



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 8 2007

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

MEMORANDUM

SUBJECT: National Petroleum Refinery Initiative Implementation: Application of Clean Air Act Stationary Source Penalty Policy for Violations of Benzene Waste Operations NESHAP Requirements

FROM: Adam M. Kushner, Director
Air Enforcement Division
Office of Civil Enforcement

A handwritten signature in black ink, appearing to read "Adam M. Kushner".

TO: Air Enforcement Managers, Regions 2-6, 8-10
Air Branch Chiefs, Regions 2-6, 8-10
Regional Counsel, Regions 2-6, 8-10

The Clean Air Act Stationary Source Civil Penalty Policy ("Penalty Policy") provides general guidance for determining the amount of civil penalties EPA will seek in settlement of enforcement actions (whether administrative or judicial) under Title I of the Clean Air Act ("CAA" or "the Act"). The policy does not, however, specifically address how penalties for violations of the Benzene Waste Operations NESHAP (40 C.F.R. Part 61, Subpart FF) ("BWON") should be calculated. Our efforts to ensure compliance by refineries with global refinery consent decrees as well as other Clean Air Act requirements has identified the BWON as a potential area of noncompliance, in particular compliance with the "2 Mg" or "6 BQ" compliance options. Due to certain unique aspects of the BWON compliance options, this memorandum outlines a standard approach for applying the Penalty Policy in these circumstances.

Specifically, this memorandum is intended to address violations at a refinery that has a total annual benzene ("TAB") of over 10 Mg per year and has exceeded the compliance option that it has selected, either the "2 Mg" or "6 BQ" option. Violations of other BWON requirements, such as failing to monitor operations and late reporting or recordkeeping, are not specifically addressed by this memorandum as they more closely match violations of regulatory requirements that are clearly addressed by the Penalty Policy. This memorandum follows the format and approach of the Penalty Policy in its discussion of each of the applicable factors, and should be followed when calculating the economic benefit and gravity component of a penalty for refineries that have exceeded their allowable uncontrolled benzene quantities under the 2 Mg or 6 BQ options.

This memorandum discusses only those portions of the Penalty Policy that are unique to addressing violations of the BWON. Other factors listed in the Penalty Policy for adjusting the gravity component (*e.g.*, history of noncompliance, litigation risk, etc.) are not unique to BWON violations, and therefore should be applied as provided in the Policy.

A. ECONOMIC BENEFIT OF NONCOMPLIANCE COMPONENT

This component should be calculated in the same manner as any other type of violation. Examples of economic benefit to consider for BWON violations typically include delayed and avoided costs of controls on individual drain systems, tanks, and other equipment for waste streams that were previously managed in uncontrolled units and that resulted in a refinery exceeding its applicable compliance option. Because the BWON offers many control alternatives for achieving compliance, and because, for a variety of reasons, a refiner may elect to undertake more actions than are necessary to meet its applicable control option, the economic benefit calculation should include only those costs associated with actions that are necessary to bring the source into consistent compliance.

B. GRAVITY COMPONENT

To the extent a refiner violates its BWON compliance option for more than one year, the five year statute of limitations for the collection of a civil penalty should mark the maximum number of years of violation for which the gravity component is computed. For example, if evidence establishes that a refiner has violated its compliance option since the inception of the BWON regulation in April 1993, the gravity calculation nonetheless should be limited to violations of the BWON for the most recent five years of noncompliance. The exception to this practice is where a tolling agreement is in place. Then, the gravity component can be computed for violations occurring during the five year limitations period plus the amount of time the claim is tolled pursuant to the Tolling Agreement.

Under this guidance, the gravity component for a violation of a refiner's compliance option is calculated on a per-year basis, not on a per-stream basis; that is, a single penalty is calculated for each year of noncompliance, taking all streams/locations that are not controlled but should have been into account in each year.

1. Actual or Possible Harm

As an initial matter, for multi-year violations, each year should be calculated on an individual basis and then added together for a sum total for the "actual or possible harm" component. Thus, for example, if a refinery violates its control option in 2004, 2005, and 2006, the "actual or possible harm" in 2004 should be calculated by adding together: (i) the 2004 "level of violation;" (ii) the 2004 "toxicity of the pollutant" fine of \$15,000; and (iii) the 12 months of violations in 2004 "length of violation" fine of \$15,000. This same addition should

then be performed for calendar years 2005 and 2006.¹ Then, all three years should be summed together.

This manner of proceeding does not reflect the standard method of calculating “actual or possible harm” for routine emission limit violations. However, for the reasons described in the “level of violation” discussion below, it has been determined that the peculiarities of the BWON justify a year-by-year calculation for “actual or possible harm” with the exception of the “toxicity of pollutant” component.

a. **Level of Violation (Amount Above Standard)** \$ _____

A “level of violation” or “amount above standard” should be calculated as a component of the gravity for a BWON violation. Noncompliance with either compliance option occurs when the total quantity of benzene in uncontrolled waste streams is in excess of the applicable compliance option. While the 2 Mg and 6 BQ compliance options are not typical emission standards or limits (such as a part-per-million emission limit on a discrete source), they do reflect a regulatory decision to limit uncontrolled emissions of benzene to below certain levels. As such, a refinery that exceeds its applicable compliance option by, for example, 30.0 Mg potentially emits far more benzene than a refinery that exceeds its option by 1.0 Mg. As such, the penalty should reflect this potentially greater environmental harm.

First Step – 2 Mg or 6 BQ Option: The first step in calculating the “level of violation” is to identify whether the refinery is under the 2 Mg or 6 BQ option, and to identify the total uncontrolled benzene for the refinery for the calendar year(s) in which a violation(s) occurred.

The “total uncontrolled benzene” *includes* the 2.0 Mg or 6.0 Mg of uncontrolled benzene allowable under the applicable compliance option. Thus, for example, for a refinery that utilizes the 6 BQ option and reports uncontrolled benzene of 8.0 Mg, the “total uncontrolled benzene” is 8.0 Mg, not just the additional 2.0 Mg of benzene over the 6.0 Mg allowed under the 6 BQ option. For the same reason, a 2 Mg refinery that reports 5.5 Mg of uncontrolled benzene, the total uncontrolled benzene is 5.5 Mg, not 3.5 Mg. However, for 2 Mg refineries, the “total uncontrolled benzene” does *not* include any contributions from streams with a concentration of less than 10 ppm because the 2 Mg option does not require any of these streams to be controlled.

Second Step – Determining “Amount Above Standard”:

Because there generally are two different compliance methods under the BWON, for purposes of calculating the “amount above standard” and to treat refineries using the 2 Mg and

¹ As provided in Section II.B.1.b of the Penalty Policy, the “toxicity of the pollutant” factor is determined on a per-pollutant basis. Therefore, when calculating a multi-year penalty, the “toxicity of the pollutant” should be included only once (*i.e.*, as a component for the first year of calculation only).

6 BQ options equitably, the “standard” against which the level of violation for both options should be measured is “6.” For penalty calculation purposes, this is the most appropriate level to use because, in creating the BWON, the Agency determined that “6 Mg” most closely approximated a risk-based limit. *See* 58 Fed. Reg. 3072, 3085 (Jan. 7, 1993). The 2 Mg option was developed in response to comments advocating an alternative compliance option, but from a risk-based perspective is considered equivalent to the 6 BQ option. *Id.* However, if two separate standards were used for determining the “amount of standard,” a 2 Mg refinery would pay three times more for this component of gravity than a 6 BQ refinery, even though the relative harm to the environment may not be three times greater.

Therefore, for purposes of determining the “amount above standard” for each option, instead of two different ones (*i.e.*, 2 for 2 Mg refineries and 6 for 6 BQ refineries) a single standard is used to ensure parity as between 2 Mg and 6 BQ refineries. The steps described below effectively “normalize” the two compliance options for calculating this component of gravity.

Refineries Using the 2 Mg Option: To capture the level of violation for total uncontrolled benzene of between 2.0 and 6.0 Mg for refineries using the 2 Mg option, the following schedule should be used:

<u>Total Uncontrolled Benzene</u>	<u>Amount</u>
2.1 - 3.0 Mg	\$ 7,500
3.1 - 4.0 Mg	\$15,000
4.1 - 5.0 Mg	\$22,500
5.1 - 6.0 Mg	\$30,000

This equates to \$7,500 per uncontrolled Mg. For example, for a 2 Mg refinery with uncontrolled benzene of 3.04 Mg, this component of the penalty would be \$7,500. For a 2 Mg refinery with uncontrolled benzene of 5.06 Mg, this component of the penalty would be \$30,000. For a 2 Mg refinery with uncontrolled benzene of greater than 6.0 Mg, \$30,000 would be added to the calculation set forth immediately below.

Refineries Using the 6 BQ option and Refineries Using the 2 Mg option that Have Total Uncontrolled Benzene Above 6.0 Mg: As discussed above, in calculating the “level of violation” for refineries using either the 6 BQ option or the 2 Mg option with total uncontrolled benzene above 6.0 Mg, the “standard” in the Penalty Policy against which the level of violation should be measured is “6.” Accordingly, the “percent above standard” table in the Penalty Policy, with its corresponding dollar amounts, should then be used to calculate the dollar amount for the “level of violation.”

Examples:

Refinery A uses the 6 BQ option with a reported total uncontrolled benzene of 24 Mg. The formula to follow for “level of violation” is as follows – [(Total uncontrolled benzene - 6 Mg) ÷ 6] x 100. Therefore:

$$[(24-6) \div 6] \times 100 = 300\%$$

300 % corresponds to \$50,000 on the Penalty Policy table

Penalty for Refinery A ≅ \$50,000

Refinery B uses the 2 Mg option, also with total uncontrolled benzene of 24 Mg. Its penalty for “level of violation” would be calculated as follows:

\$30,000 representing a penalty from the schedule above for the uncontrolled quantity from 2 Mg to 6 Mg

plus \$50,000 representing a penalty for the quantity from 6 Mg to 24 Mg, calculated in the same manner as Refinery A, above (300% above the standard of 6, or \$50,000 from the Penalty Policy table)

Penalty for Refinery B ≅ \$80,000

Third Step – Calculations Involving Multi-Year Violations. The Penalty Policy states that “[o]rdinarily the highest documented level of violation should be used. If that level, in the opinion of the litigation team, is not representative of the period of violation, then a more representative level of violation may be used.” While this calculation is generally straightforward when applied to a violation of a parts-per-million emission limit over a rolling average, there are potentially several different (and inconsistent) approaches when applied to multi-year violations of the annual calculation used for determining compliance with the BWON.

One approach is to calculate a separate penalty for each year, based on the percent above the standard for each individual year. Then, the dollar figures for each of the years in violation are summed together to calculate the total “level of violation.”

A second approach is to utilize the year in which the refinery exceeds its compliance option by the greatest amount and apply the percentage above standard in that one year to calculate the “level of violation.”

A third approach is to average the amounts of total uncontrolled benzene for all years in which the refinery exceeds its compliance option, and to utilize the average in calculating the percent above standard.

While each approach has some basis in the Penalty Policy, the first approach is the most appropriate for the BWON because it is the most consistent with the structure of the NESHAP compliance standard for which a penalty is sought: compliance is determined on the basis of a single calendar year – that is, it is a single block (not a rolling) standard. In addition, this approach does not treat those who have five years of violations the same as those who have a spill in one year. Third, this approach reflects the seriousness of multi-year violations which may not be adequately captured by the “Length of Violation” component, discussed below.

Examples:

	<i>Refinery A</i> <u>6 BQ option</u>	<i>Refinery B</i> <u>2 Mg option</u>
<i>Year 1</i>	<i>3.5 Mg</i>	<i>3.5 Mg</i>
<i>Year 2</i>	<i>10 Mg</i>	<i>10 Mg</i>
<i>Year 3</i>	<i>20 Mg</i>	<i>20 Mg</i>

Level of Violation for Refinery A (6 BQ):

<i>Year 1</i> ≡	\$ 0	<i>(not in violation)</i>
<i>Year 2</i> ≡	\$ 15,000	$[(10-6) \div 6] \times 100 = 66\%$ over standard = \$15,000 <i>(from the Penalty Policy table)</i>
<i>Year 3</i> ≡	\$ 40,000	$[(20-6) \div 6] \times 100 = 233\%$ over standard=\$40,000 <i>(from the Penalty Policy table)</i>
TOTAL	\$55,000	

Level of Violation for Refinery B (2 Mg):

<i>Year 1</i> ≡	\$ 15,000	
<i>Year 2</i> ≡	\$ 45,000	\$30,000 + \$15,000 <i>(66% above standard)</i>
<i>Year 3</i> ≡	\$ 70,000	\$30,000 + \$40,000 <i>(233% above standard)</i>
TOTAL	\$130,000	

b. Toxicity of Pollutant

\$ 15,000

The Penalty Policy specifies this amount for each hazardous air pollutant (HAP) under Section 112 of the Clean Air Act. Benzene is a HAP; therefore, \$15,000 should be added for this factor. Toxicity should be factored in only once when calculating the gravity component, regardless of duration (*i.e.*, \$15,000 should be added to the total penalty to account for the

toxicity of benzene, rather than adding \$15,000 per year for a multi-year violation). Other factors address duration.

c. Sensitivity of Environment \$ 0 _____

The Penalty Policy provides that this factor is relevant only to SIP and NSPS cases, Therefore it is inapplicable to benzene-related violations.

d. Length of Time of Violation \$ _____

Each calendar year in which a refinery exceeds its applicable compliance option should be considered a separate 12 month period of violation. Consistent with the Penalty Policy's guidance, therefore, \$15,000 should be assessed for each calendar year in which a refinery exceeds its compliance option. Thus, if a refinery exceeds its compliance option in calendar years 2003, 2005, and 2006, the total penalty assessed for "length of time of violation" should be \$45,000 (3 x \$15,000). Because the chart accompanying the discussion of this factor in the Penalty Policy is broken down by months, the Penalty Policy can be read to treat this as 36 individual months of violations (and would correspond to \$35,000 in the Penalty Policy chart for this duration). However, because the BWON is an annual (not a rolling) standard, it is more appropriate to treat each year of violation separately for determining the length of violation.

While numerous actions or inactions may cause the violation of an applicable compliance standard, the violation that should be utilized for purposes of the "length of time" is the actual exceedance of the applicable compliance standard. For example, each individual drain that was not controlled and/or each tank water draw that was not properly handled should not be used to calculated separate penalties for "length of time." Those separate actions or inactions – which are akin to "emission control equipment violations" or "work practice standard violations" – are more appropriately captured under the "importance to the regulatory scheme" factor discussed below.

Given the five year statute of limitations, the maximum dollar figure that can be associated with the "length of time of violation" is \$75,000, unless there is a Tolling Agreement.

2. IMPORTANCE TO THE REGULATORY SCHEME \$5000/location

In the typical case, the violation of an emissions standard – which results in the assessment of a penalty under the "level of violation" factor – does not also result in the assessment of any penalty under the "importance to the regulatory scheme" factor. However, because of the uniqueness of the BWON, the types of violative activities that cause the exceedance of a control option include actions that typically are considered "emission control equipment violations" or "work practice standard violations," such as failing to install p-traps on an individual drain system, failing to keep covers on sewer system manholes, or failing to manage turnaround wastes in a manner that meets the emission control requirements of the

BWON regulations. Therefore, it is appropriate to assess penalties under both the “level of violation” factor and the “importance to the regulatory scheme” factor. By so doing, a company that has a one-time spill (and thus, may have a relatively high “level of violation”) and a company that has a relatively low “level of violation” but fails to control numerous locations (and thus, may be considered more “negligent” than the company with the one-time spill) will be treated differently under this “importance to the regulatory scheme” factor.

First Step: For the year of the violation, or for the first year of the violation if there are multi-year violations, determine the fewest possible locations that needed to be controlled to meet the control option. Given the flexibility built into the BWON, a refinery may have been able to take potentially numerous, different actions to achieve compliance in any given year. In the first step of the “importance to the regulatory scheme” computation, identify the fewest number of locations that could have been controlled to achieve compliance.

Example 1. A 6 BQ refinery reports uncontrolled benzene of 8.9 Mg. On its annual report, the refinery identifies the following uncontrolled waste streams, together with the following quantities: tank water draws from 4 tanks (1.1 Mg each for a total of 4.4 Mg); 3 uncontrolled vacuum trucks (.5 Mg each for a total of 1.5 Mg); 2 desalter bypass locations to an uncontrolled sewer (1 Mg); numerous miscellaneous streams (e.g., turnaround wastes, lab wastes) (2 Mg). The fewest number of streams that would have to be controlled to meet the 6 BQ option would be 4: all 4 of the tanks.

Example 2. A refinery learns that, despite its prior beliefs, it failed to control 100 different sewer locations in 6 different process units. However, the refinery demonstrates that controlling only 50 of those locations in 3 different process units would have resulted in compliance. Therefore, even if the refiner chooses to control all 100 locations, only the 50 needed to achieve compliance should be used for calculating this component of the penalty.

Second Step: Calculate the penalty for the number of locations identified. The policy calls for a range of penalties of between \$5,000 to \$15,000 for control equipment and work practice standard violations. In applying this range in a particular case, however, it is important to keep in mind that under the BWON, there generally are an extremely large number of locations that must be controlled in order to meet the applicable compliance option. For example, an average-size, non-complex refinery can have thousands of waste streams managed in a variety of ways, including oily water sewers that have hundreds of locations where controls are required to be properly operated. Therefore, given the large number of potential non-compliance locations and/or waste streams, \$5,000 for each uncontrolled location or waste stream generally should be the maximum figure. However, the litigation team has flexibility to increase or decrease this amount depending upon the circumstances.

For example, where a refinery fails to install controls on fifteen process drains within one unit and these failures cause the exceedance of the applicable control option, it may be appropriate, based on the circumstances, to consolidate all of the violations into a \$15,000 penalty. On the other hand, if a refinery fails into cover its API separator and this failure causes the exceedance, it may be appropriate to assess a penalty of \$15,000 for this single type of failure. In general, control equipment or work practice violations that contribute to very significant amounts of uncontrolled benzene should be considered for the upper range of the penalty scale. Control equipment or work practice violations that contribute rather minimal amounts of uncontrolled benzene should be considered for the lower range of the penalty scale or for possible consolidation based on the number of process units involved.

From Example 1 above: There is nothing peculiar about this example that would suggest a deviation from the \$5,000 per location, so in general, the penalty for this component would be \$20,000.

From Example 2 above: The maximum amount that should be assessed for this component is \$250,000 (50 locations times \$5,000). However, the team has the flexibility to decrease this amount to as low as \$45,000 (3 process units times \$15,000), depending upon the circumstances.

Third Step (for multi-year violations): For each of the years of violation after the first year, determine the fewest possible locations that needed to be controlled to come into compliance but do not recount any locations that already were penalized in a prior year. If the same streams should have been controlled in multiple years to achieve compliance, those streams are counted only once for purposes of this calculation.

From Example 1 above: Assume that in the year following the Refinery's reporting of 8.9 Mg of uncontrolled benzene, the Refinery reported the same uncontrolled quantity because it had not changed its practices or control equipment, and in addition, it had 2 spills of 2 and 4 Mg. For this second year, the new number of locations is two: the two spills. Because the four uncontrolled tank water draws already were penalized in the previous year, there will not be another penalty for them for this second year.

Fourth Step (for multi-year violations): Calculate the penalty for the number of new locations identified.

From Example 1 above: For the 2 additional locations (i.e., the 2 spills), the penalty would generally be \$10,000 (2 x \$5,000).

3. SIZE OF VIOLATOR

\$ _____

This factor should be applied as specified in the penalty policy. There are no BWON-specific issues associated with this factor. This factor should be applied only once. It should not be applied multiple times even if there are multi-year violations.

4. ADJUSTING THE GRAVITY COMPONENT

Degree of Cooperation. The factors identified above are the only ones from the Penalty Policy that are addressed by this memorandum for purposes of application to BWON violations. Of some note, however, is the question of whether, and if so, what type of potential penalty reductions should be given to refiners who agree, through an enforceable document, to undertake actions that are projected to result total uncontrolled benzene of less than that allowed by the applicable option.

For example, a refiner may be required to install controls on its sewer system at a cost of \$100,000 in order to comply with its applicable compliance option. For a variety of reasons, however, the refiner may elect to install additional controls at a cost of \$1.5 million. One of the reasons for undertaking the additional investment may include the desire to create a greater “cushion” for compliance in years where spills might occur, but nonetheless, it is appropriate to encourage activities that go beyond controlling to the minimum requirements.

Therefore, in order to provide incentives to refiners who are willing to commit to additional injunctive relief obligations, a refiner’s additional actions and the cost of these additional actions should be considered positive acts of cooperation under the Penalty Policy. These acts should serve to mitigate the gravity portion of the penalty under the “degree of cooperation” factor.

By contrast, because of the nature of the BWON regulation – in that a major part of it is based on a once-a-year computation that can vary significantly from year to year and in that refiners can choose from a large suite of different control options – a commitment for additional investment or controls to create a greater “cushion” for compliance will generally not be considered appropriate as a Supplemental Environmental Project.

Other Adjustment Factors. Other factors listed in the Penalty Policy for adjusting the gravity component (*e.g.*, history of noncompliance) are not unique to BWON violations, and therefore should be applied as provided in the policy.

In addition, pursuant to the *Civil Monetary Penalty Inflation Adjustment Rule*, 69 Fed. Reg. 7121 (Feb. 13, 2004) (40 C.F.R. Parts 19 and 27), the calculation of the initial gravity component should be adjusted according to the time that the violation occurred.²

² See also “Modifications to EPA Penalty Policies to Implement the Civil Monetary Penalty Inflation Adjustment Rule (Pursuant to the Debt Collection Improvement Act of 1996, Effective October 1, 2004)” (Memorandum from Thomas V. Skinner, Acting OECA Assistant

1. For violations that occurred after March 15, 2004, the gravity is increased for inflation by a factor of 1.2895.
2. For violations that occurred after 1997 and prior to March 15, 2004, the gravity is increased for inflation by a factor of 1.10.

**EXAMPLE OF CALCULATING THE GRAVITY COMPONENT
OF A BWON PENALTY FOR REFINERY XXX
UNDER THE AED CLARIFYING POLICY**

Facts: Refinery XXX utilizes the 2 Mg compliance option.

Refinery XXX had the following amounts of total uncontrolled benzene:

2002	334.7
2003	90.0
2004	4.07
2005	10.04
2006	8.0

I. CALCULATING THE ACTUAL OR POSSIBLE HARM AND THE IMPORTANCE TO THE REGULATORY SCHEME ON A PER YEAR BASIS

A. Calendar Year 2002

1. Level of Violation	\$ 945,000
$[(334.7 - 6) \div 6] \times 100 \equiv 5478\%$ above standard $50,000 + [[(5478 - 300) \div 30]] \times 5000] \equiv \$915,000$ <i>(Reminder: $[(5478 - 300) \div 30]$ is rounded up to the nearest whole number)</i> $\$915,000 + \$30,000$ (for the amount between 2 and 6 Mg) $\equiv \$945,000$	
2. Toxicity of Pollutant	\$ 15,000
3. Sensitivity to Environment	\$ 0
4. Length of Violation	\$ 15,000
5. Importance to the Regulatory Scheme	\$ 195,000

3 streams that were routed to an uncontrolled blowdown stack resulted in a massive amount of uncontrolled benzene. Because of the magnitude of these 3 control failures, we assessed \$15,000 per stream for a total of \$45,000.

Approximately 30 maintenance and tar streams contributed approximately 4.5 Mg to the excess uncontrolled benzene quantity. We assessed \$5,000 per stream for a total of \$150,000. If the overall magnitude of the control failures for 2002 had been lower, we might have consolidated these streams to reduce the penalty.

TOTAL FOR CY 2002 **\$1,170,000**

B. Calendar year 2003

1. Level of Violation **\$ 265,000**

$[(90 - 6) \div 6] \times 100 \equiv 1400\%$ above standard
 $50,000 + [(1400 - 300) \div 30] \times 5000 = \$235,000$
(Reminder: $[(1400 - 300) \div 30]$ is rounded up to the nearest whole number)
 $\$235,000 + \$30,000$ (for the amount between 2 and 6 Mg) $\equiv \$265,000$

2. Toxicity of Pollutant **\$ 0**

3. Sensitivity to Environment **\$ 0**

4. Length of Violation **\$ 15,000**

5. Importance to the Regulatory Scheme **\$ 15,000**

3 wet weather streams were directed to 3 separate lift stations. We assessed \$5,000 per stream for a total of \$15,000.

The remainder of the causes of the elevated uncontrolled benzene were at locations we counted in CY 2002 and therefore do not recount.

TOTAL FOR CY 2003 **\$ 295,000**

C. Calendar Year 2004

1. Level of Violation **\$ 22,500**

From table in AED clarifying memo

2.	Toxicity of Pollutant	\$	0
3.	Sensitivity to Environment	\$	0
4.	Length of Violation	\$	15,000
5.	Importance to the Regulatory Scheme	\$	0

All of the uncontrolled quantity was caused by previously identified uncontrolled locations. Therefore, we do not add more.

TOTAL FOR CY 2004 \$ **37,500**

D. Calendar Year 2005

1.	Level of Violation	\$	45,000
	$[(10 - 6) \div 6] \times 100 \equiv 66\% \text{ above standard} \equiv \$15,000$ $\$15,000 + \$30,000 \equiv \$45,000$		
2.	Toxicity of Pollutant	\$	0
3.	Sensitivity to Environment	\$	0
4.	Length of Violation	\$	15,000
5.	Importance to the Regulatory Scheme	\$	25,000

1 for benzene leak @ \$5,000
1 for vacuum truck @ \$5,000
2 for dock waste locations @ \$5,000
1 for lab waste @ 5,000
Remainder was caused by locations already accounted for

TOTAL FOR CY 2005 \$ **85,000**

E. Calendar Year 2006

1.	Level of Violation	\$ 40,000
	$[(8 - 6) \div 6] \times 100 \equiv 33\% \text{ above standard} \equiv \$10,000$	
	$\$10,000 + \$30,000 \equiv \$40,000$	
2.	Toxicity of Pollutant	\$ 0
3.	Sensitivity to Environment	\$ 0
4.	Length of Violation	\$ 15,000
5.	Importance to the Regulatory Scheme	\$ 0

All of the uncontrolled quantity was caused by previously identified uncontrolled locations. Therefore, do not add more.

TOTAL FOR CY 2006 **\$ 55,000**

II. SUM UP EACH SEPARATE YEAR

2002	1,170,000	
2003	295,000	
2004	37,500	
2005	85,000	
<u>2006</u>	<u>55,000</u>	
TOTAL		\$1,642,500

III. DETERMINE SIZE OF VIOLATOR COMPONENT³

Refinery XXX (50% PDA) \$1,642,500

³ If, as with Refinery XXX, the size is so great that the Preliminary Deterrence Amount is calculated as 50% of, the 50% for size could be calculated for each individual year and arrive at the same final PDA. However, because the size of violator may not uniformly result in use of 50% of the PDA, this component should not be added for each individual year's calculation.

IV. DETERMINE PRE-ADJUSTMENT TOTAL

TOTAL **\$3,285,000**

V. ADJUSTMENTS

The only one will we do here is the inflation adjustment. Because there are different inflation adjustment figures during the period of the violation, this has to be done a little specially.

Specifically, we will use the gravity figure for “actual and possible harm” and “harm to the regulatory scheme” for each separate year. For the size of violator component, we will divide the total size of violator amount (in this case, \$1,642,500) by the total number of years of violation (5) and add that amount to each year’s total.

2002	$[\$1,170,000 + (1,642,500 \div 5)] \times 1.1 \equiv$	\$1,648,350
2003	$[\$ 295,000 + (1,642,500 \div 5)] \times 1.1 =$	\$ 685,850
2004	1/1/04 - 3/15/04 is approximately 20% of the year. 3/16/04 - 12/31/04 is approx. 80% of the year. $[[.2 \times [37,500 + (1,642,500 \div 5)] \times 1.1 \equiv$ \$ 80,520 $[[.8 \times [37,500 + (1,642,500 \div 5)] \times 1.2895 \equiv$ \$ 377,566	
2005	$[\$ 85,000 + (1,642,500 \div 5)] \times 1.2895 \equiv$	\$ 533,208
2006	$[\$ 55,000 + (1,642,500 \div 5)] \times 1.2895 =$	\$ 494,523
	TOTAL	\$3,820,017

(Note: For a final figure that is precise to the dollar (which will nearly always be obtained after adjusting for inflation), it is best to round it up or down. Here, the demand for gravity would be \$3.8 million.)