



DISCUSSION PLAN

- Technical Issues
- Emission Reduction Calculation: OTC / Pechan
- Alternative Emission Reduction Calculation: CARB Database



Technical Issues

- Floor Coatings: 380
- Exterior Wood Primers 350
- Interior Wood Stains – Clear & S-T 550
- Wood Varnishes 450
- Sanding Sealers 550



OTC Database – Pechan Analysis

- Increase in limit => increase in emission reductions
- VOC limits => negative emission reductions

Increase in limit => increase in emission reductions

Coating	Base	VOC Range	Upper Limit	Constant Gallons Assumption		Constant Solids Assumption	
				At the Limit	Over the Curve	At the Limit	Over the Curve
Sanding Sealers	SB	301 to 350	350	1,098,835	1,175,573	671,165	671,165
Sanding Sealers	SB	351 to 400	400	797,464	1,158,560	2,023,654	1,002,151
Sanding Sealers	SB	451 to 500	500	197,803	255,245	700,275	703,430
Sanding Sealers	SB	501 to 550	550	20,384	26,778	71,543	73,337
Sanding Sealers	SB	551 to 600	600	10,044	21,506	54,619	62,307
Sanding Sealers	SB	601 to 650	650	3,498	19,166	52,598	58,899
Sanding Sealers	SB	651 to 700	700	1,359	4,920	9,758	13,748
Sanding Sealers	SB	701 and Above	750	0	0	0	0

Increase in limit => increase in emission reductions

Coating	Base	VOC Range	Upper Limit	Constant Gallons Assumption		Constant Solids Assumption	
				At the Limit	Over the Curve	At the Limit	Over the Curve
Primers	SB	0 to 050	50	32,179,490	37,009,982	37,065,802	37,065,802
Primers	SB	101 to 150	150	22,290,907	35,763,450	30,065,344	36,309,142
Primers	SB	151 to 200	200	17,313,324	21,745,815	9,999,800	26,255,854
Primers	SB	201 to 250	250	12,377,511	14,575,436	18,452,542	20,584,427
Primers	SB	251 to 300	300	7,725,934	11,425,909	16,181,155	17,304,263
Primers	SB	301 to 350	350	4,543,494	6,526,545	8,803,733	9,617,325
Primers	SB	351 to 400	400	2,426,909	4,769,765	5,350,151	7,395,238
Primers	SB	401 to 450	450	1,085,863	3,042,817	3,690,160	5,252,259
Primers	SB	451 to 500	500	507,182	1,481,127	1,403,048	2,531,065
Primers	SB	501 to 550	550	203,979	1,025,678	798,240	1,782,821
Primers	SB	551 to 600	600	79,480	273,892	268,290	470,038
Primers	SB	601 to 650	650	41,083	173,095	209,894	305,801
Primers	SB	651 to 700	700	19,534	152,452	145,964	269,404
Primers	SB	701 and Above	750	0	0	0	0

VOC reductions => negative emission reductions

Coating	Base VOC Range	Upper Limit	Constant Gallons Assumption		Constant Solids Assumption	
			At the Limit	Over the Curve	At the Limit	Over the Curve
Quick-dry Primers	SB 251 to 300	300	4,162,547	(2,757,674)	(6,511,630)	(6,511,630)
Quick-dry Primers	SB 301 to 350	350	2,698,270	2,247,529	3,786,233	2,824,345
Quick-dry Primers	SB 351 to 400	400	1,301,649	2,052,301	1,792,405	2,601,080
Quick-dry Primers	SB 401 to 450	450	(12,055)	1,480,357	1,181,820	1,938,055
Quick-dry Primers	SB 451 to 500	500	116,240	212,779	407,475	416,632
Quick-dry Primers	SB 501 to 550	550	75,269	122,096	224,080	247,871
Quick-dry Primers	SB 551 to 600	600	54,503	121,996	213,452	247,701
Quick-dry Primers	SB 601 to 650	650	33,810	119,633	(977,395)	240,733
Quick-dry Primers	SB 701 and Aba	750	0	0	0	0

VOC reductions => negative emission reductions

Coating	Base VOC Range	Upper Limit	Constant Gallons Assumption		Constant Solids Assumption	
			At the Limit	Over the Curve	At the Limit	Over the Curve
Opaque Stains	WB 0 to 050	50	(237,289)	(237,876)	197,481	197,481
Opaque Stains	WB 051 to 100	100	(283,583)	(281,630)	5,708	40,686
Opaque Stains	WB 101 to 150	150	113,410	16,781	191,194	158,307
Opaque Stains	WB 151 to 200	200	(16,959)	(14,636)	4,513	10,223
Opaque Stains	WB 201 to 250	250	(85,257)	(16,375)	(9,578)	8,598
Opaque Stains	WB 251 to 300	300	2,579	1,645	993	1,955
Opaque Stains	WB 301 to 350	350	0	0	0	0

Increase in limit => increase in emission reductions **AND** VOC reductions => **negative emission reductions**

Coating	Base VOC Range	Upper Limit	Constant Gallons Assumption		Constant Solids Assumption	
			At the Limit	Over the Curve	At the Limit	Over the Curve
Seders	WB 0 to 050	50	59,207	58,647	246,561	246,561
Seders	WB 051 to 100	100	248,952	223,939	240,044	240,993
Seders	WB 101 to 150	150	112,329	141,807	160,965	176,329
Seders	WB 151 to 200	200	(76,705)	14,659	(100,693)	28,737
Seders	WB 201 to 250	250	(178,390)	(3,302)	(67,945)	13,816
Seders	WB 251 to 300	300	2,933	2,505	4,720	5,165
Seders	WB 301 to 350	350	0	0	0	0



CALCULATION OF EXPECTED EMISSION REDUCTION PERCENTAGE

	<u>Emissions (tons/day)</u>	<u>Emissions (tons/yr)</u>	<u>2000 Population</u>	<u>Emissions per capita (# /yr)</u>	<u>Emission Reduction (%)</u>
California Survey of 2000 Sales of Architectural Coatings	137	50,002	33,871,648	2.95	
CA statewide net emission reduction after emission reduction adjustments	14				
CA statewide net emission post proposed rule	123	44,895	33,871,648	2.65	
Post-national rule emission factor				5.36	
Final emission reduction percentage (after emission reduction adjustments)					51%



Emission Reduction Adjustments to CARB rule (using CARB 2000 survey data)

<u>Limit</u>	<u>Rule Categories</u>	<u>Emissions (tons/day)</u>
150	Exterior flats	0.34
380	Solventborne Floor Coatings	0.70
340	Industrial Maintenance (Limit difference OTC vs. CARB)	1.54
680	Lacquers	1.87
380	Nonflats - High Gloss*	0.00
250	Nonflats - Low and Medium Gloss	0.43
350	Primers - Exterior Wood Surfaces	0.00
380	Quick Dry Enamels	0.68
350	Quick Dry Primers	0.32
550	Sanding Sealers*	0.00
	Stains	2.09
550	Clear & Semi-transparent	
350	Opaque	
450	Varnishes*	0.00
	TOTAL Emission Adjustment	8
	CA statewide net emission reduction after reduction adjust	14
	CA statewide net emission post-proposed rule	123

*CARB claimed 0 reduction -- NPCA recommended limit matches majority of the data



CALCULATION OF EMISSION REDUCTIONS

	<u>Emissions</u> (tons/day)	<u>Emissions</u> (tons/yr)	<u>2000</u> <u>Population</u>	<u>Emissions</u> <u>per capita</u> (# /yr)	<u>Emission</u> <u>Reduction</u> (%)
Final emission reduction percentage (after emission reduction adjustments)					51%
Maryland					
Population			5,296,486		
MD current emissions, based on post-national emission rule factor		14,195		5.36	
MD emissions, based on Pechan, post-proposed rule		9,798		3.70	
MD emissions, based on this analysis, post-proposed rule		7,018		2.65	
ADDITIONAL EMISSION REDUCTIONS after reduction adjustments	7.6	2,781			51%

Optional slide

WHAT ARE VOC'S?

- VOC's are volatile organic compounds.
- VOC content is on a "less water, less exempt compounds" basis

$$\frac{\text{Wt. volatile organics}}{\text{Vol. paint-Vol. H}_2\text{O}} = \frac{\text{Wt. volatile organics}}{\text{Vol. solids+Vol. organics}}$$

Example 2 # organics, 33% H₂O: 2 / (1-.33) = 3.0 # / gal = VOC content

