CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2008
DateRun:	01/16/2008
Experimenters:	Heidi Wilcox
ClientType:	Electronics Manufacturer
ProjectNumber:	Project #1
Substrates:	Copper
PartType:	Part
Contaminants:	Cutting/Tapping Fluids
Cleaning Methods:	Mechanical Agitation
Analytical Methods:	
Purpose:	To find a product that would replace mineral spirits in their dip cleaning applications located at each machine
Experimental Procedure:	In addition to the mineral spirit cleaning, the company also has a large aqueous cleaning machine and a vapor degreaser (uses nPB). These are the cleaning processes the parts go to last before assembly or storage. Before these last steps each machinist has 1-3 red buckets at their station, and they clean parts there in mineral spirits before the parts move on. The company is trying to remove soils such as oil but also need to remove metal fines that may be in any holes of the parts. The driving force for replacing mineral spirits is that the company wants lower the air emissions as they are close to being in violation of their permit. Secondly, the company wants to do something about the flammability and to improve the work environment. The company's process uses many materials and makes many types of parts. They make parts from many inches down to very tiny parts with blind holes that the fines need to come out of. The machines are all newer models that are computerized and enclosed. The parts come out of an opening into a wire, mesh basket. Oils, fluids and lubricants are visible on the parts coming out of the machine. The parts in the strainer are taken in the strainer to a close-by red bucket full of mineral spirits. The strainer of parts is swished in the mineral spirits, both back and forth as well as up and down. The cleaning is done at room temperature and the basket is swished up and down and around to remove oils and lubes from the parts and also the metal fines in any holes or edges. Sometimes this process is done more then once. This cleaning is considered pre – cleaning due to the fact that the parts are cleaned later on in either the aqueous machine or the vapor degreaser. These pre-cleaned parts may sit in bins or bags for up to two weeks. The parts need to be able to sit for that length of time without rusting/oxidizing. The company had tried some cleaners in the past and they all had issues with rust or oxidization.
Results:	During the walk through of the facility, the satellite buckets were at just about every machine. The buckets were sometimes on the same side or right next to the machine. But some locations required the worker to turn around and walk across and aisle to clean the parts. This process should also be changed so the workers do not drip oil on the floor. In every work area there was a drum where the workers can put spent mineral spirits in for disposal. It was apparent that the pre-cleaning needed to do two things, clean off the oil and to dislodge any metal fines in the blind holes. Therefore, the cleaning in the buckets should be of the dunk and agitation type to get both of these goals accomplished. At the conclusion of the site visit, samples of the company's soils and parts of different shapes, sizes and metals were collected to be used in testing back at the laboratory.
Summary:	
Conclusion:	Follow up tests in the lab found products that worked on the soil, having cleaning efficiencies that ranged from 83 to 100 percent. A selection of parts was cleaned in these cleaners and brought the parts down to the company for QA/QC inspection. The results of the inspection will help direct the next phase of testing.