

HPVA COMMENTS to EPA on
LAMINATED PRODUCTS & FORMALDEHYDE REGULATION

May 23, 2014

Submitted by Hardwood Plywood and Veneer Association (HPVA), 1825 Michael Faraday Drive, Reston VA 20190, 703-435-2900

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HPVA wishes to express its appreciation to EPA for the opportunity to submit further comments on the proposed formaldehyde emissions rule as it relates to laminated products. Through the companies which make up the diverse membership of HPVA as an association and through HPVA Laboratories as North America's largest CARB TPC of hardwood plywood, we have a great deal of experience with these products. The comments below are offered to ensure that the integrity of hardwood plywood as defined in the ANSI/HPVA HP-1 *American National Standard for Hardwood and Decorative Plywood*, which includes laminated products, is maintained. Our association and its membership have worked diligently to ensure hardwood plywood is maintained as the lowest emitting composite wood product regulated at 0.05ppm.

We ask that EPA take our comments into consideration when making their determination on how laminated products should be treated in the proposed rulemaking. We offer the comments below in addition to those previously submitted and thank EPA for their consideration.

Hardwood plywood is hardwood plywood

Hardwood plywood is a veneer face on a variety of platforms which may include veneer core, particleboard, medium density fiberboard (including thin), combination core (typically veneer(s) combined with HDF or MDF), lumber, or special cores (e.g. honeycomb). The first national consensus standard for this product was developed by the U.S. Department of Commerce in 1932 and evolved over time and many editions to the current ANSI/HPVA-HP-1-2009. This national consensus standard requires that hardwood plywood using any of these various platforms meet a 0.05 ppm emission standard.

Conformance to the HP-1 standard is referenced and incorporated as a requirement in other federal regulations and association-sponsored programs, including but not limited to those maintained by the U.S. Department of Housing and Urban Development (HUD), the International Code Council (ICC), the Architectural Woodwork Institute(AWI), the U.S. Green Building Council (USGBC), the Kitchen Cabinet Manufacturers Association (KCMA), and others. The just published revised *National Healthy Housing Standard* limits hardwood plywood

emissions to 0.05 ppm and make no reference to “laminated products”. (See National Healthy Housing Standard published by the American Public Health Association and the National Center for Healthy Housing. (<http://www.nchh.org/policy/nationalhealthyhousingstandard.aspx>) It states in part:

“7.4.1. Building materials consisting of hardwood plywood, medium-density fiberboard, and particleboard as defined by 15 U.S.C. 2697(b)(2) shall not be used in maintenance and renovations within dwellings, unless the materials have been certified to meet the formaldehyde emission standards of 15 U.S.C. 2697(b)(2):

- (1) Hardwood plywood with a veneer core, 0.05 parts per million (ppm);
- (2) Hardwood plywood with a composite core, 0.05 ppm;”

As a result, wood products meeting the HP-1 definition of hardwood plywood must conform to HP-1, and therefore must meet the 0.05 ppm formaldehyde emission requirement.

Contrary to the testimony at the EPA hearing and in subsequent written comments filed with EPA, laminated panels are not excluded from the definition of hardwood plywood by statute. In fact, in 15 USC 2697 (a) (3) (C), the required rulemaking is for EPA to determine “whether the definition of the term “hardwood plywood” should exempt engineered veneer or any laminated products”. This is completely discretionary. For the reasons stated at the hearing by HPVA, the intent of TSCA is to limit exposures, not increase them, which CARB endorses by default in its proposal.

Why would the highest emission standard of all the regulated products be used for laminated products (0.13ppm) when most of the platforms will be 0.05ppm (VC) or 0.08ppm (PB or MDF)? This means a “laminating” company can use a really stinky, high emitting resin and pass at 0.13 ppm! This makes no sense, unless the objective is to let everybody but U.S. panel manufacturers off the hook.

CARB’s proposal for regulating laminated panels effectively assigns two different formaldehyde emission limits to the same exact product, with one of the limits (laminated product = 0.13 ppm) being **160% higher** than the other (hardwood plywood = 0.05 ppm). This will undoubtedly result in mass confusion in the marketplace and with consumers. For example, a homeowner interested in buying new low emitting kitchen cabinets would have no way of distinguishing cabinets made with hardwood plywood (0.05 ppm) from cabinets made with “laminated panels” (0.13 ppm). To add to the confusion of CARB’s approach, both the low and high emitting hardwood plywood products could be labeled “EPA compliant” with no other way for the consumer to differentiate between them.

Lastly, CARB proposes the use of 0.13 ppm as the laminated product emission limit because it is the currently limit for thin MDF (tMDF), and is the highest limit of all composite wood products. It is HPVA Laboratories’ experience that tMDF, once it is laminated on both sides with wood veneer, actually emits well below this limit (0.028 ppm average using a UF veneer adhesive; See

Appendix 1). We therefore see no practical reason to allow all laminated products to emit up to 0.13 ppm.

The Appropriate Emission Rate for Hardwood Plywood is 0.05ppm

As noted above, two very disparate emission rates for the same product will create a significant amount of confusion in the marketplace and with consumers. The TSCA provisions mandate a single emission rate for hardwood plywood, but grant flexibility for fabricators who manufacture hardwood plywood. Their compliance scheme (the number and frequency of tests required, certification program requirements, etc.) can be different than those that CARB imposed on panel producers. We recognize this, and have offered cost efficient and practicable suggestions on schemes for that segment of manufacturers in comments previously submitted to the EPA.

A two-tiered emission rate will make enforceability of the fabricators' requirement to use emission compliant platforms virtually impossible to enforce. California currently has no emission limits on VC platforms. Even if they close that loophole and EPA includes them in the federal standard, if the two-step manufacturer (one who applies only a face/back veneer to a purchased platform) is regulated at the 0.13 ppm limit, there would be no reason to determine if a compliant core was used. As a practical matter, it wouldn't make a difference. The fabricators vehemently oppose the "destructive test" method. Consumers would be exposed to two different emission levels on the same product, and both would be considered compliant with the regulation.

There is Substantial Evidence of Non-Compliance

As a TPC, we have become acutely aware of the fact that, just because a manufacturer uses CARB Phase II compliant cores (PB, MDF, tMDF, etc.) in the production of hardwood plywood, there is no guarantee that the end product will meet the lower 0.05 ppm hardwood plywood limit. This is often due to the substantially higher emission limits set for these composite wood products in comparison to hardwood plywood. Appendix 1 shows the summary results of formaldehyde tests dating back to 2009 which were performed on hardwood plywood produced with various core types and adhesive systems; over the years, several failures have been recorded on products that used CARB compliant cores.

On imported products, we have observed a high failure rate even when the products are stamped CARB compliant. This data can be viewed in Appendix 2 at the end of this document.

Stakeholders have expressed varying viewpoints in which they express the need for some test verification and execution of a Statement of Compliance.

An ENGO commenter stated: "A laminator applying a veneer to thin medium-density fiberboard likely could not achieve standards that are more stringent than those applicable to fiberboard, even if the veneer is hardwood." U.S. manufacturers of hardwood plywood on thin MDF

achieve this on a regular basis, and have done so since the CARB regulation was imposed. This further proves that U.S. manufacturers are achieving the necessary emission reductions, while a huge class of manufacturers are not held accountable in the slightest.

A kitchen cabinet representative in a private communication touted a single test showing compliance as justification to exempt all testing as costly and unnecessary. One test does not make a robust data set. As a 3rd Party Certifier, we know that compliance can be achieved, but we have witnessed failures as well (See Appendix 1 which shows our experience in the range of emissions depending on the resin system and core platform used).

Test to Verify and Certify with an Executed Statement of Compliance

We reiterate from our previous comments and testimony that some limited test data to establish performance, and a signed Statement of Compliance to enable enforcement is absolutely necessary. The CARB proposed honor system with no testing required makes a mockery of enforceable standards equally and applied to all.

We proposed a limited testing program (3 small scale tests) with sampling documented by an independent contractor. The Statement of Compliance could be executed with a 3rd Party Certification Organization or with EPA, who may require an annual or bi-annual audit. A Statement of Compliance is a critical enforcement mechanism. The "Scout's honor" approach which CARB has proposed is a virtual guarantee of circumvention.

Costs of Compliance have been Grossly Exaggerated

Only those fabricators who lay up veneer would be subject to this rule. It is our understanding that the number of kitchen cabinet manufacturers in this category is quite limited (not in the neighborhood of 100's); through private communication with KCMA, we have been told that this number is less than 10 in the U.S. Furniture and woodworking plants are probably greater in number. However, only the product lines manufactured with a veneer laminating operation would be subject to the rule. Contrary to the oral testimony (Flexible Materials), no laminating operation using paper, foils, paint, plastic or other non-wood material is subject to the rule. None of these companies manufacture PB, MDF or thin MDF. The regulation would only apply to a veneer laminating operation that is making hardwood plywood. The product lines requiring testing are limited to less than three in most cases, not the hundreds or thousands as some would have us believe (AHFA). HPVA Laboratories' clients manufacture diverse product sets and typically group product types into three to four categories for certification based on the adhesive type used and the type of core or platform to which the veneer is applied.

Depending on the final rule requiring some degree of testing, a “laminator” of hardwood plywood would perform a test on each platform used (PB, MDF, etc.) at its thickest configuration and using the thinnest face veneer in order to quantify the maximum emission potential of the product. If a fabricator used both thin veneers (the Chinese tout their capability in this regard; See ITC Antidumping/Countervailing Duty case Against Chinese Hardwood Plywood) and U.S. specification hardwood veneer thickness (see Voluntary Standard for Sliced Veneer Wood Face Veneer Industry Standard DFV-1-1995), then both veneer thicknesses might be tested at the decision of the manufacturer. The thickness and porosity of the veneer will affect the effectiveness of the wood itself to serve as an emission barrier.

As we submitted in the first comment period, these costs would likely be in the \$2,000-10,000 range for each manufacturing operation. An extended compliance period of up to 3 years adequately addresses the capacity issue which has been raised.

With \$770,000,000 of hardwood plywood, over \$250,000,000 of engineered wood flooring, over \$550,000,000 of ready to assemble kitchen cabinets, and over \$3,000,000,000 of furniture exported from China into the U.S., that volume of product needs more than a “word of honor” system. U.S. manufacturers are at a severe competitive disadvantage having to test and verify with 3rd party certifiers against those imports. In hardwood plywood, those imports comprise over 50% of the hardwood plywood consumed in the U.S.

The 3rd Party Certification should have less variability among certifiers and testing laboratories

Appendix 3 contains a detailed analysis of the 3 round robins that CARB conducted. As the graphs and comments point out, the range in test results observed between laboratories, as well as between “equivalent” test methods within the same laboratory, were unacceptably wide. There are four primary take-aways from this data, and from CARB’s approach to interlaboratory comparisons in general:

- 1.) Each year, there are several labs that cannot show equivalency between their small (ASTM D6007) and large chamber (E1333) test methods;
- 2.) Each year, there are several labs that are well outside of the acceptable range in both the large and small chamber datasets;
- 3.) Outlier labs are not excluded from the analyzed and distributed dataset
- 4.) The allowable tolerance in these round robins is much too large (often ± 0.03 ppm or more), considering the lowest regulatory limit is 0.05 ppm (hardwood plywood)

There needs to be more rigor in the conduct of the round robin themselves. Both the LSC and SSC do need to be included. If a laboratory has only small chambers, then a “companion”

facility that performs large chamber testing needs to be used. In other words, samples would be sent to both the small chamber lab and its companion large chamber lab to equilibrate results.

Clear guidelines need to be established on the acceptable variability. For example, is plus or minus 0.01 ppm or 0.02 ppm allowed? If laboratory variability is reduced, a program for reduced testing and fast track exemptions for laminators becomes more viable. There needs to be a 0.01 ppm limit established for the small chamber and large chamber test methods, and an allowable range between the TPC's of a similar limit. The round robin would also be improved if the test samples were all of a known emission characteristic.

HPVA put in a FOIA request for the identifiers (alphabetical designators) for each lab used in the 3 round robins. The identifiers changed each time. We did not want nor did we ask for the lab's name or identity as that is information between the lab and CARB. Our e-mail request was initially denied but when a formal letter of request for the FOIA information was made, CARB notified us it was granted. We were then told the information did not exist in a single Excel spreadsheet and CARB is not required to generate new documents under FOIA. Our request was then accepted before it was denied. Due to the limitation of the ability to look at the same lab over the 3 round robins our analysis is limited to what we have submitted to EPA.

SUMMARY

Whether or not decorative hardwood plywood is manufactured or "laminated," the end product is the same, and therefore its formaldehyde emissions limit should be as well (0.05 ppm). Having a single, uniform limit keeps manufacturers accountable, and deters circumvention of the rule by would-be laminators. HPVA Laboratories, the nation's largest certifier of hardwood plywood products, is well aware of the challenges and possibility for emission above 0.05 in HWPW products. However, we believe that with a certain amount of due diligence in manufacturing and a small amount of testing we can be sure that laminated products perform on par with hardwood plywood from a manufacturer.

Allowing the proposed 0.13ppm level creates a lower standard for hardwood plywood. Regardless of manufacturing conditions, in order to maintain the integrity of the product and its position in the marketplace as the lowest emitting of all regulated composite wood products, the 0.05 ppm emissions level should be maintained for wood veneer laminated products.

Appendix 1
Summary of Adhesive/Core Test Results

Core Type	Adhesive Type		
	ULEF	SOY	
HDF	0.028 ± 0.007 (n=8) Range: 0.013 - 0.038	N/A	0.015 R
MDF	0.043 ± 0.021 (n=42) [1 BLQ] Range: BLQ - 0.124	0.015 ± 0.007 (n=9) [1 BLQ] Range: BLQ - 0.029	0.015 R
PB	0.034 ± 0.020 (n=14) Range: 0.011 - 0.096	0.019 ± 0.008 (n=11) [3 BLQ] Range: BLQ - 0.029	0.020 R
tMDF	0.028 ± .015 (n=8) [2 BLQ] Range: BLQ - 0.046	0.013 ± 0.001 (n=13) [9 BLQ] Range: BLQ - 0.014	0.024 R
Combination Core	N/A	0.013 ± 0.005 (n=12) [6 BLQs] Range: BLQ - 0.022	
IVC (Import Veneer Core)	0.041 ± 0.026 (n=35) [3 BLQ] Range: BLQ - 0.118	N/A	0.012 R
DVC (Domestic Veneer Core)	0.029 ± 0.017 (n=73) [4 BLQ] Range: BLQ - 0.102	0.012 ± 0.004 (n=12) [10 BLQ] Range: 0.008 - 0.013	0.017 R
Combined Average ± Std	0.035 ± 0.021 (n=180) [10 BLQ] Range: BLQ - 0.096	0.015 ± 0.007 (n=57) [29 BLQ] Range: BLQ - 0.029	0.018 ± R

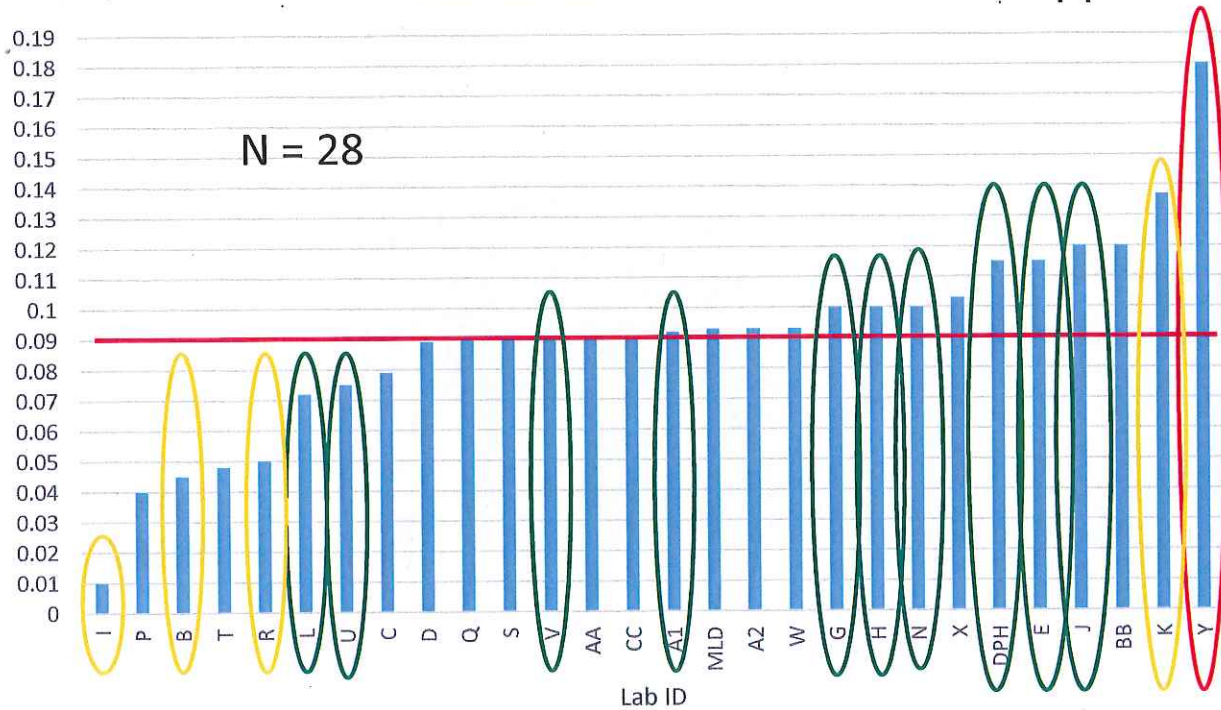
Example: Average ± standard deviation (n= # of samples) [# of samples registering BLQ]

note: Samples registering "below limit of quantitation (BLQ)" were not included in the above averages or standard deviations

BLQ = 0.008 ppm

Appendix 2

Chinese Plywood/Underlayment - Summary of Results		
Product Description	Date Tested	D6007 (ppm)
23/32" 4'x8' A/C Pine Plywood	7/25/2013	0.11
	7/26/2013	0.09
	7/25/2013	0.14
	7/26/2013	0.14
5mm Lauan 5-ply Underlayment	8/14/2013	0.19
	8/14/2013	0.20
	8/14/2013	0.18
5mm Lauan 5-ply Underlayment	9/5/2013	0.10

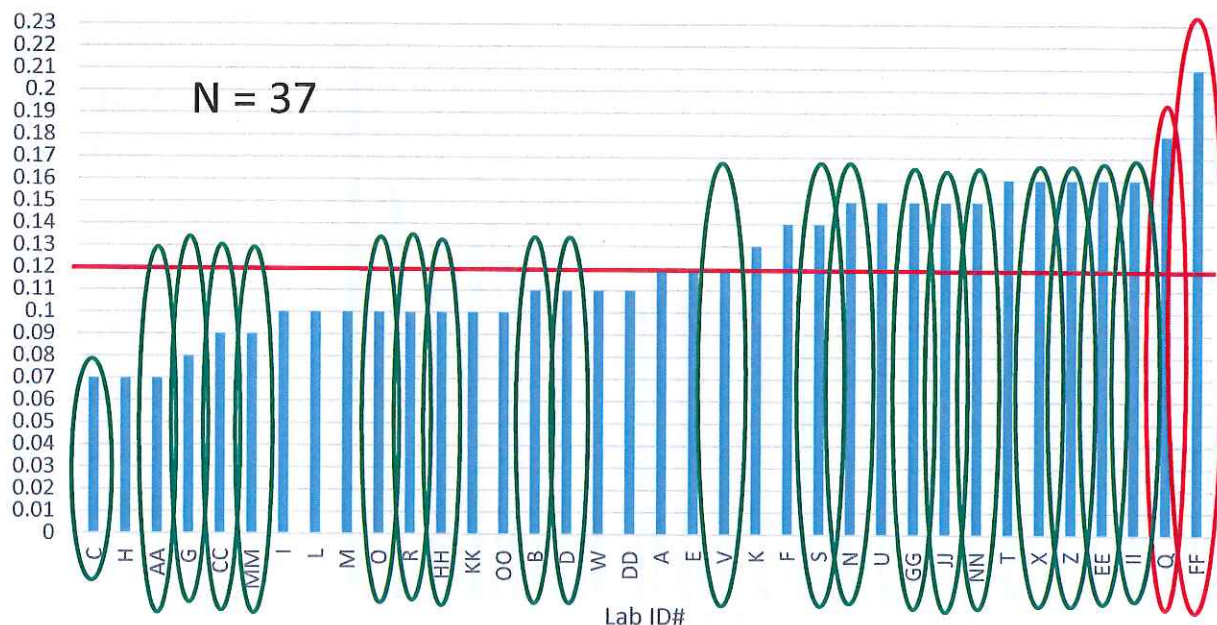


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2009 E1333 Discussion

- All labs who performed E1333 also performed D6007 except : DD, Z, M, and O
- Between-lab variation: Lab Y was considered a "possible outlier;" The results from Lab B and R were "of concern"
- Only Lab I's D6007 and E1333 results were found to not be equivalent
- Lab Y's D6007 and E1333 results were in agreement, but their E1333 results were "nearly out of range" in the between-lab comparison

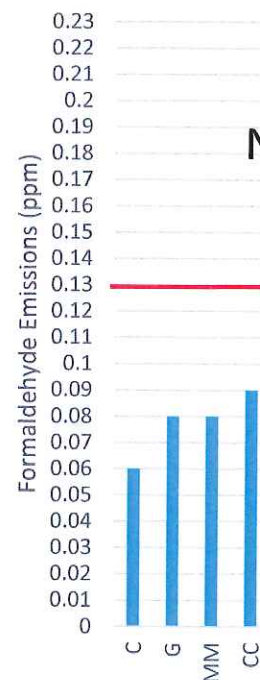


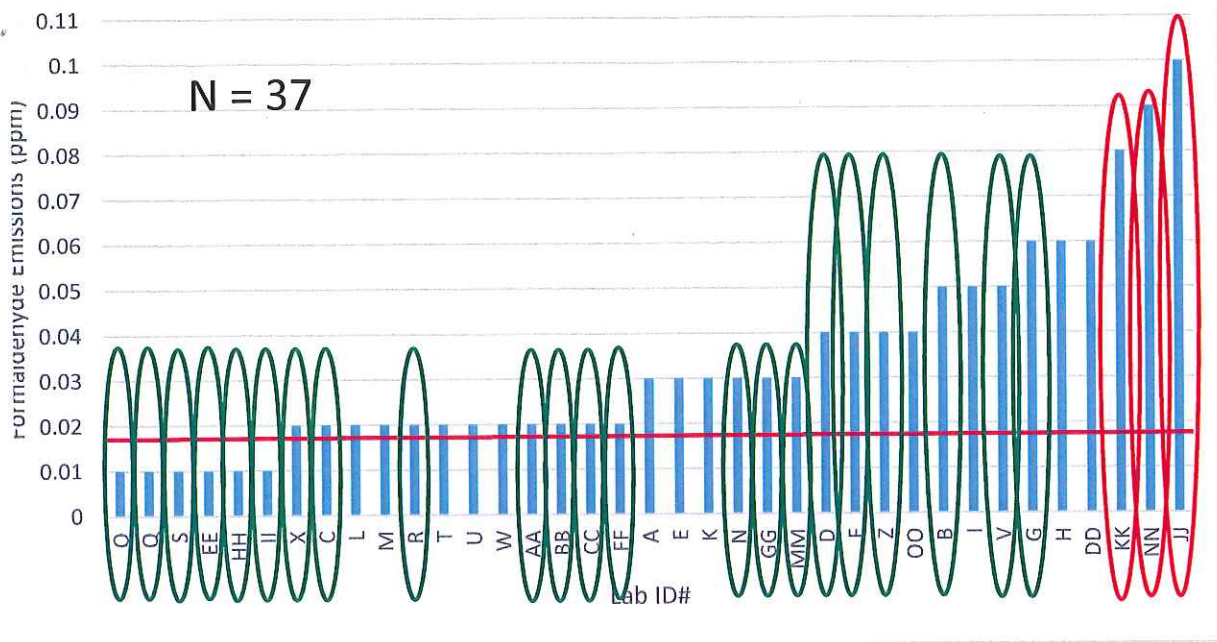


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2011 tMDF E1333 Discussion

- All labs who performed E1333 also performed D6007 except: BB, J, LL, and Y.
- Between-lab variation: 3 Labs (C, MM, and FF) reported failing results; a fourth lab (G) reported at the limit
- Two Labs (D and AA) had D6007 and E1333 results which differed by greater than 0.03 ppm; both labs passed the E1333 between-lab comparison
- Three labs (C, MM, and FF) had D6007 and E1333 results which were in agreement, but all three failed the E1333 between-lab comparison

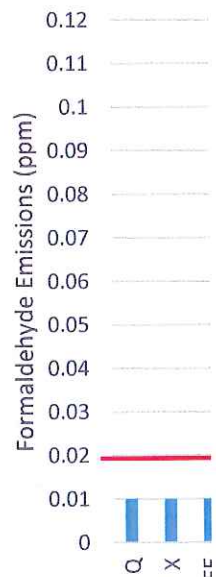




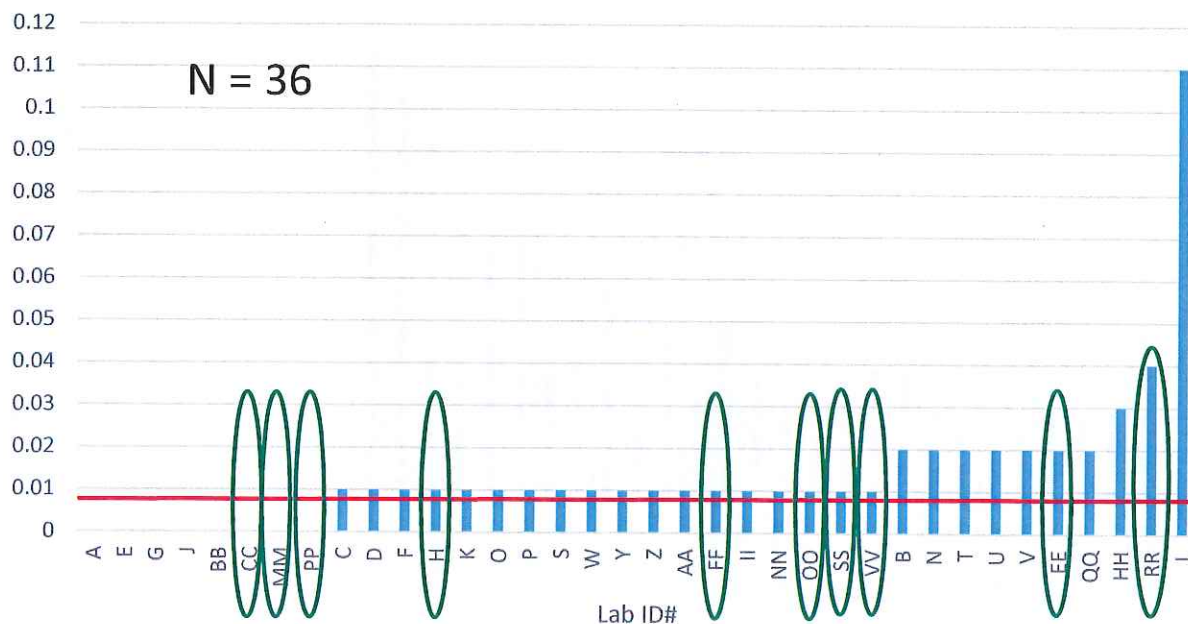
- All circle test met
- Between-lab variation: 3 Labs (C, MM, and FF) reported failing results; a fourth lab (G) reported at the limit
- Two Lab (D and NN) had D6007 and E1333 results which differed by greater than 0.03 ppm; Lab NN passed the E1333 between-lab comparison
- One Lab (JJ) had D6007 and E1333 results which were in agreement, but failed the E1333 between-lab comparison

2011 HWPW E1333 Discussion

- All labs who performed E1333 also performed D6007 except: J, LL, and Y
- Between-lab variation: 3 Labs (C, MM, and FF) reported failing results; a fourth lab (G) reported at the limit
- Two Labs (D and NN) had D6007 and E1333 results which differed by greater than 0.03 ppm; Lab NN passed the E1333 between-lab comparison
- One lab (JJ) had D6007 and E1333 results which were in agreement, but failed the E1333 between-lab comparison



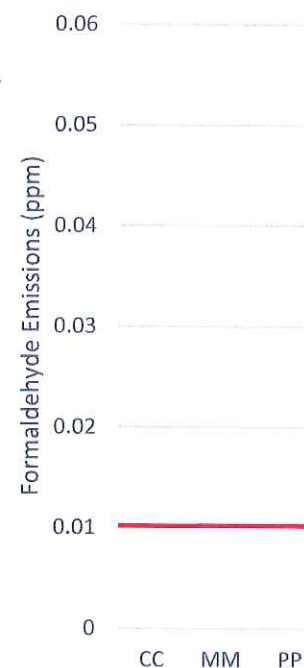
2013 ILC Results - tMDF - D6007

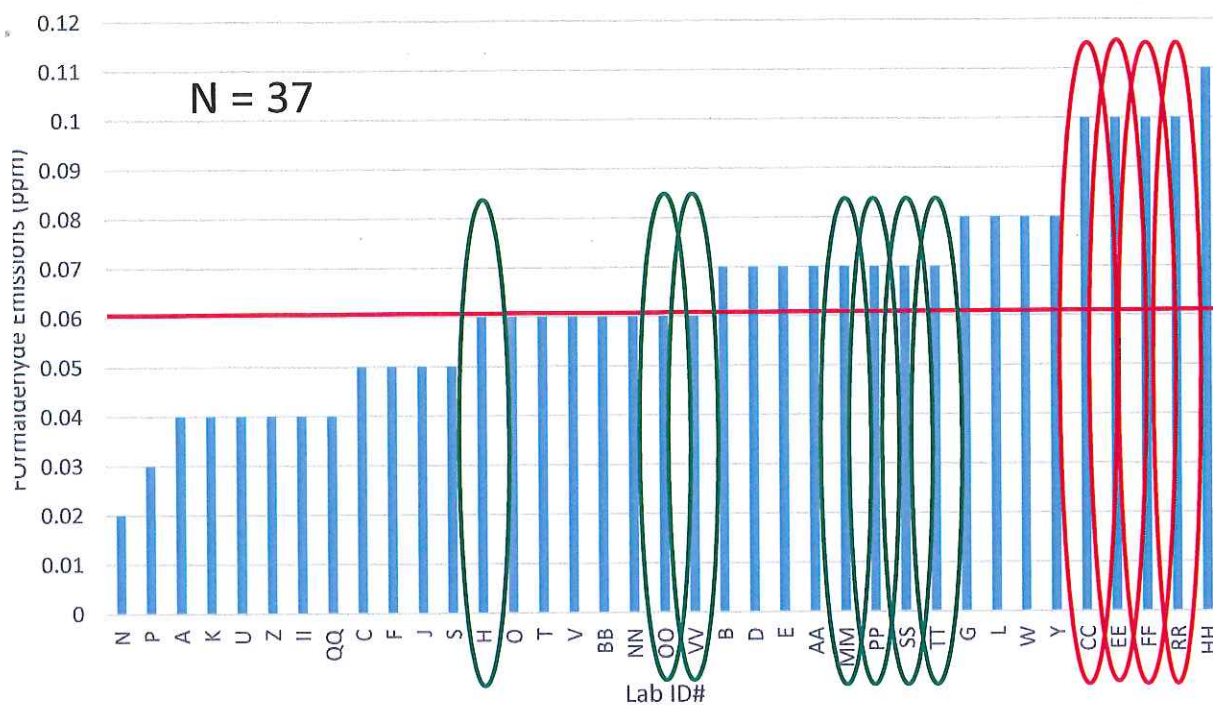


- All circle test met
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- Lab L fai did not p
- No labs differed l

2013 tMDF E1333 Discussion

- All labs who performed E1333 also performed D6007 except: Q, DD, JJ, TT, WW, and GG.
- Between-lab variation: 2 Labs (RR and GG) reported failing results
- No lab had D6007 and E1333 results which differed by greater than 0.03 ppm
- One lab (RR) had D6007 and E1333 results which were in agreement, but failed the E1333 between-lab comparison





- All circled test met
- Between-lab variation: 2 Labs (EE and RR) reported failing results
- No lab had D6007 and E1333 results which differed by greater than 0.03 ppm
- Two labs (EE and RR) had D6007 and E1333 results which were in agreement, but failed the E1333 between-lab comparison

2013 PB E1333 Discussion

- All labs who performed E1333 also performed D6007 except: M, WW, Q, JJ, DD, and GG.
- Between-lab variation: 2 Labs (EE and RR) reported failing results
- No lab had D6007 and E1333 results which differed by greater than 0.03 ppm
- Two labs (EE and RR) had D6007 and E1333 results which were in agreement, but failed the E1333 between-lab comparison

