Comments of
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on the

Proposed Rule: Mobile Source Air Toxics
National Benzene Standard for Gasoline
U.S. Environmental Protection Agency (EPA)

Focus on Refineries in PADDs 4 and 5
May 2006

I. COMPLIANCE CHALLENGES FOR PADD 4 and 5 REFINERIES

Under the Proposed Benzene Program
Refineries in PADDs 4 and 5
Unquestionably Face the Greatest Compliance Challenges.

The EPA reports that the average benzene content in the U.S. gasoline pool (excluding California) is 0.97 vol%. The agency is proposing a nationwide benzene standard of 0.62—a 0.35 vol% reduction from current levels. While agency information indicates gasoline benzene levels vary widely across refineries and regions, facilities in the Rocky Mountain and Pacific Northwest regions (PADDs 4 and 5, respectively) unquestionably face the greatest compliance difficulty under the proposed regulation.

This is due to a number of factors. Table VII.C-2 of the proposed rule highlights the large differences in gasoline benzene levels between regions.[1]

TABLE VII.C–2.—BENZENE LEVELS IN GASOLINE PRODUCED CURRENTLY AND UNDER THE PROPOSED PROGRAM

	Number of refineries by gasoline benzene level (vol%)						Benzene level (vol%)*			
	<0.5	0.5–<1.0	1.0–<1.5	1.5–<2.0	2.0–<2.5	>=2.5	Min	Max	Range**	Avg***
Starting Gasoline Benzene Levels**										
PADD 1	4	3	3	0	2	0	0.41	2.19	1.77	0.62
PADD 2	0	5	8	11	1	1	0.60	2.85	2.25	1.32
PADD 3	4	16	10	7	0	2	0.41	3.10	2.69	0.86
PADD 4	0	1	4	6	3	2	0.60	3.56	2.96	1.60
PADD 5****	0	0	1	3	2	2	1.36	3.81	2.44	2.06
Total	8	27	26	27	8	7	0.41	3.81	3.39	0.97
Benzene Levels After Program Implementation										
PADD 1	4	5	1	2	0	0	0.41	1.96	1.54	0.51
PADD 2	1	22	1	2	0	0	0.49	1.95	1.46	0.73
PADD 3	10	27	3	0	1	0	0.36	2.07	1.71	0.55
PADD 4	0	8	7	1	0	0	0.53	1.94	1.40	0.85
PADD 5***	0	4	2	2	0	0	0.54	1.84	1.30	1.04
Total	15	66	14	7	1	0	0.36	2.07	1.71	0.82

*Starting benzene levels based on summer 2003 batch data.
**Range in benzene level (MIN–MAX).
***Average volume-weighted benzene level.
****PADD 5 excluding California.

[1] Federal Register, March 29, 2006—EPA Control of Hazardous Air Pollutants From Mobile Sources, Proposed Rule, p. 15868. For reference purposes a copy of Table VII.C-2 is included.

The table shows refineries in PADDs 4 and 5 have the highest average benzene levels nationally, much higher than the 0.97 vol% U.S. average. Table VII.C-2 indicates:

Gasoline in PADD 4

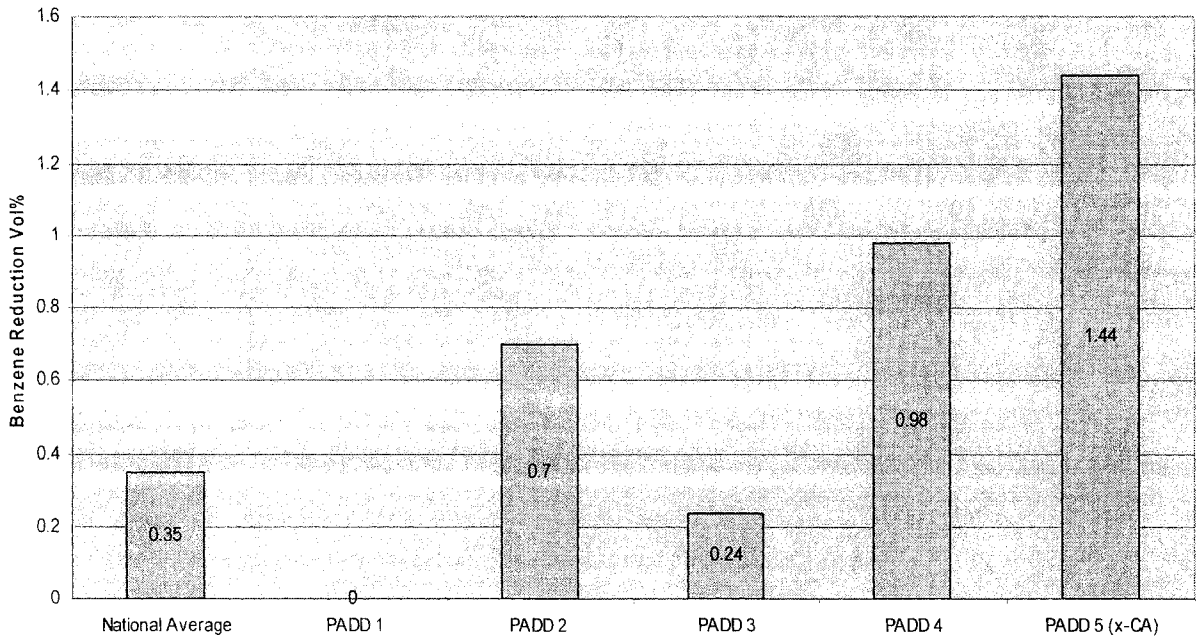
- Second highest average benzene content in the U.S.—1.60 vol% (requiring a .98 vol% reduction to meet a 0.62 vol% standard).
- Largest *range* between minimum and maximum benzene concentrations.
- 94% of refineries produce gasoline with average benzene levels above the U.S. average of 0.97 vol%.

Gasoline in PADD 5 (except CA)

- Highest average benzene content in the U.S.—2.06 vol% (requiring a 1.44 vol% reduction to meet the standard)
- Second highest *range* between minimum and maximum benzene concentrations
- 100% of refineries produce gasoline with average benzene levels above the U.S. average of 0.97 vol%

The information in Table VII.C-2 indicates EPA's proposal would require PADD 4 and 5 refineries (x-CA) to reduce 3 to 4 times more benzene, on average, than facilities located in other regions.

Benzene Reduction (Ave) to Meet 0.62 vol% Standard

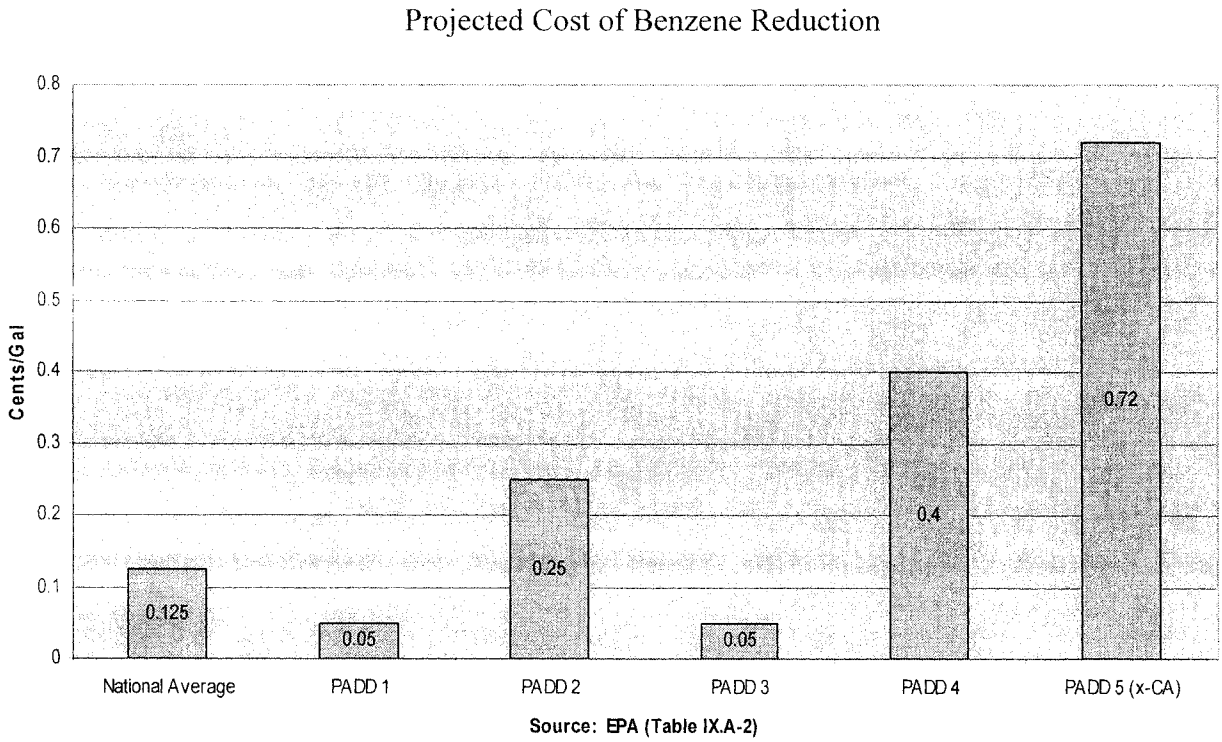


Since PADD 4 and 5 refineries have the highest average benzene levels, they would experience the highest costs achieving the new standard. EPA modeling confirms this fact. Table IX.A-2 of the proposed rule estimates per gallon benzene control costs by PADD.[2]

TABLE IX.A–2.—CURRENT AND PROJECTED BENZENE LEVELS AND COSTS BY PADD
[$2002, 7% ROI before taxes]

	PADD					U.S.
	1	2	3	4	5 (w/o CA)	
Current Benzene Level (vol%)	0.66	1.32	0.86	1.54	1.87	0.97
Projected Benzene Level (vol%)	0.51	0.73	0.55	0.95	1.04	0.62
Cost (c/gal)	0.05	0.25	0.05	0.40	0.72	0.125
Projected Benzene Level (vol%) (With 1.3 vol% Max-Avg Std)	0.50	0.75	0.56	0.90	0.88	0.62
Cost (c/gal)	0.06	0.22	0.03	0.43	1.18	0.130

This table projects the cost of benzene control in PADDs 4 and 5 to be 0.40 and 0.72 cents/gal, respectively. This compares to a nationwide control cost of 0.125 cents/gal. *The information in Table IX.A-2 projects benzene control costs for PADD 4 and 5 refineries would be 3 to 6 times more expensive than the U.S. average.*



Source: EPA (Table IX.A-2)

[2] Federal Register, March 29, 2006—EPA Control of Hazardous Air Pollutants From Mobile Sources, Proposed Rule, p. 15903. For reference purposes a copy of Table IX.A-2 is included.

However, the cost model in Table IX.A-2 projects PADD 4 and 5 refineries investing in control technology *only to reach an average benzene level of about 1.0 vol%, not the proposed 0.62 vol% standard.* The model assumes western refineries would enter 2011 out-of-compliance with the new standard and rely on benzene credits to make up the difference. Moreover, the model does not factor in a price for these credits in the cost estimate. Therefore, **the compliance cost estimates for PADDs 4 and 5 are greatly understated.** Also, the model's assumption of western refineries using benzene credits to achieve the 0.62 standard is premised on large uncertainties; namely, benzene credits would be widely available at a price more affordable than compliance.

Since EPA believes PADD 4 and 5 refineries will rely on credits to meet the national standard, additional compliance lead-time would help ensure these credits are available for refineries to purchase and that a robust credit trading market is in place.

A further economic disadvantage PADD 4 and 5 refineries face with benzene control is the distance from and lack of access to benzene markets. Historically, many refineries near petrochemical markets have had economic incentive to remove benzene from gasoline. This may be one reason why many Gulf Coast refineries manufacture gasoline with benzene levels lower than the nation at large. Conversely, PADD 4 and 5 refineries that rail benzene to petrochemical plants in the Gulf Coast region pay a high transportation penalty to sell benzene to these facilities.

The Proposed 2011 Benzene Compliance Deadline
Conflicts with Other Major EPA Regulatory Deadlines,
Especially For PADD 4 Refineries.

The proposed January 1, 2011 effective date of the benzene control program overlaps with other major EPA regulations already in process, especially for refineries in the Rocky Mountain region:

PADD 4

EPA Regulation:	Effective Date
Tier II Gasoline Sulfur	January 2009
Highway Diesel Sulfur	June 2010
Off-Road Diesel Sulfur	June 2010
Gasoline Benzene (Proposed)	*January 2011*
Renewable Fuels Standard	January 2012

Cumulatively, these major regulations along with significant capacity expansions and other major refinery projects all compete with each other for funding, engineering, construction, fabrication and other limited resources. Projects driven by mandated government regulations always take priority in order to keep the refinery and the products it manufactures in compliance with the law. Unless regulations are properly sequenced, they will have the affect of pushing back other important refinery projects, such as capacity

expansions. This is a concern we have with the proposed effective date for the gasoline benzene standard.

The importance of sequencing regulations was underscored in a study done in 2000 for the U.S. Secretary of Energy by the National Petroleum Council (NPC). This report noted the conflict refiners face between investing in more capacity to make more fuel with the need to comply with major new regulations. The NPC stated that the:

> "timing and size of the necessary refinery and distribution investments to reduce sulfur in gasoline and diesel, eliminate MTBE, and make other product specification changes *such as reducing toxic emissions* from vehicles are unprecedented in the petroleum industry...."
>
> "It is imperative that the fuel specification changes and resulting required investment be *appropriately sequenced with minimum overlap to mitigate the potential for major disruptions in supply...*"

The NPC concluded that if major regulations were properly sequenced that both regulatory and fuel supply needs could be achieved:

> "...proper sequencing of fuel quality changes with minimum overlap, and sufficient lead time to respond to each major specification change...the domestic refining industry can be expected to satisfy product demand under the more stringent product specification requirements..." [3]

We point out that sequencing was a key part of EPA's last major gasoline regulation—Tier 2 Gasoline Sulfur. The agency established the "*geographic phase-in area*" (GPA) in Tier 2 regulations. The EPA recognized that all refineries, regardless of ownership, are small in the GPA and as such, face higher per barrel regulatory compliance costs. They also recognized the unique geographic nature and refinery constraints in the region. One element of EPA's GPA approach was a delayed compliance schedule. This delay was extended an additional two years in the Highway Diesel Sulfur rule for GPA refineries committed to manufacturing 15 ppm sulfur diesel in 2006. This sequencing approach has fostered a smooth transition to lower sulfur gasoline in PADD 4.

In this rulemaking we urge the EPA again to sequence the implementation of the national benzene standard to avoid conflicting with other worthy environmental and capacity expansion projects that are planned and underway at refineries in the West.

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[3] U.S. Petroleum Refining, *Assuring the Adequacy and Affordability of Cleaner Fuels*, National Petroleum Council, June 2000, pg. 2 (emphasis supplied).

Engineering and Construction Availability
For Refinery Projects is Tight and Expensive.

Engineering and construction costs for major refinery projects, and the lead-times for these projects, have both increased in recent years. Rebuilding Gulf Coast refineries damaged by the twin hurricanes, numerous low sulfur fuel regulations, and capacity expansions have stretched engineering resources. Professional engineering, craft labor, design and fabrication shops, etc. that serve U.S. refining are scheduled well into the future. At the March 2006 National Petrochemical and Refiners Meeting some speakers indicated refinery lead-times needed to complete major projects—which traditionally has been four years—would now take an additional 6 to 12 months to complete.

The following excerpt from Platts Global Alert illustrates this problem. Valero recently reported that scarce labor has delayed the expansion of their Port Arthur refinery:

> 'A tight labor market has forced Valero Energy to delay expansion work at its 250,000 b/d Port Arthur, Texas, refinery by about three months this year, Rich Marcogliese, the company's vice president of refining operations, said Tuesday.
>
> 'The expansion, which plans to take the refinery's capacity to 325,000 b/d, was "originally envisioned for a June implementation," Marcogliese told analysts during an earnings conference call. However, due to labor shortages and with equipment deliveries running slow because of increasing demand, "we've had to push it back to September," he said.' [4]

Not only is construction labor serving U.S. refining becoming more difficult to obtain, it is our experience that it is also becoming more expensive to contract. The same article noted above highlights this fact:

> "Scarcity of labor is showing up in inflated labor rates on the Gulf Coast," he [Mr. Marcogliese] said. "We're seeing inflation of about 20-25% (this year)."
>
> In addition to higher hourly worker rates, "we've had to include per-diems for people..."

We affirm that we are experiencing the same kind of construction labor shortages and price hikes mentioned in this article. *The labor availability and cost challenge noted above is heightened for refineries that are small and/or located in isolated areas (typical of PADDs 4 and 5).* In fact, in the benzene proposal, the EPA recognizes the engineering and construction challenges small refiners face in complying with the proposed standards:

> "*...providing small refiners more time to comply would increase the availability of engineering and construction resources to them. Some*

[4] Platts Global Alert, April 25, 2006, Article #115

refiners would need to install additional processing equipment to meet the proposed benzene standard. We anticipate that there could be increased competition for technology services, engineering resources, and construction management and labor. In addition, vendors would be more likely to contract with the larger refiners first, as their projects would offer larger profits for the vendors."

"Temporarily delaying compliance for small refiners would spread out the demand for these resources and probably reduce any cost premiums caused by limited supply.[5]

In the benzene proposal the EPA uses this rational, in part, to recommend a four-year compliance extension of the benzene rule to companies considered small refiners under EPA and Small Business Regulatory Enforcement Fairness Act (SBREFA) definitions.

To this very point we highlight the fact that every refinery located in or near PADD 4 is a small refinery. Many refineries located in PADD 5—especially those in Alaska and Hawaii—are close in size to PADD 4 refineries. Refineries in these western PADDs also face geographic challenges in contracting labor and professional services. In truth, refiners in these regions possess many of the same limitations EPA has identified with SBREFA refineries. *In fairness, much of what is known of SBREFA refineries is also known of other refineries in Rocky Mountain and Pacific Coast states.* The proposal needs to change to reflect this fact.

The Proposed Rule Unintentionally Favors
Large Refiners Over Small and Independent Refiners.

After evaluating the proposed benzene rule we conclude it favors large *multi-refinery refiners over small and independent refiners.*

There are several reasons for this. Consider U.S. refining industry information from Energy Information Agency. The following chart separates the largest 30 refiners in the U.S. by size (capacity) into three groups of 10 refiners each:

Refiners in the U.S. By Size (Capacity)	Number of Refineries Per Refiner (Average)	% of Refineries in PADDs 4 and 5 (x-CA.)
Largest 10 Refiners	7.2	14%
Second Largest 10 Refiners	2.5	32%
Third Largest 10 Refiners	1.8	33%

[5] Federal Register, March 29, 2006, EPA Control of Hazardous Air Pollutants From Mobile Sources, Proposed Rule. Refer to Section entitled: *Rational for Small Refiner Provisions.*

Average Number of Refineries. This chart shows the largest 10 refiners in the U.S. average about seven facilities each, while the second and third groupings of refiners average about two facilities each. *Hence, the 10 largest refiners in the county, on average, have three times more facilities to determine where benzene controls can be most efficiently placed compared to independent and small refiners in the second and third tiers.* Under the proposed ABT scheme, a slight over-compliance at a very large facility may obviate the need to install controls at a smaller facility. Directionally, independent and smaller facilities have far fewer refineries and options in which to optimize compliance under the proposed rule.

Refineries in PADDs 4 and 5. As noted earlier, EPA believes benzene compliance challenges, in general, will be the greatest in the western United States (excluding CA.). In this area of the nation large refiners own few refineries. Only 14% of the 72 refineries owned by the largest 10 refiners are located in western PADDs. Conversely, 32-33% of all refineries owned by independent and small refiners are located in PADDs 4 and 5. *Independent and small refiners in the U.S. are more than twice as likely to own a refinery in PADDs 4 and 5 as large refiners—the very regions where compliance will be the hardest.*

Refineries Already in Compliance with the Proposed Standard are not in PADDs 4 and 5. EPA's benzene model estimates 19 refineries are predicted to maintain current gasoline benzene levels and over comply with the standard *without making any additional process improvements.* According to Table VII.C-2 in the proposed rule, all refineries in PADDs 4 and 5 (except one) have gasoline benzene levels of 1 vol% or more. This means virtually all PADD 4 and 5 refineries need substantial work to meet the new benzene standard. It also means these 19 refineries already in compliance are located outside of the western United States where most refineries are owned by large oil companies.

Considered together, these dynamics indicate independent and small refiners have fewer compliance options and greater compliance challenges meeting the proposed benzene standard than the nation's largest refiners.

II. RECOMMENDATIONS

The compliance challenges PADD 4 and 5 refineries (x-CA) would face with the proposed gasoline benzene rule, as noted above, are considerably more significant than refineries would face elsewhere in the county. The challenges highlighted earlier in these comments are summarized as follows:

- Western refineries (x-CA) will need to reduce 3 to 4 times more benzene, on average, than facilities in other regions.
- Per gallon benzene control costs for PADD 4 and 5 refineries (x-CA) will be many times more expensive than the U.S. average.
- EPA modeling projects western refineries (x-CA) will heavily use and rely on benzene credits to meet a national 0.62vol% standard.

- Western refineries are economically disadvantaged in a benzene control program due to the lack of access to benzene markets.

- The proposed 2011 effective date for benzene control overlaps with other major EPA regulations affecting refineries that are already in place, especially in PADD 4. Gasoline benzene regulations will compete for financial and manpower resources available to a refinery for capacity expansions and other major projects.

- Professional engineering, construction, fabrication resources available for refinery projects are constrained and expensive. EPA has pointed out that these effects are more pronounced for smaller facilities.

- The very arguments that EPA uses to justify added compliance time for SBREFA refineries under the gasoline benzene proposal equally apply to most refineries in PADDs 4 and 5 (x-CA).

- There is a preponderance of independent and small refineries in the west (x-CA).

Against this backdrop, we respectfully offer the following recommendations to the proposed benzene regulation:

1. Implement a nationwide 0.62vol% annual average gasoline benzene standard (same as EPA proposal).

2. Refiners nationwide would meet the 0.62vol% standard on January 1, 2011 (same as EPA proposal).

3. Implement the Average, Banking and Trading program (ABT) proposed by EPA with minor changes noted below.

4. Refineries in PADDs 4 and 5 (x-CA) willing to accept an annual average gasoline benzene standard of 1.3vol% on a permanent basis could elect to delay compliance with the 0.62vol% benzene standard until January 1, 2015:

    - There would be no per gallon benzene cap.

    - Refiner participation in the 1.3vol% annual average gasoline benzene standard would be optional.

    - The election would be available to all refiners owning refineries in PADDs 4 and 5 (x-CA).

    - If a refiner elects to have one or more PADD 4 and 5 refineries participate in the 1.3vol% annual average standard, all refineries owned by that refiner in other PADDs would still be required to comply with the 0.62vol% by January 1, 2011.

5. Refiners with more than one refinery in either PADD 4 or 5 could meet a 1.3vol% annual average gasoline benzene standard across the PADD if the facilities are located not more than 100 geographic[3] miles apart.

6. Refineries in PADDs 4 and 5 opting-in to a 1.3vol% annual average gasoline benzene standard would be subject to the same ABT provisions EPA is proposing for SBREFA refiners.

7. The ABT provisions EPA has proposed in connection with the 0.62vol% gasoline benzene standard would still apply to PADD 4 and 5 refineries opting-in to the 1.3vol% annual average gasoline benzene standard. However, benzene credits could not be used to help the PADD 4 or 5 refineries meet the 1.3vol% annual average gasoline benzene standard.

These recommendations maintain the basic goals, objectives and the regulatory structure EPA has proposed. They could easily be implemented into EPA's final regulation. **There are many reasons supporting this approach:**

- The phase-in plan achieves the desired 0.62 vol% benzene standard nationwide. *Nearly 90% of the nation's refineries would meet this new standard on January 1, 2011, as proposed by EPA.*

Compliance Date	Refineries Located In:	% of U.S. Refining Capacity (x-CA)
1/1/2011	PADDs 1,2, 3	89%
1/1/2011 or 2015	PADDs 4,5	12%*

* Rounding
Figures exclude SBREFA Refineries

- Refineries accepting a permanent 1.3vol% annual average standard assure that *bona fide gasoline benzene reductions will be made in the regions where average levels are the highest.* In the long-term, significant gasoline benzene reductions would be made in those regions most needing reductions.

- Providing PADD 4 and 5 refineries (x-CA) with the election recognizes the unique compliance challenges these facilities face relative to other refineries nationwide. In sum, regulatory flexibility would be directed to refineries facing the greatest compliance challenges.

- While some refiners may consider gasoline benzene control to be a modest regulation in terms of complexity and economic impacts, the proposed benzene rule represents a *significant regulation* for many refineries in PADDs 4 and 5 (x-CA)

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[3] In this instance "geographic miles" refers to actual distance between facilities (not road miles).

where current gasoline benzene levels are well above the national average. The impact of the regulation is even more challenging for small and independent refiners who have limited averaging options and whose refining operations are concentrated in PADDs 4 and 5.

- The election for PADD 4 and 5 refineries takes into account refinery size, ownership and geographic constraints inherent with facilities located in these western PADDs 4 and 5.

- Sequencing compliance phase-in will help allocate scarce engineering, professional labor and other construction resources that are already heavily scheduled in the refining industry for the next several years.

- The election avoids the logjam of major EPA regulations for PADD 4 refineries. It also allows time for refineries to devote financial and other resources to capacity expansions.

- The election for PADD 4 and 5 refineries provides time to determine if the proposed ABT system is developing as intended. This is important since EPA models assume refineries in PADDs 4 and 5 will rely on credits for compliance. This would help make compliance more cost effective.

- Allowing a refiner who has facilities located in close proximity to each other (100 geographic miles or less)—to average across the PADD—enables these facilities to continue utilizing operational efficiencies and synergies that exist between the facilities. This represents an important element of regulatory flexibility to the few refiners affected by this option who may elect compliance with a 1.3vol% annual average gasoline benzene limit.

- Since a significant number of SBREFA refineries are located in PADDs 4 and 5 (x-CA), allowing additional time for non-SBREFA refineries to comply with the proposed benzene standard helps level the competitive playing field.

III. CONCLUSION

We thank personnel at EPA for considering these comments and recommendations.

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