

ADEQ NON-CRITERIA POLLUTANT CONTROL STRATEGY  
Revised April 2015

BACKGROUND

Under the federal Clean Air Act, EPA is obligated to establish ambient air quality standards for 6 commonly found “criteria” pollutants: carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen oxides and sulfur oxides. EPA is also obligated to review and establish emission standards for designated hazardous air pollutants (HAPs) on an industry-by-industry sector basis through the promulgation of Maximum Achievable Control Technology (MACT) standards. MACT standards are initially technology based, but EPA is obligated to perform residual risk analyses to determine if technology controls alone provide adequate human health protection from exposure to HAPs.

Where EPA has established a MACT standard for HAPs from a specific industry sector, ADEQ implements those federally established standards. However, these standards do not address site specific impacts. In addition, there is any number of industry sectors for which EPA has not developed MACT standards. ADEQ utilizes this strategy to ensure that emissions from both these type of sources do not cause unacceptable off-site acute or chronic human health impacts, i.e. “air pollution”. Also, there are numerous chemicals that are neither designated HAPS nor criteria pollutants for which no federal standards have been established. This strategy also covers the evaluation of exposures to those chemicals. It is noted that on-site risks to workers are addressed under OSHA rules and are not covered in this strategy.

Arkansas state law [A.C.A. §8-4-203(c)(2)] also establishes requirements for the permit record:

In the case of any discharge limit, emission limit, environmental standard, analytical method, or monitoring requirements the record of the proposed [permitting] action ... shall include a written explanation of the rationale for the proposal, demonstrating that any technical requirements or standards are based upon generally accepted scientific knowledge and engineering practices.

This Strategy is implemented pursuant to state rather than federal law, thus any air permit provision resulting from application of this Strategy alone is state enforceable only.

This Strategy is a methodology for reviewing and evaluating non-criteria emissions by permit applicants and ADEQ permit engineers. The Strategy allows for the flexibility necessary to accommodate advances in science, existing or newly developed information gleaned from federal agencies or other states, and/or other credible information. At any stage in the implementation of this strategy, ADEQ will consider evidence submitted by the facility supporting the position that further inquiry is not needed, even if such evidence is not specifically contemplated by the protocol set out in this Strategy.

The Strategy begins with a screening process to determine whether additional, more site specific information concerning proposed non-criteria emissions from a facility is necessary to evaluate

human health impacts. The screening process described herein is intentionally conservative as it is applied in many environmental, industrial and population exposure settings. In practice, a majority of permitted facilities successfully pass through this screening without the need for further exposure analysis.

IMPLEMENTATION (See also Appendix D Non-Criteria Pollutant Control Strategy – Revised Implementation)

This Strategy is limited to pollutants listed as Hazardous Air Pollutants (HAPs) under 112(b) of the Clean Air Act and other pollutants for which no federal standard has been established. For example, ethanol is not a HAP but would be considered a VOC so no evaluation would be necessary under this strategy. Conversely, Ammonia is also not a HAP but is not otherwise regulated (as a VOC or other pollutant) so it would be covered.

As a first step in implementation of the Strategy, facilities are required to submit a list of all air contaminants/pollutants that might reasonably be expected to be emitted. Facilities should provide measured or estimated emission rates for each air contaminant/pollutant which the facility, through general process knowledge, knows to be emitted. The list and reported emission rates should be based on the best available information from test reports, emission factors, technical literature, knowledge of process, etc. It is important that emission rates accurately reflect operations and maximum emission rates. Average emission rates are usually not acceptable, especially if they obscure times of significantly higher emission rates. This is not to be construed to require emission rates for upset or malfunction conditions, but is to require emissions during routine operations. For example, filling losses at a tank can be significantly higher than standing losses and should be reported, separately or as the higher emission rate.

Facilities are encouraged to provide any degree of documentation desired that may negate the need to conduct in-house screening, expedite the review or otherwise alleviate potential concerns. Such documentation might include evidence that non-criteria pollutants are not emitted, evidence that potential emissions of non-criteria pollutants result in insignificant impacts, etc. If the emission rates in question are below the Presumptively Acceptable Emission Rates ("PAERs") described herein the facility may simply refer to the PAER as evidence of acceptable impacts. The PAER is used solely as a screening exercise. There is no intent to imply that emissions from particular sources in excess of the listed PAER present a health risk.

If, after reviewing the above described documentation, the ADEQ determines actual screening is warranted, ADEQ Air staff will conduct a preliminary screening based on the information provided and its own resources and process any permit applications that obviously satisfy the strategy. If the preliminary screen indicates compounds requiring additional consideration, the permit writer or other qualified Air staff will conduct an in-house, second stage screen by running EPA approved air dispersion models with model inputs derived from information contained in the application or subsequently obtained from the facility. This modeling will be conducted with regulatory default options in the model unless the facility has provided information which preempts the use of such defaults. Resulting predicted ambient concentrations will be compared to the PAILs described herein. Modeling will be consistent with the principals described in the EPA document "Guideline on Air Quality Models." During these first and second stages of modeling, the facility may contact the permit writer assigned to its facility to monitor and potentially provide additional information to the process.

If a second-stage screen conducted by the ADEQ indicates the potential for ambient concentrations exceeding the PAILs, ADEQ Air staff will immediately notify the facility of its findings for specific air contaminants/pollutants and indicate its intent regarding further evaluation of these emissions. This notification will include a statement that the facility may be required to submit additional information to demonstrate that the projected ambient concentrations do not result in unacceptable impacts to human health or the environment, and/or that the development and imposition specific permit conditions may be warranted unless the facility elects to reduce the projected ambient concentrations of specified non-criteria pollutants.

At this stage, the facility may take any combination of the following measures:

1. Use refined modeling to predict lower concentrations;
2. Revise emission rate estimates;
3. Use alternative risk assessments to develop site specific presumptively acceptable impact levels;
4. Propose additional control of emissions of contaminants/pollutants of concern;
5. Propose alternative operating scenarios that result in lower modeled concentrations;
6. Install ambient air monitors at appropriate locations;
7. Accept emissions limitations in a permit that result in lower modeled concentrations.
8. Consideration of (unfenced) property lines and areas where there will be no impact on human health can be considered. Generally, all facility property can be excluded from the model if there is no general access by the public. Other impacted areas, such as roads, rivers and other uninhabited property can be excluded as on a case by case basis.

The notification to the facility will contain these options and ask for the facility's intended course of action. Any refined modeling or risk assessment will be the responsibility of the facility and subject to review and approval by ADEQ. Facilities may choose among EPA approved or generally accepted documents, including regulations, guidance documents, policies, models, etc. Unless and until notified otherwise, the application review will continue with the assumption that the facility will accept the operating conditions that are developed and implemented by the Air Division.

ADEQ may request information which will enable the permit writer to evaluate the risk associated with exposure to such compounds, taking into account the likely exposure pathways and concentrations.

Appendix A  
PAER  
PRESUMPTIVELY ACCEPTABLE EMISSION RATES

The Presumptively Acceptable Emission Rate (PAER) for a substance is obtained by the use of the following equation.

$$\text{PAER (lb/hr)} = 0.11 \times \text{TLV(mg/m}^3\text{)}$$

A brief description of the derivation of the conversion factor is given after the following examples. Example 1 shows the use of this factor to obtain the PAER for toluene.

EXAMPLE

A facility emits toluene and wants to determine the Presumably Acceptable Emission Limit without conducting atmospheric dispersion modeling.

The TLV for toluene is approximately 75.4 mg/m<sup>3</sup>.

$$\text{PAER (lb/hr of substance emitted)} = 0.11 \times 75.4 \text{ mg/m}^3 = 8.3 \text{ lb/hr toluene}$$

If the facility emits more than 8.3 lb/hr of toluene, an atmospheric dispersion model using facility-specific inputs will be required. If the resulting maximum 24-hr average ambient concentration exceeds 754 ug/m<sup>3</sup>, additional review may be necessary.

Appendix B  
PAIL  
(PRESUMPTIVELY ACCEPTABLE IMPACT LEVELS)

The Presumptively Acceptable Impact Level shall be a maximum ambient 24-hour average concentration less than or equal to 1/100th of the Threshold Limit Value (TLV) for each substance emitted. TLV values are updated and published on an annual basis by the American Conference of Governmental Industrial Hygienists and can be found in a booklet titled Threshold Limit, Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs).

The ambient concentration resulting from the proposed emission rate of a substance is determined by using atmospheric dispersion models to obtain the maximum ambient, ground level concentration expressed as a 24-hour average. AERMOD, a freely available atmospheric dispersion model developed and supported by the Environmental Protection Agency, is used by the Air Division and is the preferred model. Other EPA approved models may be used when necessary or appropriate. Regulatory default options are used unless supporting information justifies the use of non-default values.

All sources of a particular pollutant shall be modeled at the allowable or actual emission rate, whichever is higher.

Appendix C  
Basis of PAER Conversion Factor

The conversion factor was developed by running ISC-ST3 with inputs designed to result in ambient concentrations that would not exceed the Presumably Acceptable Impact Level of 1/100th of the TLV. The following conservative assumptions were used:

stack height	=	10 meters
stack diameter	=	1 meter
stack exit velocity	=	0.1 meters/second
Fence line distance	=	200 meters
exit gas temperature	=	295N Kelvin

An emission rate of 1 gram/second (7.9 pounds/hour) resulted in a maximum predicted 24-hour ambient concentration of 703 micrograms/cubic meter and a maximum predicted annual impact of 40 micrograms/cubic meter. For a given model run, the relationship between emission rate and resulting ambient concentration is linear. In this example, an emission rate of 0.0014 grams/second (0.011 pounds/hour) would result in a one-microgram per cubic meter ambient concentration.

Thus, the PAER, in grams per second, for a substance being emitted is

$$\text{TLV (mg/m}^3\text{)}/100 \times 1000 \mu\text{g/mg} \times 0.011\text{lb/hr}/\mu\text{g/m}^3$$

$$1/100 \times 1000 \times 0.011 = 0.11$$

## Appendix D

### Non-Criteria Pollutant Control Strategy – Revised Implementation

#### Summary

Based on past experience in implementation of the Non-Criteria Pollutant Control Strategy (NCAPCS “strategy”), ADEQ has now limited the implementation or use of the strategy to any single Non Criteria Air Pollutant (NCAP) with emissions equal or greater than 10 tons per year or any NCAP with a TLV less than 1 mg/m<sup>3</sup>\*, regardless of emission rates. There is no benefit to evaluating emissions of lesser amounts.

*\*Not all NCAPS will have a TLV. In such cases where there is no suitable TLV, if the pollutant has a health based ambient air concentration (REL, RfC, etc.) less than 10 ug/m<sup>3</sup> (equivalent to 1/100 of a 1 mg/m<sup>3</sup> TLV) it will be evaluated.*

#### Introduction

By regulation, Arkansas permits are required to:

- Contain such conditions as the Department may prescribe, to prevent, control, or abate air pollution;
- Addresses all recognized air pollutant emissions and all pollutant emitting equipment at the stationary source except pollutants or equipment specifically exempt.

In the case of non-criteria pollutants, there are few published specific emission rates or standards that must be specifically included in permits. This allows ADEQ flexibility in addressing these pollutants in a permit, as required by regulation.

The Department developed the NCAPCS in order to address these permit requirements as they pertain to NCAPs. In the past, permitting procedures screened pollutants to be evaluated and permitted based on Relative Toxicity (RT). Each pollutant was then included in the permit as a separate limit. The Relative Toxicity approach was a consistent approach but yielded specific emission limits for a multitude of pollutants, unnecessarily limiting flexibility and increasing permit complexity.

#### General Procedures

The purpose of the NCAPCS is to identify issues and not create unnecessary conditions, limits and recordkeeping. The following procedures will, in general be followed during review of a permit for NCAPs.

1. Applications will be reviewed to assure that all NCAPs, regardless of amounts or toxicity, are identified and emission rates are accurately quantified, both long term and short term.
2. Any single NCAP emitted facility wide at 10 tpy and greater will be evaluated based on the strategy
3. Any NCAP with a TLV less than 1 mg/m<sup>3</sup> will be evaluated based on the strategy.
4. Facilities with a valid risk assessment required by the Hazardous Waste Division do not require a separate NCAPs review for that portion of the facility if it addresses all emissions of such pollutants.
5. Emergency generators – generally emissions from emergency generators do not need to be evaluated for impacts because they are both very intermittent and small. NCAP emissions will still be included in the permit. Exceptions may occur for generators used for more than intermittent power outages.

#### Applicant Responsibility

It is the applicant's responsibility to provide information on the nature and amount of pollutants to be emitted. This information must be included in the emission rate tables (or similar) and in the calculations section of the permit application.

1. Applicants are cautioned against providing only generic emission estimates or data. For example, stating emissions will be less than 9 tons per year of a single HAP. This information would be insufficient for the Department to conduct a review.
2. The applicant may suggest methods to incorporate the limits into the permit, such as grouping of HAPS.

### Limits in Permits

In constructing a permit and SOB, it is not necessary to specify every NCAP and limit, though that is an option. But at a minimum, permits will contain the following elements:

1. A description in the permit (under process description) and Statement of Basis (under Non-Criteria Pollutant section) of the type of HAPs or other non-criteria pollutants that the facility may emit. For example,
  - a. The facility emits HAPs related to incomplete combustion
  - b. The facility emits HAPs related to painting and coating operations (list typical compounds)
  - c. The facility emits HAPs from naturally occurring compounds in raw materials (list the typical ones)
2. Specific limits on HAPs that are required by a MACT or other rule. If a rule requires a specific emission limit, that limit must be in the permit.
3. A total HAP emission rate, in tons per year (12 months) and a single HAP emission rate if necessary to maintain a minor source status, i.e. a single HAP emission rate less than 10 tons per year. Also, a compliance mechanism for tracking these rates is necessary. This can be based on throughputs, testing or other methods. This is not to be construed as requiring the specific HAP that can be emitted to be listed with an emission rate, though in some cases this may be necessary or desired.
4. If the facility emits NCAPs that are not HAPs, these may need a limit separate from any HAP limit in tons per year (12 months) and a compliance mechanism for tracking these rates. This can be based on throughputs, testing or other methods. This is not to be construed as requiring the specific non-HAP that can be emitted to be listed with an emission rate, though in some cases this may be necessary.
5. A "chargeable emissions" rate may be necessary but it need not be included in the permit and can be in the fee calculation alone. This may be necessary if the grouping of pollutants does not clearly identify pollutants subject to emission fees.
6. For pollutants less than the 10 tpy and greater than 1mg/m<sup>3</sup> thresholds, the statement "Based on Department procedures for review of non-criteria pollutants, emissions are below thresholds of concern" in the SOB will suffice.

For permits with some pollutants evaluated, the statement "The non-criteria pollutants listed below were evaluated. Based on Department procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern." In the SOB followed by evaluation of those pollutants will suffice

7. If necessary, the permit will also contain short term emission rates and/or testing/monitoring requirements. This may be necessary where emission rates are not well established and need to be verified to ensure they are not at major levels (i.e. 10/25 tpy).



Facilities with pollutants that have been reviewed under the strategy (i.e. with emissions equal to or greater than 10 tons per year of a single non-criteria pollutant or those emitting a compound with a TLV less than 1 mg/m<sup>3</sup>) will have the following additional items:

8. Specific limits or other limits (such as a TLV table) for all non-criteria pollutants permitted at or above 10 tons per year. Also recordkeeping requirements associated with these limits will be included.
9. For compounds with a TLV less than 1 ug/m<sup>3</sup> TLV specific limits may be required if emission are variable. Department evaluation of such compounds by the strategy does not specifically require the establishment of emission limits and the presumption will be that they are not needed.

Transition from permits with specific limits and based on RT screening

If a facility is only changing a portion of the permit it may be difficult to follow these procedures, in which case the facility can choose to submit an application to update the whole permit or the permit can be updated with any existing methodology that exist, such as a RT screening, TLV table, etc.

Final Note

These are general guidelines and the specifics of a permit may vary.

Examples

These are only examples. Permits can be written in many different ways and still comply with the intent of this document

Example 1. Paint booth with miscellaneous HAPs and Acetone. The acetone has a separate limit for fee purposes and/or the facility wanted it separate.

SN	Description	Pollutant	lb/hr	tpy
08, 27, 28, 29, and 30	Paint Booths and cleanup operations	Acetone	0.2	1.0
		Total HAPs	0.58	2.9

Example 2. Direct fired lumber kiln and generator. All NCAP are HAPs, less than 10 tpy and resulting from combustion or lumber drying.

SN	Description	Pollutant	lb/hr	tpy
05	Dry Kiln # 3 10.0 MMBtu/hr	PM	0.1	0.2
		Total HAPs (products of combustion)	1.57	3.14
13	Generator #1	PM HAPs	0.5 2.96	1.1 6.51

Example 3. A facility using specific chemicals, so the chemicals are just listed.

SN	Description	Pollutant	lb/hr	tpy
01	Amine Storage Tank Duratone Circuit (15,000 gal)	Methyl Chloride	0.1	*
03	Benzyl Amine Storage Tank Duratone Circuit (15,000 gal)	Methyl Chloride	0.1	*
		Benzyl Chloride	0.1	**
15	Amine Storage Tank Extruder Circuit (12,000 gal)	Methyl Chloride	0.1	*
16	Thermal Oxidizer (7.0 MMBtu/hr) + Duratone Circuit & Extruder Circuit Rotary Dryers (4.5 MMBtu/hr & 2.4 MMBtu/hr, respectively)	PM	4.0	17.2
		Methyl Chloride	0.1	0.07*
		Benzyl Chloride	0.1	0.11**

Asterisks denote combined limits

Example 4. Engines. Total Formaldehyde emissions are over 10 tpy so it is listed separately.

SN	Description	Pollutant	lb/hr	tpy
13	Generator #1	PM	0.5	1.1
		Formaldehyde	1.21	6.51
		Total Other HAPs	0.60	3.25
14	Generator #2	PM	0.5	1.1
		Formaldehyde	1.21	6.51
		Total Other HAPs	0.60	3.25

Example 5: A brick kiln that is major for HAPs has the following plant wide emission rate limits in their application. The facility also has a MACT limit of 0.01 lb/ton HF. Cadmium, Chlorine, Chromium, Hexane, and Methylene Chloride are not listed in the permit because they are less than 10 tpy. HCl is listed because it is  $\geq 10$  tpy. Hydrogen Fluoride is listed individually because it also has a MACT limit. The Total Other HAPs is the sum of all not specifically listed HAPs. The Chargeable NCAP is the sum of all not specifically listed chargeable NCAPs. Acetone is specifically listed because it is  $\geq 10$  tpy.

Pollutant	lb/hr	tpy
Hydrogen Chloride	5.00	15.00
Hydrogen Fluoride	1.00	3.00
Total Other HAPs	3.42	10.26
Other Chargeable NCAPs	3.50	10.50
Acetone	6.00	18.00