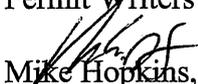




Ohio Environmental Protection Agency  
Division of Air Pollution Control

## INTER-OFFICE COMMUNICATION

**TO:** Permit Writers and Permit Reviewers

**FROM:**  Mike Hopkins, Assistant Chief, Permitting, DAPC

**DATE:** MAY 1, 2013 DRAFT FOR COMMENT

**RE:** BAT Requirements for Permit Applications Filed On or After August 3, 2009

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This guidance memo supersedes the *BAT Requirements for Permit Applications Filed on or After August 3, 2009* memo dated December 10, 2009. It contains changes associated with the comments received from interested parties and associated with additional decisions that have been made concerning the applicability of BAT and Senate Bill (S.B.) 265. In response to those comments, and in keeping with the definition of BAT in section 3704.01(F) of the Revised Code and Ohio Administrative Code (OAC) Rule 3745-31-01(T), we are revising this guidance in order to clarify how case-by-case BAT determinations should be made. This approach is consistent with the intent of the amendments to section 3704.03(T) of the Revised Code in S.B. 265.

On August 3, 2009, DAPC issued guidance concerning the implementation of the BAT portion of S.B. 265. The intent of the guidance was to provide permit writers with information they needed to determine BAT for new and modified sources until rules were developed and implemented as required by S.B. 265.

After the August 3, 2009 guidance was issued, DAPC received comments concerning how best to implement the S.B. 265 BAT standards. This document revises the August 3, 2009 guidance to incorporate changes that meet the requirements of S.B. 265.

The following procedure shall be used to develop and determine BAT for non-exempt sources<sup>1</sup>.

1. Applicability of Post August 3, 2009 BAT

Determine the date the installation or modification permit application was *filed* (not the completeness determination date). In this case, "modification" means a modification as defined in Chapter 31, not an administrative modification. Determine the date that construction or installation of the air contaminant source was started. If the application was filed prior to August 3, 2009, or the air contaminant source was constructed or modified (for this permit action) prior to August 3, 2009, then BAT for the new or modified air contaminant sources covered under the application shall be determined on a case-by-case basis using past practices (prior to August 3, 2009) for determining BAT.

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<sup>1</sup> Exempt sources include those that are exempt under OAC rule 3745-31-03 and those that are exempt from BAT under the <10 ton/yr exemption. This guidance would not apply to de minimis sources because de minimis sources are not required to obtain installation permits.

This includes utilizing the March 2008 Q & A guidance (<http://www.epa.ohio.gov/dapc/S.B.265.aspx>) that describes how S.B. 265 should be implemented. In that case, do not follow the below procedure. If the application was filed and the source was to be installed or modified on or after August 3, 2009, then proceed to the next step.

## 2. MACT, BACT, LAER Applicability

Review each air contaminant source, each criteria pollutant (or precursor) and each operating scenario<sup>2</sup> to determine if the source/pollutant combination is subject to Section 112 (Maximum Achievable Control Technology (MACT) or Generally Available Control Technology (GACT)), Part C of Title I (Prevention of Significant Deterioration, PSD) (Best Available Control Technology (BACT)), and Part D of Title I (Nonattainment NSR) (Lowest Achievable Emission Rate (LAER)) of the federal Clean Air Act. If, for the applicable criteria pollutant (or precursor), one or more of the above rules applies, then BAT is equivalent to the most stringent of the above applicable standards. (Note, this requirement of S.B. 265 applies to any permit *issued* on or after August 3, 2009. Also note that this approach follows long standing DAPC guidance.)

Note that the format of the MACT/BACT/LAER based BAT limit established needs to follow the standard format for each of the above requirements. For instance, for BACT and LAER limits, U.S. EPA often requires one or more short term limits, such as an emission rate limit (like lb/hr) and a technology based limit (like ppm, % control, etc.), and an annual limit. For MACT or GACT based BAT limits, the format should be in the same format as found in the applicable MACT or GACT standard. Since most MACT's and GACT's do not have annual limits, no annual limit would be established for BAT.

Do the above analysis for each criteria pollutant or criteria pollutant precursor separately. Also, if the permittee is asking for multiple operating scenarios, then do the analysis for each operating scenario.

If you determine BAT based on this step, then use ORC 3704.03(T) and OAC 3745-31-07(A)(3) for the applicable rule citation for the BAT limit and the typical MACT, BACT and LAER citation for their equivalent limits. You can use the typical "the requirements of this rule are equivalent to MACT/GACT/BACT/LAER requirements" language.

If, for the particular pollutant, one or more of the above standards apply, then BAT is the MACT/GACT/BACT/LAER limit. Do not establish another BAT requirement for that pollutant in this case unless the permittee is asking for multiple operating scenarios. BAT has been determined and you do not need to do the rest of the procedures below.

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<sup>2</sup> For example, the use of different fuels, different raw materials, etc.

If, for the particular pollutant and operating scenario, none of the above standards apply, then proceed to step three.

### 3. Reasonably Available Control Technology (RACT) Minimum BAT Requirements

Review each air contaminant source to determine if the controlled potential to emit of volatile organic compounds (VOC) is greater than or equal to 10 tons per year (controlled is used in this case because the <10 ton/yr exemption is based on controlled emissions). For those air contaminant sources where the controlled potential to emit of VOC is greater than or equal to 10 tons per year, review the rules of OAC Chapter 21 (Carbon Monoxide, Photochemically Reactive Materials, Hydrocarbons, and related Materials Standards) Reasonably Available Control Technology (RACT) that were effective on January 1, 2006. These rules include the following:

*The January 1, 2006 version(s) of paragraphs (C) to (J), (K) with the exception of (K)(4), (L) to (N), (O) with the exception of (O)(2)(e), (P) to (R), (U) with the exception of (U)(2)(k) and (U)(2)(l), (V) to (X), (Y) with the exception of (Y)(2)(d) and (Y)(3), (Z) to (EE), and (DDD) of rule 3745-21-09 of the Administrative Code; and*

*The January 1, 2006 version(s) of rules 3745-21-11 to 3745-21-16 of the Administrative Code.*

Determine if any VOC rule for any location in the State applies to the same size and type of source you are considering. If a January 1, 2006 effective VOC rule applies anywhere in the State for your type of source, then BAT is determined to be, at a minimum, equivalent to the most stringent VOC rule no matter where in the State that rule applies. Note that this sets the minimum BAT for VOC but you still have to determine if a more stringent case-by-case BAT is appropriate under step 4 below.

Do the above analysis for each operating scenario if there are different operating scenarios.

The format for BAT established in this step should be identical to the format of the RACT rule you are using to establish BAT. You would not add any additional BAT requirements (like a ton/year limit).

Use the RACT monitoring, recordkeeping, reporting and testing requirements to support the BAT requirement.

If you determine BAT based on this step and you decide that a more stringent case-by-case BAT requirement is not appropriate under step 4 below, then use ORC 3704.03(T) and OAC Rule 3745-31-05(A)(3) for the applicable rule citation. You should not use the RACT rule citation in this case.

If a RACT limit is established under this step for VOC, then that VOC RACT limit is BAT for those pollutants unless you decide that a more stringent requirement is needed under step 4 below. BAT has been established for the pollutant(s) and you do not move on to Step four. However, if BAT cannot be established based on RACT, then move on to Step four.

#### 4. Case-by-Case BAT Determination

If the procedures described in step one through step three above do not result in a determination of BAT for the pollutant and/or operating scenario, then a case-by-case determination must be made. In addition, if you determined the minimum BAT for VOC based on the RACT requirement as described in step three above, then use this step to determine if a more stringent requirement than RACT is appropriate for BAT.

Under Ohio Revised Code (ORC) 3704.01, Best Available Technology is defined as:

"Best available technology" means any combination of work practices, raw material specifications, throughput limitations, source design characteristics, an evaluation of the annualized cost per ton of pollutant removed, and air pollution control devices that have been previously demonstrated to the director of environmental protection to operate satisfactorily in this state or other states with similar air quality on substantially similar air pollution sources.

This definition is repeated within Ohio Administrative Code OAC rule 3745-31-01.

The definition of BAT was not changed as part of the revisions to BAT under S.B. 265. Instead, the SB changed other aspects of BAT including how BAT can be expressed when a case-by-case determination is made.

So, in order to determine BAT under the revised SB 265 language, permit writer need to take two steps. First, they will need to follow the historic approach to determining BAT, and then, second, they will need to determine the appropriate SB 265 method that should be used to express BAT.

#### ***Initial Determination of BAT***

First, the permit writer should review each air contaminant source to understand the type of process used, the equipment used, the materials used etc. in order to fully understand the air pollution source. This review is designed to understand the type and size of the air pollution source so it can be compared to similar type and size sources.

Once the size and type of source is understood, then permit writers should review other similar sources in other states with similar air quality (excluding states, for example, that have severe air quality) to determine what level of control has been demonstrated to work for these sources. For many common sources, this analysis will involve simply reviewing other permits for similar sources. For other more significant sources, this may involve a more detailed cost-effectiveness analysis. Remember, you will need to do this analysis for each pollutant and for each operating scenario. In any case, this analysis will follow our traditional analysis to determine BAT.

For many cases, this will result in some numerical value for BAT. In some cases, for instance for fugitive type sources, the conclusion will not result in a numerical value but, instead, will result in a description of a work practice.

Once this analysis is complete, the next step is to determine the method that should be used to express BAT.

### ***Determining the Appropriate Method to Express BAT***

At this point, the permit writer should determine the appropriate method to ***express*** the BAT requirement. S.B. 265 directs BAT to be expressed as follows:

...  
*Best available technology requirements established in rules adopted under this division shall be expressed only in one of the following ways that is most appropriate for the applicable source or source categories:*

- (1) *Work practices;*
- (2) *Source design characteristics or design efficiency of applicable air contaminant control devices;*
- (3) *Raw material specifications or throughput limitations averaged over a twelve-month rolling period;*
- (4) *Monthly allowable emissions averaged over a twelve-month rolling period.<sup>3</sup>*

...  
Each of these options is described in more detail below. In order to improve the readability of the below discussion, the below table describes the shortened term I will use for each acceptable BAT expression.

<b>Original Language</b>	<b>Shortened Language</b>
Work practices	<i>Work Practice</i>
Source design characteristics	<i>Source Design Characteristic</i>
Design efficiency of applicable air contaminant control	<i>Design Efficiency</i>

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<sup>3</sup> DAPC believes these restrictions (item 4) should be in the format: tons of emission per rolling, 12 month period.

devices	
Raw material specifications or throughput limitations averaged over a twelve-month rolling period	<i>Raw Material/Throughput</i>
Monthly allowable emissions averaged over a twelve-month rolling period	<i>Monthly Allowable</i>

### Work Practices

*Work Practice* BAT will typically describe how an owner or operator will operate a source in order to minimize emissions. There are a number of different ways to do this depending upon the type of source. A couple of examples are given below:

#### *Unpaved Roadway Example*

Under the revised BAT approach, there are two main options available for unpaved roadway fugitive sources. The first, and primary approach, is to describe a certain frequency of watering the roadway to minimize or eliminate dust emissions. Under this approach, no opacity limit is needed and no ton/yr limit is needed. However, this approach will need to describe the control method used (watering by truck, etc.), the frequency of watering (once per hour, etc.), the area covered (Haul road #6B), the records that need to be kept, the reports that need to be submitted and other key information needed for the work practice.

The above described *Work Practice* approach will work fine when the frequency of watering is well known ahead of time. However, in some cases, the watering needs might vary. In that case, the below described second option *Work Practice* can be used if the permittee would prefer.

The second option is designed for cases where a rigid frequency does not make sense. In those cases, it may be better to set BAT as an opacity limit and allow the company to set the control application rate as needed to comply with the opacity limit. This is the same approach we have used for years where we set an opacity limit (no visible PE except for 3 minutes during any 60-minute period), described a preferred control approach (watering), describe an inspection frequency and describe the supporting reporting requirements for the source. As such, we are allowing an opacity-based work practice limit if the company prefers.

That being the case, permit writers should discuss the options with the company to decide which approach should be used. If the company wants the work practice frequency approach, then use it. If the company would prefer the opacity approach, then use it.

Neither of these approaches will include an annual emission limit.

The *Work Practice* BAT will have ongoing compliance obligations including appropriate monitoring, record keeping, reporting and testing.

### **Source Design Characteristics or Design Efficiency of Applicable Air Contaminant Control Devices**

#### *Source Design Characteristics*

For some sources not utilizing controls, BAT may be a *Source Design Characteristic*. When we say *source design characteristic*, we are really talking about a design characteristic as it relates to emissions. For instance, if a gas-fired boiler has a burner that is designed to achieve 0.1 lbs of NO<sub>x</sub>/mmBtu emission rate, then the *Source Design Characteristic* will be the 0.1 lbs NO<sub>x</sub>/mmBtu rate. Another example of a design characteristic is a 0.1 lb PM/100 lbs charged emission rate for an incinerator. If the incinerator was designed to meet this emission rate, then it would be appropriate to use that emission rate for BAT.

When trying to decide if a *Source Design Characteristic* exists for a source without controls, permit writers should ask the permittee to provide the design specification sheet (as related to emissions) from the manufacturer of the equipment. If the design specification sheet contains design specifications for NO<sub>x</sub>, PM, but not SO<sub>2</sub>, CO or VOC, then *Source Design Characteristic* BAT should be set for NO<sub>x</sub> and PM, but not for SO<sub>2</sub>, CO or VOC.

For those pollutants where there is no design characteristic, BAT will most likely be set based on either the *Raw Material/Throughput* type limit or the *monthly allowable* type limit.

Note Ohio EPA expects emissions design characteristics to be short-term specification like ppm, gr/dscf, lb/mmBtu, lb/100 lbs charged, etc. A ton/yr type limit would not make sense as an emissions design characteristic.

For some source types, an actual limit may not be appropriate the BAT expression. Instead, the *Source Design Characteristics* may also be things like a description of the equipment installed that has the impact of reducing emissions. An example of that approach is for degreasers or cold cleaners where the BAT expression would simply be described as the use of cooling coils and lids. Another example would be for the use of a complete enclosure on a material conveyor.

#### *Design Efficiency*

When a source utilizes a control device, BAT will be either a *Source Design Characteristic* or a *Design Efficiency* of the control device. This will most often be the

short-term emission rate that the control device has been designed to meet. For instance, baghouses are typically designed to achieve a X.X grain of particulate/dscf outlet concentration. Other control devices may have been designed to meet a ppm, a lb/hr or other similar emission rate.

In other cases, the control device may have been designed to meet a control efficiency. In that case, the BAT limit would be in the form of a percent control efficiency, rather than an emission rate as described above.

If the source or control device has not been designed to meet a certain emission level, control level or have other emissions control design characteristics, then the *Source Design Characteristics* or *Design Efficiency* BAT approach is probably not the appropriate approach to use and another approach should be chosen.

When a BAT limit is based on the source designed characteristic or design efficiency, then ongoing compliance is expected including appropriate monitoring, record keeping, reporting and testing. Periodic stack testing or continuous monitoring may be required depending upon the size of the air pollution source and its history of compliance.

If a BAT limit is established for the *Source Design Characteristics* or *Control Efficiency* then no ton/yr or other limit should be included for BAT. Also, remember, that if there are different operating scenarios, BAT limits may need to be established for each scenario.

#### **Raw Material Specifications or Throughput Limitations Averaged Over a Twelve-month Rolling Period**

This particular type of BAT is essentially the same as we have used for years to support synthetic minor type limits. An example of this kind of BAT for a rotary grain dryer at a brewery could be “5000 tons of wet grain processed per rolling 12-month period”. Another example could be “45.6 tons of steel produced/Rolling 12-month period.”

This type of BAT will have an ongoing compliance obligation that includes monitoring, record keeping, and reporting to verify ongoing compliance with BAT.

Note that under this BAT, no “short term” BAT limit will be listed. For instance, there will not be a ton of wet grain per hr, per day, or per month type limit.

Note also that if the source is a synthetic minor source, the above type limit will be needed for the synthetic minor and, in that case, short term limits will be needed in order to meet U.S. EPA’s requirements for synthetic minors. In that case, the permit writer has the option of using the synthetic minor *Raw Material/Throughput* limitation approach as BAT (i.e., have it function as both the synthetic minor limit and the BAT limit) or, instead, establish a separate BAT as a *Source Design Characteristic* or *Monthly*

*Allowable* limit.

#### **Monthly Allowable Emissions Averaged Over a Twelve-month Rolling Period**

This is another type of BAT that is essentially the same as we have used to support synthetic minor type limits. It is similar to the above material/throughput BAT except that emissions are restricted instead of the amount of material processed or product throughput. An example of this would be, "32.1 tons VOC/Rolling 12-month period".

This type of BAT will have an ongoing compliance obligation that includes monitoring, record keeping, reporting and testing to verify ongoing compliance with BAT.

Under this BAT, no "short term" BAT limit will be listed<sup>4</sup>. For instance, there will not be a pound of VOC per hr, per day, or per month type limit.

#### **Deciding Which Option Is Most Appropriate**

Since there are four optional ways BAT can be expressed under the S.B. 265 language, it can sometimes be difficult to decide which option is most appropriate for the source or source category. In order to help determine which BAT format is most appropriate, DAPC is recommending the following approach in the following order:

1. If the source is a traditional fugitive type source (roadways, parking areas, etc.) or a source that Ohio EPA has not typically established a short-term type BAT limit (degreaser), then it is recommended you use the *Work Practices* type expression for BAT. You do, however, have the option of using one of the other BAT expressions.
2. If the source has a control device for the particular pollutant, then use the *Design Efficiency* approach where you determine the basis of the control equipment design to control the pollutant. This is typically a ppm, gr/dscf, etc., or control efficiency type limit so use one of those expressions for the limit.
3. If there is no control device, review the manufacturers' specifications for the source to determine if the source was designed to meet a certain emission rate (The *Source Design Characteristic* approach). If the source was designed to meet a certain emission rate, then use that expression type for BAT.
4. If none of the above applies, then you will typically be using the *Monthly Allowable* expression approach where you establish a ton of emission per rolling 12-month period BAT type limit.

Note, that under S.B. 265, Ohio EPA cannot include more than one BAT requirement per pollutant per operating scenario. So, only use the one expression of BAT. However, you are free to use another format as long as it fits within one of the four categories listed in S.B. 265 and is considered most appropriate for the applicable source or source category.

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<sup>4</sup> Note that a short-term limit may still be needed to support a synthetic minor restriction in order to follow U.S. EPA requirements.

Also remember that if the source has multiple operating scenarios, then you should determine BAT for each operating scenario using the above procedures.

If you determine BAT based on this step, then use ORC 3704.03(T) and OAC 3745-31-05(A)(3) as the applicable rule citation associated with the BAT limit.

Once you have completed this step, move on to Step 5.

Develop the testing requirements needed to support the BAT selected. In many cases, this will simply be detailing the method used to calculate emissions. However, when compliance testing is needed, it will be detailing the calculation method and describing the emissions testing that will be needed to determine compliance.

5. Next, it is recommended you provide the permittee with a copy of the terms of the permit and discuss with them the decisions you made to determine BAT. Let them know of the current issues associated with S.B. 265 and advise them of their options associated with BAT.
6. Your decision concerning the establishment of BAT under this guidance should be documented in the Permit Strategy Write-up document in STARS2. This serves two purposes. First, the potential to emit and the basis are documented outside of the terms and conditions and this can be relied on in the future to determine whether the air contaminant source has undergone a Chapter 31 modification. Second, in the event that a company has decided that they will not accept a BAT requirement in accordance with this memo, this document can be shared with U.S. EPA who has requested to be notified in these instances.
7. Process the permit per our normal procedures from this point.

## **Common Questions and Answers**

**Question 1:** If a company indicates they do not want Ohio EPA to establish a BAT requirement because a BAT rule has not been developed, what should the permit writers do?

*Bring the issue up with your Central Office DAPC permit contact for further guidance. We will discuss options with the company including: (1) agree to establish a BAT requirement following this guidance, (2) ask us to process the permit without a BAT requirement, or (3) ask us to process the permit with a voluntary restriction on allowable emissions that is equivalent to BAT (see OAC Rule 3745-31-05(F)). If they choose option (2) or (3) we will inform them that U.S. EPA would likely not approve the permit and that U.S. EPA may take*

*some sort of action against either the company or Ohio EPA. We will also inform them that we are obligated to provide U.S. EPA with a copy of any issued permit that does not contain BAT.*

**Question 2:** What happens if I am still not sure which type of BAT expression I should use?

*Contact your Central Office DAPC permit contact for further guidance.*

**Question 3:** Ohio EPA has used the BAT rule to establish used oil specification limits in the past. These limits have been established to ensure hazardous waste was not burned and to ensure air emissions would not cause health or welfare effects. Can we continue to use the BAT rule to do this?

*Yes. BAT can be expressed as a "source design characteristic" under S.B. 265, and fuel specifications can be included as a "source design specification" or "work practice". You can continue to use our standard terms that restrict used oil contaminants to make sure the oil is not classified as a hazardous waste.*

**Question 4:** DAPC's interpretation of S.B. 265 is that only one BAT requirement can be established. What happens when an emission unit has more than one stack? For instance, consider a painting line often that has an emission point from the uncontrolled base-coat spray booth and then another emission point from an incinerator-controlled prime-coat spray booth. Can permit writers still establish a BAT requirement for each stack?

*Yes and no. If the BAT control approach is different for each stack, then you can establish a limit for each stack. For instance in the example of the paint line discussed above, the base-coat booth stack is typically limited by a lb VOC/gallon of coating limit usually based on the RACT rule. This limit has nothing to do with the emissions associated with the prime-coat booth controlled with the incinerator. The prime-coat booth with incinerator would typically have a ppm BAT requirement. As such, you can establish BAT for the base-coat separately from BAT for the prime-coat booth. However, take the example of a printing line with an incinerator for control, assuming 95% capture and 95% destruction. In this example, the printing line would have emissions coming out of the incinerator stack and fugitive emissions from the line that don't get captured. If you establish BAT as a control device design efficiency of 90.25% overall control, then, you do not need to establish a separate BAT requirement for the fugitive emissions because the specified BAT covers all emissions associated with the emissions unit.*

**Question 5:** Can we continue to determine PTE after controls for major NSR applicability purposes?

*Yes, we have decided to continue the past approach of calculating PTE after controls for NSR purposes.*

**Question 6:** If a MACT applies and the MACT does not include an annual limit, can we establish an annual limit as part of BAT?

*No, if the MACT applies, then only list the limits/control requirements/operational restrictions as BAT. Do not add any other limits.*

**Question 7:** What happens if both a MACT applies to a source and a RACT rule applies to the source? Which is BAT? What happens if there is a similar source RACT rule that is more stringent than the MACT?

*If MACT applies to the source and a RACT rule applies to the source (actually applies, not because it is a similar source under step 3 above), then MACT would represent BAT.*

*If MACT applies to the source and a "similar source" RACT rule could apply under step 3 above, the MACT is BAT, not the "similar source" RACT.*

**Question 8:** DAPC's interpretation of S.B. 265 is that only one BAT requirement can be established. What happens when an emission unit has more than one operating scenario? For instance, an asphalt plant typically operates using natural gas some days, #2 fuel oil on other days, or may use different raw materials (say, slag) on different days. The emission rate for SO<sub>2</sub> in this case is significantly different for each fuel/material. What should we do for BAT?

*A different BAT requirement for each pollutant should be established for each operating scenario where there is a difference in emissions. However, if the emission rate is the same for the various operating scenarios, then it is acceptable to establish only one BAT requirement.*

If you have any questions or concerns about establishing BAT for particular source, please contact your Central Office permit contact to discuss.

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