CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2008
DateRun:	06/01/2008
Experimenters:	Heidi Wilcox
ClientType:	Electro-Optical Devices
ProjectNumber:	Project #1
Substrates:	Aluminum, Glass/Quartz
PartType:	Coupon
Contaminants:	Adhesive, Fluxes
Cleaning Methods:	Manual Wipe
Analytical Methods:	Visual
Purpose:	To conduct on-site assistance to eliminate IPA from cleaning process for worker health and safety
Experimental Procedure:	The three products brought to the facility were tested in the TURI lab prior and were found to remove gaskets and adhesive efficiently off glass coupons. The products were brought with MSDS's in 1000ml bottles. Once on site the solutions were used at 100% strength and squirt bottle tops were put on each of the three bottles so workers could squirt the solutions on the rag used to clean the panels. Observations were made by the workers, EH&S and manufacturing staff as to the use, smell and drying rate of the products. Reasons for project are to reduce air emissions of VOC's and also to reduce flammability and worker exposure to toxics.
Results:	Product 1: Gemtek SC Actisolv This product was a little grippy. Meaning it didn't slide across the panel like the IPA did. He said it was ok but wasn't sliding as well as they were used to. When the back of the panel was wiped with the product, the solution took the ink right off the labels and bar code. This is not a huge issue; it would require retraining of the cleaning staff to not go over the printed labels or have new labels made with a protective coating. The management staff didn't seem concerned but would like a product that did not so readily destroy the labels. The product was pretty good on the gasket removal. It may have even been easier to remove the gasket with this product then with the IPA. Reason may be that IPA drives fast and by doing so may leave the gasket sticky upon drying. This product is a bio-based product and may possibly coat the gasket and let it not stick to surfaces as readily and thus making it easier to remove. It was better on hands then IPA. Observed some smell. IPA has a smell this was just different. The workers would have to get used to the new smell if the product was selected. Drying time on the front of the panel took longer as it had less evaporation than the IPA. It eventually dried when left sitting. This may not be an issue in the process. The change in drying could be worked around. The panel looked and felt good after it dried. The company wanted to know if the product could be blended with IPA. Follow would have to be done by talking to the manufacturer. Product will not be used in further testing. Product 2: Dysol DS 144 Product moved well across surface. It performed much better than the first product. Not grippy at all. It was alright on labels. Rubbing removed some ink but it wasn't immediate ink removal as seen with the first product. Again, a retraining issue as to why they are cleaning the back of the panel in general may need to be visited or how much product they are putting on the clothes may need to be decreased. It was also pretty good at removing the gaskets. The product handled streaks well. Other workers liked this product better than the first for streaks. The odor was described as orange or citrus like. This wasn't likely to be an issue. The product was slippery on hands but dried fine. They are used to the fast-drying nature of IPA. Texture of anything else will take time to get used to. Cleaning the back white side of the panel was an issue. It seems that this product dried slower on the backing then the front or glass side. Also, when it dried it left residue. This would be due to the amount the workers are putting on the clothes when they begin cleaning. Not so much is needed. A degradation test will be done in the lab to see if any hard is done to the skin of the panel. The company supplied the lab with a sheet of backing to use for testing. This product will be left on site for further piloting. Product 3: Kyzen Corporation Ionox HC2 Company informed the lab that this product was tried on the flux line and while it cleaned the housing of the flux machine well it was too tacky and left a residue so most likely it wouldn't be something they would use in the shop.

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The lab tested it anyway on the panel cleaning line with workers including who was present the one other time TURI visited for a walk-through site visit. The product was tacky and grippy. It did not slide easily across the panel. It did not clean off the gasket as well as the other two products, but it dried well.

The product was not as good on the streaks as the DS 144 and the workers did not like the smell.

A decision was made that this product would not be testing any further at the facility.

Summary:

Conclusion:

Issue with VOC’s came up for the first time at this meeting. Dyson 144 was the product the company liked the most and was going to be used in further on-site testing by the client. However, the VOC level of the product did not lower the companies air emissions so further products will be looked for and tested by the TURI lab staff.

It was explained to the staff that to achieve the evaporation rate they are used to, they may be looking at using a high VOC product. If lower VOCs are wanted a product that does not dry as easily may have to be used and retraining of staff to do an extra wiping process after cleaning may need to occur or panels may need to sit to dry longer than their current process.

In the new plant, the company will increase their use of cleaners by approximately 8 times. Therefore, VOCs are a major concern.