used, historically. Right now, there's ion mobility spectrometry which has been trying to get in. We're actually looking at fourier transform infrared (FTIR) as a possibility for monitoring our cleaning validation process, but actually what I've been doing here is trying to establish visible residue limits for our cleaning. Essentially, we establish a visual limit for our active pharmaceutical