Appendix 2

Rule Effectiveness Studies

Executive Summary

Rule effectiveness studies are methods designed to assess the success of regulatory rules at controlling their targeted emissions. It is acknowledged that facilities and source categories subject to control techniques and devices mandated by rules do not always achieve 100% compliance with those requirements. Given this reality, the US EPA recommends the use of rule effectiveness studies to improve the quality of emission estimates presented in emission inventories. Rule effectiveness studies adjust the emissions from subject facilities and source categories to account for times of non-compliance and control device equipment failure. Of particular importance to Maricopa County are those rules that control particulate matter release and ozone formation, since parts of the county have been designated as nonattainment areas in regards to U.S. EPA PM_{10} and 8-hour ozone standards. Consequently, the rule effectiveness studies presented here deal with the control of criteria pollutants PM_{10}, $PM_{2.5}$, and the precursors to ozone formation (VOC, NO_x and CO).

In general, rule effectiveness studies incorporate compliance history at regulated facilities and sources, along with agency programs and policies (i.e., inspection frequencies, enforcement penalties, public outreach efforts, etc.), to ascribe a percentage rate (RE rate) at which the subject rule(s) attains the intended emissions reductions. For these studies, inspection data from July 2008 through June 2009 was used to determine the rate of compliance of subject facilities and source categories with the rules. The resulting compliance rate was then combined with data on the effectiveness of Maricopa County Air Quality Department (MCAQD) programs and policies to produce the final rule effectiveness rates used to adjust the emissions inventory estimates. Both source-specific and multi-source rule effectiveness studies were performed. Source-specific studies include Rule 310 (fugitive dust from dust-generating operations), Rule 310.01 (fugitive dust from non-traditional sources of fugitive dust), Rule 316 (nonmetallic mineral processing), and agricultural activities (best management practices). For all other regulated processes that control particulates and the formation of ozone, multi-source RE rates were calculated separately for Title V and non-Title V permitted facilities. Final compliance rates and RE rates are listed in the table below:

Rule/Source Category	Compliance Rate	Rule Effectiveness (RE) Rate
310	87.01%	82.99%
310.01	95.15%	80.87%
316	35.29%	49.62%
Agricultural Activities	Unknown	55.33%
Title V Facilities	89.14%*	90.94%
Non-Title V Facilities	81.00%*	84.27%

** Compliance rate for Title V and Non-Title V facilities based upon two full years (2008-2009) of inspection data and includes compliance self-monitoring recordkeeping practices in addition to violation data.*

The resulting RE rates shown above have been applied to relevant point and area source inventory categories and are reflected in the emission estimates presented in applicable sections of Chapters 2 and 3.

Background

The US EPA has provided a number of guidance documents that detail the use and formulation of rule effectiveness studies (US EPA, 2005; 1994; 1992). The most recent of these documents states, “First and foremost, an agency responsible for emissions inventory preparation should

attempt to obtain facility specific data from as many sources as possible, and use the collected information to make a refined source of source category RE determination" (ibid, 2005). Given this directive, MCAQD developed a rule effectiveness study methodology that utilizes all available compliance and department programmatic data to produce a RE rate that best reflects the field effectiveness of the rule. By using the entire population of data for the prescribed time period, (July 2008 – June 2009) the statistical validity of the RE rate greatly improves. This approach deviates from previous rule effectiveness studies conducted by MCAQD that were based upon a small sample pool of targeted inspections (MCAQD, 2007).

The RE rates presented here are developed from statistical examination of recorded inspection data, supplemented with data on department programs and policies that impact the enforcement and creation of the rules under study. Assessment of inspection records provides the major component of the RE rate known as a compliance rate. This is the rate at which inspection staff is observing facility and source category compliance in the field. While this provides the most direct measure of rule effectiveness, it is still an incomplete picture of overall rule effectiveness. In actuality, the observed compliance rate is better described as a rate at which inspection staff issue violations. Inspection staff has a range of experience and training which influences their proficiency in issuing appropriate violations. There may be instances when a rule violation goes unnoticed by staff, or conversely a violation may be issued in error. Even with a compliance rate that has a high statistical measure of accuracy, it fails to reflect a number of programmatic measures that affect overall rule effectiveness; measures like the strength or rule language, departmental enforcement and penalty actions, inspector training programs, educational and public outreach efforts, etc. This reality is reflected in earlier US EPA guidance:

> A percentage effectiveness rating is not enough to describe the compliance effectiveness of a rule for a source category. An SSCD [Stationary Source Compliance Division] study should attempt to link the rating to a regulatory agency's overall effort. The study should address the factors that affect the percentage effectiveness rating such as the compliance rate of the sources in a category, inspection frequency and thoroughness, the language of the rule (*i.e.*, whether or not it has loopholes), and the reporting and recordkeeping by the regulatory agency. Evaluating these factors will provide a more complete evaluation of the effectiveness of a rule. (US EPA, 1994)

In effort to incorporate all these salient factors, a weighting matrix was created to produce a final RE rate. US EPA's latest guidance (2005) provides a listing of factors that affect rule effectiveness (*i.e.*, inspector training, frequency of inspections, media outreach, enforcement policies, recordkeeping requirements, etc.), grouped into major categories of most important factors, important factors and other factors. MCAQD used these suggested factors as the base structure for creating the weighted matrixes. In brief, the compliance rate developed from inspection data (labeled as "Compliance History" in the weighting matrix) is weighted at 70% of the overall RE rate, while all other factors account for the remaining 30% (exception to these weighting values apply in the case of agricultural activities). Each individual factor is scored based upon the department's success in implementing that factor. As an example, the score for the factor "Compliance History" is the compliance rate developed from the study period inspection data, while the score for "Enforcement Penalties" is based upon the department's timely response to, and settlement of, observed violations associated with the subject rule or source category. The complete weighting matrixes are shown in Appendices A through F.

Once a RE rate has been established, the percentage rate is applied to relevant sources on a process level, thus adjusting emission estimates to reflect a lower degree of control efficiency. The formula below provides an example of how RE rates influence emission estimates:

Emissions before RE application:
Uncontrolled Emissions × (1 – (Control Efficiency) = Controlled Emissions
100 tons × (1 – (0.90)) = 10.0 tons

Emissions after RE application:
Uncontrolled Emissions × (1 – (Control Efficiency) × (RE)) = Adjusted Controlled Emissions
100 tons × (1 – (0.90 × 0.83)) = 25.3 tons

In general, the RE rate is applied to all processes where a control device or control technique is in use. There are some limitations to this blanket rule, as expressed in US EPA's recent guidance:

> …not all emission estimates involving use of a control device or technique need to be adjusted to account for RE…For example, a state or local agency may conclude that a control device that operates in conjunction with a continuous emissions monitor, or is equipped with an automatic shutdown device, may provide a sufficient level of assurance that intended emission reductions will be achieved, and therefore an adjustment for rule effectiveness is not necessary. Another example would be in instances where a direct determination of emissions, such as via a mass balance calculation, can be made. (US EPA, 2005)

Another hindrance to the application of a blanket RE percentage rate occurs when the control device efficiency reported is high. Control device efficiencies are routinely reported at efficiencies of 99% or greater (baghouses, thermal oxidizers). Even small adjustments through the application of RE can cause a dramatic increase in reported emissions. As an example, a process with a control device of 99.9% efficiency may report controlled emissions of 10 tons. If an RE rate of 85% were applied to this process the adjusted emissions would be 1,508.5 tons. In these types of instances, MCAQD evaluated the affected processes on a case-by-case basis to determine the appropriateness of applying an RE adjustment.

Four source-specific rule effectiveness determinations (Rule 310, Rule 310.01, Rule 316 and agricultural activities) and two multi-rule determinations (Title V and non-Title V permitted facilities) were developed for use in adjusting the emission inventory estimates. The following sections detail the data used in developing each of the RE rates.

Rule 310 RE Rate

Rule 310 sources are largely composed of construction sites where the disturbance of earth is occurring. The RE rate for Rule 310 sources is developed as a weighted average between the observed compliance rate of permitted sites and the effectiveness of department programs and policies related to Rule 310 implementation. The weighted average matrix for Rule 310 is shown in full in Appendix A.

The compliance rate for Rule 310 sources uses inspection data of issued dust permits between July 2008 and June 2009. Only inspections that result in a finding of compliance of non-compliance (*i.e.*, "in violation") are considered in the compliance rate. Inspections conducted solely to confirm the closing of a permit, or inspections where a compliance determination could

not be made, were not including in the development of the compliance rate. Using these criteria, a total of 12,290 inspections were conducted on 5,458 issued permits, out of a possible pool of 7,974 issued permits. Dust Control Permits are only valid for 12 months, and expire on the anniversary of their issue date. A permit issued on July 22, 2007, expires on July 22, 2008. This permit would therefore only have "operated" 22 days in the inspection period on which this compliance data is based. Some issued permits also experience limited operations, perhaps only a month or two, but in most cases these permits are left open by the permit holder for the entire 12 months. Given these realities, it is not unexpected that 2,516 out of the pool of 7,974 permits received no compliance determination inspection in the months of July 2008 through June 2009. Over 58% of issued permits were inspected 2 or more times, with some sites receiving as many as 13 compliance determination inspections during the study time period.

Of the inspected sources listed above, individual compliance rates are determined on a permit by permit basis. Any permit that received at least one violation during any conducted inspection in July 2008 through June 2009 received a compliance rate of 0%. Permitted sites that had no recorded violations during the study period received a compliance rate of 100%. Of the violations noted 42% of the violations were emissions related (track-out, visible emissions, silt content, etc.) with the remaining 58% of the violations being procedural (recordkeeping, inadequate dust control plan, etc.). The permit-specific compliance rates were summed and averaged to produce an overall grouped compliance rate of 87.01%. Inputting the 87.01% compliance rate into the weighting matrix in Appendix A yields an overall RE rate of 82.99%.

Rule 310.01 RE Rate

The majority of Rule 310.01 sources are vacant lots. It is estimated that there are at least 100,000 vacant lots in Maricopa County. Rule 310.01 sources generally do not require a permit, unlike Rule 310 and Rule 316 sources. The RE rate for Rule 310.01 sources is calculated based upon vacant lot inspection compliance rate and the effectiveness of department programs and policies related to Rule 310.01 implementation. The weighted average matrix for Rule 310.01 is shown in full in Appendix B.

In the study period between July 2008 and June 2009, MCAQD inspectors performed 12,370 inspections of vacant lots in Maricopa County. The main purpose of a Rule 310.01 inspection is to verify whether or not the vacant lot in question has a stabilized surface. If the surface is determined to be stable (through a variety of tests) the lot is deemed to be in compliance. Conversely, if the lot is unstable a violation of Rule 310.01 has occurred. Similar to Rule 310, compliance rates are determined individually for each vacant lot and then summed and averaged to produce a group compliance rate. The overall compliance rate for Rule 310.01 sites is 95.15%. All the violations noted by inspectors were emissions-related violations, as all the violations are for unstable soil conditions. The compliance rate is inputted into the weight matrix in Appendix B to yield the overall RE rate of 80.87%.

Rule 316 RE Rate

Rule 316 facilities cover industries involved in the mining of sand and gravel and the production of concrete products. All Rule 316 sites are required to be permitted by MCAQD as either a Title-V permit or a non-Title V permit. Currently, all facilities subject to Rule 316 have only non-Title V permits. Exceptions are made for portable sources that leave the county, which can be permitted by the Arizona Department of Environmental Quality. The RE rate for Rule 316 sites is determined in similar fashion top Rules 310 and 310.01; by developing a weighted average between the observed compliance rate of permitted sites and the effectiveness of

department programs and policies related to Rule 316 implementation. The weighted average matrix for Rule 316 is shown in full in Appendix C.

Inspection data for the study period of July 2008 through June 2009 reveal that there were 136 issued permits for Rule 316 facilities. All of these facilities were inspected at least once, and a compliance determination was made for each of the facilities during the study period. Overall, 525 total inspections that resulted in a compliance determination were performed during the study period. As with Rules 310 and 310.01, the compliance rates are determined for each facility and then summed and averaged for the group to produce a 35.29% compliance rate. Of the violations noted, 44% were emissions-related while the remaining 56% were procedural in nature. The compliance rate is inputted into the weight matrix in Appendix C to yield an overall RE rate of 49.62%

Agricultural Activities RE Rate

Agricultural activities in most parts of Maricopa County are subject to the Best Management Practices program administered by the Arizona Department of Environmental Quality (ADEQ). This program is largely a self-monitoring program, where participants indicate which management practices were chosen to be used during differing operations (harvesting, tilling, etc.). No compliance rate figures on the program have been noted during the study period. ADEQ does indicate that after a site has been visited, 100% of the sources return to compliance. Because compliance with this program is only verified on a complaint basis, the weight given to compliance history is decreased (from 70% to 25%) in the computed weight matrix shown in Appendix D. The results of the weight matrix indicate an overall RE rate of 55.30%.

Title V and Non-Title V RE Rates

For the remaining emission processes (not regulated by Rules 310, 310.01 or 316) that possess a control device or technique that limits particulate matter or ozone formation, a separate multi-rule RE rate has been developed for permitted Title V and non-Title V facilities. Weight matrixes similar to the ones used for Rules 310, 310.01 and 316 have been utilized to develop RE rates for Title V and non-Title V facilities. Compliance rates for these sources is based upon 2 full years of data (2008 through 2009), as compliance information for these sources tends to be more detailed (as reflected in the weighting matrix). The compliance rate for these facilities also includes data on self-monitoring recordkeeping practices in addition to inspection data. The combination of monitoring data and inspection data produce the compliance rate section of the weight matrix and still account for 70% of the RE rate. The combined compliance rate for Title V facilities is 89.14% and 81.00% for non-Title V facilities. Appendixes E and F indicate RE rates of 90.94% and 84.27% for Title V and non-Title V facilities, respectively.

References

MCAQD, 2007. 2005 Periodic Emissions Inventory for PM_{10} for the Maricopa County, Arizona, Nonattainment Area.

US EPA, 1992. Guidelines For Estimating And Applying Rule Effectiveness For Ozone/CO State Implementation Plan Base Year Inventories. EPA Rep. 452/R-92-010, November 1992.

US EPA, 1994. Rule Effectiveness Guidance: Integration of Inventory, Compliance and Assessment Applications. EPA Rep. 452/R-94-001, January 1994.

US EPA, 2005. Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations. EPA Rep. 454/R-05-001, November 2005.

APPENDIX A

Weighting Matrix for Rule 310

Rule 310 Weighting Matrix

A. Most important factor (1 criteria, assigned weighting of 70% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Compliance History	86%	100%	93%	Over 90% of facilities inspected in the source category are in compliance			
	70%	85%	78%	Over 75% of facilities inspected in the source category are in compliance	70%	87%	60.91%
		< 70%	35%	Over 60% of facilities inspected in the source category are in compliance			

B Other important factors (6 criteria, each assigned weighting of 4% of total):

Compliance Certifications	86%	100%	93%	Source is subject to some type of compliance certification;			
	70%	85%	78%	Source is subject to some type of compliance certification;			
		< 70%	35%	Source is not subject to any type of compliance certification;	4%	0%	0.00%
Type of Inspection	86%	100%	93%	Inspections are thorough and detailed, and include close examination of control equipment, and a detailed records review			
	70%	85%	78%	Inspections consist of a records review, and sometimes inspection of control equipment;	4%	78%	3.12%
		< 70%	35%	Inspections generally consist of a records review only;			
Inspection frequency/ percentage	86%	100%	93%	Percent of facilities inspected in the sector in a given year is 25% or greater;	4%	93%	3.72%
	70%	85%	78%	Percent of facilities inspected in the sector in a given year is 15% or greater;			
		< 70%	35%	Percent of facilities inspected in the sector in a given year is less than 15%			
Unannounced Inspections	86%	100%	93%	Unannounced inspections are sometimes done;	4%	93%	3.72%
	70%	85%	78%	Unannounced inspections are done, but infrequently;			
		< 70%	35%	Unannounced inspections are never done;			
Enforcement Penalties	86%	100%	93%	Agency takes prompt enforcement action, including monetary fines, against violators;			
	70%	85%	78%	Agency usually takes enforcement action, including monetary fines, against violators;	4%	78%	3.12%
		< 70%	35%	Agency usually does not take enforcement action against violators;			
Compliance Assistance	86%	100%	93%	A compliance assistance program exists and is adequately staffed, and includes such things as workshops, mailings, web-based tutorials, etc.			
	70%	85%	78%	A compliance assistance program exists and is minimally staffed. The program occasionally makes workshops, mailings, web-based tutorials, etc., available.	4%	78%	3.12%
		< 70%	35%	A compliance assistance program does not exist			

Rule 310 Weighting Matrix

C. Other factors (3 criteria, each assigned weighting of 2% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Monitoring Requirements	86%	100%	93%	Monitoring requirements exist and must be reported to regulatory agency at least once a year;			
	70%	85%	78%	Monitoring requirements exist but records don't have to be filed with regulatory agency;	2%	78%	1.56%
		< 70%	35%	Monitoring requirements do not exist;			
Follow-up Inspections	86%	100%	93%	Follow-up inspections are done when violations are noted most (>75%) of the time;	2%	93%	1.86%
	70%	85%	78%	Follow-up inspections are done when violations are noted some of the time;			
		< 70%	35%	Follow-up inspections are not routinely done;			
Media Publicity	86%	100%	93%	Media Publicity of enforcement actions is routinely conducted	2%	93%	1.86%
	70%	85%	78%	Media Publicity of enforcement actions is sometimes done			
		< 70%	35%	Media Publicity of enforcement actions is rarely done			
							82.99%

APPENDIX B

Weighting Matrix for Rule 310.01

Rule 310.01 Weighting Matrix

A. Most important factor (1 criteria, assigned weighting of 70% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Compliance History	86%	100%	93%	Over 90% of facilities inspected in the source category are in compliance	70%	95%	66.61%
	70%	85%	78%	Over 75% of facilities inspected in the source category are in compliance			
		< 70%	35%	Over 60% of facilities inspected in the source category are in compliance			

B Other important factors (6 criteria, each assigned weighting of 4% of total):

Compliance Certifications	86%	100%	93%	Source is subject to some type of compliance certification;			
	70%	85%	78%	Source is subject to some type of compliance certification;			
		< 70%	35%	Source is not subject to any type of compliance certification;	4%	0%	0.00%
Type of Inspection	86%	100%	93%	Inspections are thorough and detailed, and include close examination of control equipment, and a detailed records review			
	70%	85%	78%	Inspections consist of a records review, and sometimes inspection of control equipment;	4%	78%	3.12%
		< 70%	35%	Inspections generally consist of a records review only;			
Inspection frequency/ percentage	86%	100%	93%	Percent of facilities inspected in the sector in a given year is 25% or greater;			
	70%	85%	78%	Percent of facilities inspected in the sector in a given year is 15% or greater;			
		< 70%	35%	Percent of facilities inspected in the sector in a given year is less than 15%	4%	35%	1.40%
Unannounced Inspections	86%	100%	93%	Unannounced inspections are sometimes done;			
	70%	85%	78%	Unannounced inspections are done, but infrequently;	4%	78%	3.12%
		< 70%	35%	Unannounced inspections are never done;			
Enforcement Penalties	86%	100%	93%	Agency takes prompt enforcement action, including monetary fines, against violators;			
	70%	85%	78%	Agency usually takes enforcement action, including monetary fines, against violators;			
		< 70%	35%	Agency usually does not take enforcement action against violators;	4%	35%	1.40%
Compliance Assistance	86%	100%	93%	A compliance assistance program exists and is adequately staffed, and includes such things as workshops, mailings, web-based tutorials, etc.			
	70%	85%	78%	A compliance assistance program exists and is minimally staffed. The program occasionally makes workshops, mailings, web-based tutorials, etc., available.			
		< 70%	35%	A compliance assistance program does not exist	4%	35%	1.40%

Rule 310.01 Weighting Matrix

C. Other factors (3 criteria, each assigned weighting of 2% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Monitoring Requirements	86%	100%	93%	Monitoring requirements exist and must be reported to regulatory agency at least once a year;			
	70%	85%	78%	Monitoring requirements exist but records don't have to be filed with regulatory agency;	2%	78%	1.56%
		< 70%	35%	Monitoring requirements do not exist;			
Follow-up Inspections	86%	100%	93%	Follow-up inspections are done when violations are noted most (>75%) of the time;			
	70%	85%	78%	Follow-up inspections are done when violations are noted some of the time;	2%	78%	1.56%
		< 70%	35%	Follow-up inspections are not routinely done;			
Media Publicity	86%	100%	93%	Media Publicity of enforcement actions is routinely conducted			
	70%	85%	78%	Media Publicity of enforcement actions is sometimes done			
		< 70%	35%	Media Publicity of enforcement actions is rarely done	2%	35%	0.70%
							80.87%

APPENDIX C

Weighting Matrix for Rule 316

Rule 316 Weighting Matrix

A. Most important factor (1 criteria, assigned weighting of 70% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Compliance History	86%	100%	93%	Over 90% of facilities inspected in the source category are in compliance			
	70%	85%	78%	Over 75% of facilities inspected in the source category are in compliance			
		< 70%	35%	Over 60% of facilities inspected in the source category are in compliance	70%	35%	24.70%

B Other important factors (6 criteria, each assigned weighting of 4% of total):

Compliance Certifications	86%	100%	93%	Source is subject to some type of compliance certification;			
	70%	85%	78%	Source is subject to some type of compliance certification;	4%	78%	3.12%
		< 70%	35%	Source is not subject to any type of compliance certification;			
Type of Inspection	86%	100%	93%	Inspections are thorough and detailed, and include close examination of control equipment, and a detailed records review			
	70%	85%	78%	Inspections consist of a records review, and sometimes inspection of control equipment;	4%	78%	3.12%
		< 70%	35%	Inspections generally consist of a records review only;			
Inspection frequency/ percentage	86%	100%	93%	Percent of facilities inspected in the sector in a given year is 25% or greater;	4%	86%	3.44%
	70%	85%	78%	Percent of facilities inspected in the sector in a given year is 15% or greater;			
		< 70%	35%	Percent of facilities inspected in the sector in a given year is less than 15%			
Unannounced Inspections	86%	100%	93%	Unannounced inspections are sometimes done;	4%	93%	3.72%
	70%	85%	78%	Unannounced inspections are done, but infrequently;			
		< 70%	35%	Unannounced inspections are never done;			
Enforcement Penalties	86%	100%	93%	Agency takes prompt enforcement action, including monetary fines, against violators;			
	70%	85%	78%	Agency usually takes enforcement action, including monetary fines, against violators;	4%	78%	3.12%
		< 70%	35%	Agency usually does not take enforcement action against violators;			
Compliance Assistance	86%	100%	93%	A compliance assistance program exists and is adequately staffed, and includes such things as workshops, mailings, web-based tutorials, etc.			
	70%	85%	78%	A compliance assistance program exists and is minimally staffed. The program occasionally makes workshops, mailings, web-based tutorials, etc., available.	4%	78%	3.12%
		< 70%	35%	A compliance assistance program does not exist			

Rule 316 Weighting Matrix

C. Other factors (3 criteria, each assigned weighting of 2% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Monitoring Requirements	86%	100%	93%	Monitoring requirements exist and must be reported to regulatory agency at least once a year;			
	70%	85%	78%	Monitoring requirements exist but records don't have to be filed with regulatory agency;	2%	78%	1.56%
		< 70%	35%	Monitoring requirements do not exist;			
Follow-up Inspections	86%	100%	93%	Follow-up inspections are done when violations are noted most (>75%) of the time;	2%	93%	1.86%
	70%	85%	78%	Follow-up inspections are done when violations are noted some of the time;			
		< 70%	35%	Follow-up inspections are not routinely done;			
Media Publicity	86%	100%	93%	Media Publicity of enforcement actions is routinely conducted	2%	93%	1.86%
	70%	85%	78%	Media Publicity of enforcement actions is sometimes done			
		< 70%	35%	Media Publicity of enforcement actions is rarely done			
							49.62%

APPENDIX D

Weighting Matrix for Agricultural Activities

Agricultural Activities Weighting Matrix

A. Most important factor (1 criteria, assigned weighting of 25% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Compliance History	86%	100%	93%	Over 90% of facilities inspected in the source category are in compliance	25%	93%	23.25%
	70%	85%	78%	Over 75% of facilities inspected in the source category are in compliance			
		< 70%	35%	Over 60% of facilities inspected in the source category are in compliance			

B Other important factors (6 criteria, each assigned weighting of 10% of total):

Compliance Certifications	86%	100%	93%	Source is subject to some type of compliance certification;			
	70%	85%	78%	Source is subject to some type of compliance certification;			
		< 70%	35%	Source is not subject to any type of compliance certification;	10%	35%	3.5%
Type of Inspection	86%	100%	93%	Inspections are thorough and detailed, and include close examination of control equipment, and a detailed records review			
	70%	85%	78%	Inspections consist of a records review, and sometimes inspection of control equipment;			
		< 70%	35%	Inspections generally consist of a records review only;	10%	35%	3.5%
Inspection frequency/ percentage	86%	100%	93%	Percent of facilities inspected in the sector in a given year is 25% or greater;			
	70%	85%	78%	Percent of facilities inspected in the sector in a given year is 15% or greater;			
		< 70%	35%	Percent of facilities inspected in the sector in a given year is less than 15%	10%	35%	3.5%
Unannounced Inspections	86%	100%	93%	Unannounced inspections are sometimes done;			
	70%	85%	78%	Unannounced inspections are done, but infrequently;			
		< 70%	35%	Unannounced inspections are never done;	10%	35%	3.5%
Enforcement Penalties	86%	100%	93%	Agency takes prompt enforcement action, including monetary fines, against violators;			
	70%	85%	78%	Agency usually takes enforcement action, including monetary fines, against violators;			
		< 70%	35%	Agency usually does not take enforcement action against violators;	10%	35%	3.5%
Compliance Assistance	86%	100%	93%	A compliance assistance program exists and is adequately staffed, and includes such things as workshops, mailings, web-based tutorials, etc.	10%	93%	9.3%
	70%	85%	78%	A compliance assistance program exists and is minimally staffed. The program occasionally makes workshops, mailings, web-based tutorials, etc., available.			
		< 70%	35%	A compliance assistance program does not exist			

Agricultural Activities Weighting Matrix

C. Other factors (3 criteria, each assigned weighting of 5% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Monitoring Requirements	86%	100%	93%	Monitoring requirements exist and must be reported to regulatory agency at least once a year;			
	70%	85%	78%	Monitoring requirements exist but records don't have to be filed with regulatory agency;			
		< 70%	35%	Monitoring requirements do not exist;	5%	35%	1.75%
Follow-up Inspections	86%	100%	93%	Follow-up inspections are done when violations are noted most (>75%) of the time;			
	70%	85%	78%	Follow-up inspections are done when violations are noted some of the time;			
		< 70%	35%	Follow-up inspections are not routinely done;	5%	35%	1.75%
Media Publicity	86%	100%	93%	Media Publicity of enforcement actions is routinely conducted			
	70%	85%	78%	Media Publicity of enforcement actions is sometimes done			
		< 70%	35%	Media Publicity of enforcement actions is rarely done	5%	35%	1.75%
							55.30%

APPENDIX E

Weighting Matrix for Title V Facilities

Title V Facilities Weighting Matrix

A. Most important factors (2 criteria, each assigned weighting of 35% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Monitoring	94%	100%	97%	Source specific monitoring used for compliance purposes, and monitoring records filed with regulatory agency at least every 4 months.			
	87%	93%	90%	Source specific monitoring used as an indicator of compliance, and monitoring records filed with regulatory agency every 6 to 9 months.	35%	90%	31.5%
	81%	86%	84%	Source specific monitoring used as an indicator of compliance, and monitoring records filed with regulatory agency each year.			
	70%	80%	75%	General guidance exists for source specific enhanced monitoring, and monitoring records required but aren't submitted to regulatory agency.			
		< 70%	35%	No requirements for any type of monitoring.			

Compliance History	94%	100%	97%	The facility has been in compliance for the past eight quarters.	35%	10 of 19 facilities	17.9%
	87%	93%	90%	The facility is believed to have been in compliance for the past eight quarters, although inspection frequency is such that this can't be positively confirmed.			
	81%	86%	84%	On schedule; the facility is meeting its compliance schedule.			
	70%	80%	75%	In Violation; facility is in violation of emissions and/or procedural requirements.		8 of 19 facilities	12.4%
		< 70%	35%	High Priority Violator (HPV): the facility is in significant violation of one or more applicable requirement of the CAA.		1 of 19 facilities	0.6%
						Sum:	**30.9%**

B. Other important factors (4 criteria, each assigned weighting of 3% of total):

Type of Inspection	94%	100%	97%	Inspections involve compliance test methods with a high degree of accuracy, such as stack testing or other types of precise emissions measurement.	3%	97%	2.9%
	87%	93%	90%	Inspections involve detailed review of process parameters & inspection of control equipment.			
	81%	86%	84%	Inspections involve review of process and inspection of control equipment.			
	70%	80%	75%	Inspections generally consist of only a records review.			
		< 70%	35%	Inspections most likely consist of visual inspection (e.g., opacity), or drive by.			

Operation & Maintenance	94%	100%	97%	Control equipment operators follow and sign daily O&M instructions.			
	87%	93%	90%	Control equipment operators follow daily O&M instructions.	3%	90%	2.7%
	81%	86%	84%	Control equipment operators follow daily or weekly O&M instructions.			
	70%	80%	75%	O&M requirements exist, but on no specific schedule.			
		< 70%	35%	No specific O&M requirements.			

Title V Facilities Weighting Matrix

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score(= weight × value)
Unannounced Inspections	94%	100%	97%	Routinely conducted.	3%	97%	2.9%
	87%	93%	90%	Sometimes done.			
	81%	86%	84%	Done, but infrequently.			
	70%	80%	75%	Rarely done.			
		< 70%	35%	Never done.			

Enforcement Penalties	94%	100%	97%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.	3%	97%	2.91%
	87%	93%	90%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.			
	81%	86%	84%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.			
	70%	80%	75%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.			
		< 70%	35%	Agency does not have sufficient authority to impose punitive measures towards violators.			

C. Other factors (9 criteria, each assigned weighting of 2% of total):

Compliance Certifications	94%	100%	97%	Source subject to Title V or other type of compliance certification.	2%	97%	1.94%
	87%	93%	90%	Source subject to Title V or other type of compliance certification.			
	81%	86%	84%	Source not subject to any type of compliance certification.			
	70%	80%	75%	Source not subject to any type of compliance certification.			
		< 70%	35%	Source not subject to any type of compliance certification.			

Inspection Frequency	94%	100%	97%	Source(s) are inspected once every 2 years or more frequently.	2%	97%	1.94%
	87%	93%	90%	Source(s) inspected every 3 years or more frequently.			
	81%	86%	84%	Source(s) inspected every 5 years or more frequently.			
	70%	80%	75%	Inspection of source(s) infrequent. > every 5 years.			
		< 70%	35%	Inspections rarely, if ever, performed.			

Title V Facilities Weighting Matrix

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score(= weight × value)
EPA HPV Enforcement	94%	100%	97%	Agency has sufficient resources to implement EPA's 12/22/98 HPV policy.	2%	97%	1.94%
	87%	93%	90%	Agency's resources allow it to implement EPA's 12/22/98 HPV policy in most instances.			
	81%	86%	84%	Agency's resources allow it to implement EPA's 12/22/98 HPV policy in most instances.			
	70%	80%	75%	Agency's resources allow it to implement EPA's 12/22/98 HPV policy more often than not.			
		< 70%	35%	Resource constraints prohibit agency from implementing EPA's 12/22/98 HPV policy in most instances.			
Operator Training	94%	100%	97%	Control equipment operators complete a formal training program on use of the equipment, and such program is kept up to date and has been reviewed by the regulatory agency.			
	87%	93%	90%	Control equipment operators complete formal training program, and such program is kept up to date and available for review by the regulatory agency upon request.			
	81%	86%	84%	Control equipment operators complete some amount of formal training.	2%	84%	1.68%
	70%	0.8	75%	Control equipment operators receive only on the job training.			
		< 70%	35%	Control equipment operators receive no specific training.			
Media Publicity	94%	100%	97%	Media publicity of enforcement actions.	2%	97%	1.94%
	87%	93%	90%	Media publicity of enforcement actions.			
	81%	86%	84%	Media publicity of enforcement actions.			
	70%	80%	75%	Media publicity of enforcement actions.			
		< 70%	35%	No media publicity of enforcement actions.			
Regulatory Workshops	94%	100%	97%	Regulatory workshops are available annually, and/or the implementing agency mails regulatory information packages each year.	2%	97%	1.94%
	87%	93%	90%	Regulatory workshop are available every 1-2 years, and/or the implementing agency mails regulatory information packages every 1-2 years.			
	81%	86%	84%	Regulatory workshop are available every 2-3 years, and/or the implementing agency mails regulatory information packages once every 2-3 years.			
	70%	80%	75%	Regulatory workshop not routinely available, but implementing agency mails regulatory information packages out about once every 2-3 years.			
		< 70%	35%	Regulatory workshops not routinely available. implementing agency mails regulatory information packages infrequently, if ever.			

Title V Facilities Weighting Matrix

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score(= weight × value)
Inspector Training	94%	100%	97%	Inspectors must undergo 2 weeks of comprehensive basic training, and 1 to 2 weeks of source specific training, and such training is updated each year.			
	87%	93%	90%	Inspectors must undergo 1 to 2 weeks of basic training and 1 week of source specific training and such training is updated every 1-2 years.	2%	90%	1.80%
	81%	86%	84%	Inspectors must undergo 1 to 2 weeks of basic training and 3 to 5 days of source specific training, and such training is updated every 1-2 years.			
	70%	80%	75%	Inspectors must undergo 1 to 2 weeks of basic training and 1 to 3 days of source specific training, and such training is updated every 1-2 years.			
		< 70%	35%	Inspectors must undergo less than 5 days of basic training less than 3 days of source specific training, and such training is updated only every 2 years or less frequently.			
Testing Guidelines	94%	100%	97%	Specific guidelines and schedule for testing and test methods exist.	2%	97%	1.94%
	87%	93%	90%	Specific guidelines on testing and test methods exist, but no schedule for testing.			
	81%	86%	84%	Specific guidelines on testing and test methods exist, but no schedule for testing.			
	70%	80%	75%	Specific guidelines on testing and test methods, but no schedule for testing.			
		< 70%	35%	Only general guidance on testing, or no mention of testing requirements.			
Follow-up Inspections	94%	100%	97%	Follow-up inspections always or almost always done (90 % of the time or more).	2%	97%	1.94%
	87%	93%	90%	Follow-up inspections usually done (approximately 75% of the time).			
	81%	86%	84%	Follow-up inspections sometimes done (approximately 50% of the time).			
	70%	80%	75%	Follow-up inspections infrequently done (approximately 25% of the time).			
		< 70%	35%	Follow-up inspections rarely or never done (10% of the time or less)			
							90.94%

APPENDIX F

Weighting Matrix for Non-Title V Facilities

Non-Title V Facilities Weighting Matrix

A. Most important factors (2 criteria, each assigned weighting of 35% of total):

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score (= weight × value)
Monitoring	94%	100%	97%	Source specific monitoring used for compliance purposes, and monitoring records filed with regulatory agency at least every 4 months.			
	87%	93%	90%	Source specific monitoring used as an indicator of compliance, and monitoring records filed with regulatory agency every 6 to 9 months.			
	81%	86%	84%	Source specific monitoring used as an indicator of compliance, and monitoring records filed with regulatory agency each year.			
	70%	80%	75%	General guidance exists for source specific enhanced monitoring, and monitoring records required but aren't submitted to regulatory agency.	35%	75%	26.3%
		< 70%	35%	No requirements for any type of monitoring.			

Compliance History	94%	100%	97%	The facility has been in compliance for the past eight quarters.	35%	156 of 298 facilities	17.8%
	87%	93%	90%	The facility is believed to have been in compliance for the past eight quarters, although inspection frequency is such that this can't be positively confirmed.		10 of 298 facilities	1.1%
	81%	86%	84%	On schedule; the facility is meeting its compliance schedule.			
	70%	80%	75%	In Violation; facility is in violation of emissions and/or procedural requirements.		130 of 298 facilities	11.5%
		< 70%	35%	High Priority Violator (HPV): the facility is in significant violation of one or more applicable requirement of the CAA.		2 of 298 facilities	0.1%
						Sum:	**30.4%**

B. Other important factors (4 criteria, each assigned weighting of 3% of total):

Type of Inspection	94%	100%	97%	Inspections involve compliance test methods with a high degree of accuracy, such as stack testing or other types of precise emissions measurement.			
	87%	93%	90%	Inspections involve detailed review of process parameters & inspection of control equipment.	3%	90%	2.7%
	81%	86%	84%	Inspections involve review of process and inspection of control equipment.			
	70%	80%	75%	Inspections generally consist of only a records review.			
		< 70%	35%	Inspections most likely consist of visual inspection (e.g., opacity), or drive by.			

Operation & Maintenance	94%	100%	97%	Control equipment operators follow and sign daily O&M instructions.			
	87%	93%	90%	Control equipment operators follow daily O&M instructions.	3%	90%	2.7%
	81%	86%	84%	Control equipment operators follow daily or weekly O&M instructions.			
	70%	80%	75%	O&M requirements exist, but on no specific schedule.			
		< 70%	35%	No specific O&M requirements.			

Non-Title V Facilities Weighting Matrix

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score(= weight × value)
Unannounced Inspections	94%	100%	97%	Routinely conducted.	3%	97%	2.91%
	87%	93%	90%	Sometimes done.			
	81%	86%	84%	Done, but infrequently.			
	70%	80%	75%	Rarely done.			
		< 70%	35%	Never done.			

Enforcement Penalties	94%	100%	97%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.	3%	97%	2.91%
	87%	93%	90%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.			
	81%	86%	84%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.			
	70%	80%	75%	Agency has the authority to impose punitive measures, including monetary fines, towards violators such as in delegated Title V Operating Permit programs.			
		< 70%	35%	Agency does not have sufficient authority to impose punitive measures towards violators.			

C. Other factors (9 criteria, each assigned weighting of 2% of total):

Compliance Certifications	94%	100%	97%	Source subject to Title V or other type of compliance certification.			
	87%	93%	90%	Source subject to Title V or other type of compliance certification.			
	81%	86%	84%	Source not subject to any type of compliance certification.			
	70%	80%	75%	Source not subject to any type of compliance certification.	2%	75%	1.5%
		< 70%	35%	Source not subject to any type of compliance certification.			

Inspection Frequency	94%	100%	97%	Source(s) are inspected once every 2 years or more frequently.	2%	97%	1.94%
	87%	93%	90%	Source(s) inspected every 3 years or more frequently.			
	81%	86%	84%	Source(s) inspected every 5 years or more frequently.			
	70%	80%	75%	Inspection of source(s) infrequent. > every 5 years.			
		< 70%	35%	Inspections rarely, if ever, performed.			

Non-Title V Facilities Weighting Matrix

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score(= weight × value)
EPA HPV Enforcement	94%	100%	97%	Agency has sufficient resources to implement EPA's 12/22/98 HPV policy.	2%	97%	1.94%
	87%	93%	90%	Agency's resources allow it to implement EPA's 12/22/98 HPV policy in most instances.			
	81%	86%	84%	Agency's resources allow it to implement EPA's 12/22/98 HPV policy in most instances.			
	70%	80%	75%	Agency's resources allow it to implement EPA's 12/22/98 HPV policy more often than not.			
		< 70%	35%	Resource constraints prohibit agency from implementing EPA's 12/22/98 HPV policy in most instances.			
Operator Training	94%	100%	97%	Control equipment operators complete a formal training program on use of the equipment, and such program is kept up to date and has been reviewed by the regulatory agency.			
	87%	93%	90%	Control equipment operators complete formal training program, and such program is kept up to date and available for review by the regulatory agency upon request.			
	81%	86%	84%	Control equipment operators complete some amount of formal training.			
	70%	0.8	75%	Control equipment operators receive only on the job training.	2%	75%	1.5%
		< 70%	35%	Control equipment operators receive no specific training.			
Media Publicity	94%	100%	97%	Media publicity of enforcement actions.	2%	97%	1.94%
	87%	93%	90%	Media publicity of enforcement actions.			
	81%	86%	84%	Media publicity of enforcement actions.			
	70%	80%	75%	Media publicity of enforcement actions.			
		< 70%	35%	No media publicity of enforcement actions.			
Regulatory Workshops	94%	100%	97%	Regulatory workshops are available annually, and/or the implementing agency mails regulatory information packages each year.	2%	97%	1.94%
	87%	93%	90%	Regulatory workshop are available every 1-2 years, and/or the implementing agency mails regulatory information packages every 1-2 years.			
	81%	86%	84%	Regulatory workshop are available every 2-3 years, and/or the implementing agency mails regulatory information packages once every 2-3 years.			
	70%	80%	75%	Regulatory workshop not routinely available, but implementing agency mails regulatory information packages out about once every 2-3 years.			
		< 70%	35%	Regulatory workshops not routinely available. implementing agency mails regulatory information packages infrequently, if ever.			

Non-Title V Facilities Weighting Matrix

	Range		Midpt. value	Description	Weight	Value assigned to MCAQD	Score(= weight × value)
Inspector Training	94%	100%	97%	Inspectors must undergo 2 weeks of comprehensive basic training, and 1 to 2 weeks of source specific training, and such training is updated each year.			
	87%	93%	90%	Inspectors must undergo 1 to 2 weeks of basic training and 1 week of source specific training and such training is updated every 1-2 years.	2%	90%	1.80%
	81%	86%	84%	Inspectors must undergo 1 to 2 weeks of basic training and 3 to 5 days of source specific training, and such training is updated every 1-2 years.			
	70%	80%	75%	Inspectors must undergo 1 to 2 weeks of basic training and 1 to 3 days of source specific training, and such training is updated every 1-2 years.			
		< 70%	35%	Inspectors must undergo less than 5 days of basic training less than 3 days of source specific training, and such training is updated only every 2 years or less frequently.			
Testing Guidelines	94%	100%	97%	Specific guidelines and schedule for testing and test methods exist.	2%	97%	1.94%
	87%	93%	90%	Specific guidelines on testing and test methods exist, but no schedule for testing.			
	81%	86%	84%	Specific guidelines on testing and test methods exist, but no schedule for testing.			
	70%	80%	75%	Specific guidelines on testing and test methods, but no schedule for testing.			
		< 70%	35%	Only general guidance on testing, or no mention of testing requirements.			
Follow-up Inspections	94%	100%	97%	Follow-up inspections always or almost always done (90 % of the time or more).	2%	97%	1.94%
	87%	93%	90%	Follow-up inspections usually done (approximately 75% of the time).			
	81%	86%	84%	Follow-up inspections sometimes done (approximately 50% of the time).			
	70%	80%	75%	Follow-up inspections infrequently done (approximately 25% of the time).			
		< 70%	35%	Follow-up inspections rarely or never done (10% of the time or less)			
							84.27%