

**Air Toxics Workgroup (ATW)**  
**Discussion Paper: Limit Permit Modification Reviews to**  
**Changes That Are Meaningful**  
**June 14th, 2013 DRAFT**

**ORR (2011) Report Recommendation A-1(2):**

R 336.1225 should be amended and specifically include the following:

Limit permit modification reviews to those increases in a Hazard Index exceeding 10% above the previously permitted baseline.

**ATW Discussion**

Discussion of this issue began at the May 15, 2013 ATW meeting. The idea is that Permit to Install applications and reviews would be more streamlined if previously permitted processes were exempted from R 225 if a company was proposing process changes involving only very minor changes in air toxics emissions. Although the exemption is not proposed to be limited to certain types of operations, the exemption would be particularly beneficial to painting/coating operations, which commonly undergo changes in suppliers or formulations involving relatively minor changes in air toxics emissions.

The ORR report recommendation mirrors an already existing procedure that is utilized by companies and AQD in determining if a change may be exempt from the requirement to obtain a Permit to Install (PTI). Rule 285(b) and 285(c) state that a PTI is not required for:

*“(b) Changes in a process or process equipment which do not involve installing, constructing, or reconstructing an emission unit and which do not involve any **meaningful change in the quality and nature or any meaningful increase in the quantity** of the emission of an **air contaminant** therefrom.*

*Examples of such changes in a process or process equipment include the following:*

*(i) Change in the supplier or formulation of similar raw materials, fuels, or paints and other coatings.*

*(ii) Change in the sequence of the process.*

*(iii) Change in the method of raw material addition.*

*(iv) Change in the method of product packaging.*

*(v) Change in process operating parameters.*

*(vi) Installation of a floating roof on an open top petroleum storage tank.*

*(vii) Replacement of a fuel burner in a boiler with an equally or more thermally efficient burner.*

*(viii) Lengthening a paint drying oven to provide additional curing time.*

*(c) Changes in a process or process equipment which do not involve installing, constructing, or reconstructing an emission unit and which involve a **meaningful change in the quality and nature, or a meaningful increase in the quantity**, of the emission of an **air contaminant** resulting from any of the following:*

*(i) Changes in the supplier or supply of the same type of virgin fuel, such as coal, no.*

2 fuel oil, no. 6 fuel oil, or natural gas.

(ii) Changes in the location, within the storage area, or configuration of a material storage pile or material handling equipment.

(iii) Changes in a process or process equipment to the extent that such changes do not alter the quality and nature, or increase the quantity, of the emission of the air contaminant beyond the level which has been described in and allowed by an approved permit to install, permit to operate, or order of the department.” (emphasis added)

However, the terms “meaningful change in the quality and nature” and “meaningful increase in the quantity” are not defined in the Statute (NREPA) or in the Rules. The above Rules refer to “air contaminants”, a general term that includes the six EPA criteria pollutants and the air toxics. With regard to the criteria pollutants, EPA has objected to the use of these undefined terms in the Rules, as part of the State Implementation Plan (SIP). With regard to the State-only air toxics rules, companies and AQD have utilized a paper presented at an AWMA conference (Avery, 1993; also contained in MDEQ (2005) as Appendix G) that describes a method for determining if a change in air toxics emissions is “meaningful” or not. The method involves calculating the highest “Hazard Potential (HP)” for the *baseline* condition, which is calculated as the hourly potential to emit (pounds per hour, pph) divided by the IRSL or ITSL (with the averaging time adjusted to annual, as needed). For the *proposed* condition, the HP is also calculated for each of the air toxics in a similar way. The change in HP is then calculated as the percent increase in HP from the baseline condition to the proposed condition. If there is an increase of 10% or greater, the change may be considered meaningful, and if the change is less than 10% then the change may be considered not meaningful, according to Avery (1993). Avery (1993) also states that proposed increases should be compared to the federal significant emission rates (based on potential to emit on an annual basis); any increase that is 10% or more of those rates should be considered meaningful. All relevant scientific information, including odoriferousness, effects on the environment, and non-inhalation routes of exposure should also be considered (Avery, 1993). In the example calculations provided, one example involved the calculation of the HP based on odor thresholds; the other examples involved air toxics screening levels (ITSLs and IRSLs) (Avery, 1993).

The ATW discussion noted that the meaningful change methodology of Avery (1993) also appears in the MDEQ (2005) report, “Permit to Install – Determining Applicability Guidebook” (*the Guidebook*). The Guidebook describes the method for determining if there is a *meaningful change in the nature of an air contaminant*, as a seven-step method:

1. Identify the TACs (for both the existing operation and proposed modification)
2. Calculate hourly potential to emit (PTE) (in pph)
3. Identify screening levels (ITSLs and IRSLs)
4. Calculate adjusted annual screening levels (all ITSLs with 1-, 8-, and 24-hour averaging times are converted to adjusted annual average ITSLs, using the SCREEN3 model conversion factors (1-hr AT/75; 8-hr AT/18; 24-hr AT/10))
5. Calculate Hazard Potential (HP) (hourly PTE ÷ IRSL or adjusted annual average ITSL)
6. Find TAC with highest HP (for both the existing operation and proposed modification)

7. Determine the percent change in HP (a 10% increase in HP is the criterion for “meaningful”)

It should be noted that these steps do not mention the other relevant scientific information to consider, as mentioned in the Avery (1993) paper (odor thresholds; non-inhalation exposure; effects on the environment).

The Guidebook also describes the same general approach to determining if there is a *meaningful increase in the quantity of an air contaminant* (based on a criterion of a 10% increase). The examples provided in the Guidebook indicate that, regardless of the HP calculations, a proposed change **is exempt** from needing a PTI if it passes the Rule 278 requirements and is included under another specific exemption (e.g., Rule 286(e)); and, it is **not exempt** under R 285 if the proposed increase would exceed a permit limit (e.g., a VOC hourly emission rate limit).

Although EPA is not supportive of the undefined term “meaningful” in the Part 2 Rules with regard to the SIP and criteria pollutants, the approach could continue to be utilized for TACs if it was more appropriately defined in the Rules. Because the air toxics rules are not part of the SIP, EPA has no role in reviewing the air toxics rules or an exemption from those rules based on however the agency defines a “meaningful” change in air toxics emissions.

The ATW discussed how the 10% is determined, and in particular, what is the baseline that is used. It was stated that, in historical and current practice, the baseline for a process can change outside of the permitting process (as allowed under R 285), so it can be difficult to know what the original baseline was. A Member mentioned that it does not make sense to compare an increase of all chemicals equally as they can have very different effects. Another Member stated that they are concerned with losing the R 285 exemption should AQD determine that it is inappropriately vague. There were also concerns expressed that with a 10% increase allowed under the exemption: the increase could be due to a more toxic compound; thresholds could be exceeded; and, multiple increments of 10% increases could potentially be compounded. Also, there was a comment that the goal should be a reduction in emissions, not an exempt increase in emissions. Some Members also expressed a concern that, if the agency were to adopt a restricted list of TACs, then companies may be allowed to make changes to non-TACs without obtaining a permit for the modification, if that is regarded as non-meaningful under R285. The Members said they would like AQD to draft some language to try to address this recommendation.

### **AQD Discussion and Proposal**

The concept that some “small” change, or increase, in air toxics emissions may be acceptable and exempted from requiring a permit, has been allowed under R 285 since 1992. This is similar in principle to the assessment of proposed new/increased criteria pollutant emissions in areas that are modeled to exceed a NAAQS standard; such emissions of criteria pollutants are deemed as not causing *or contributing to* a NAAQS exceedance if the modeled impacts are below “significant impact levels (SILs);” the various SILs vary from about 1-5% of the NAAQS.

AQD's position is that the key definitions for implementing R 285 should be in the Rules. The use of the currently available method for air toxics, as it appears in guidance documents (Avery, 1993; MDEQ, 2005), is not sustainable. While addressing the EPA's objections to Rule 285(b) regarding the criteria pollutants is outside the scope of the ATW, the ATW can recommend an approach for the air toxics.

AQD proposes that certain key elements of the available guidance (Avery, 1993; MDEQ, 2005) be developed into proposed Rules defining the key terms. Some aspects of the available guidance are proposed to be modified due to concerns of ATW Members and AQD staff. Once promulgated as Rules, the definitions would be applied to R 285, for air toxics only. The greatest benefit for regulatory streamlining would be to clarify the key terms and enable the continued use of the R 285 exemption from needing a Permit to Install. If that can be accomplished, then there does not appear to be a significant additional benefit (in terms of easier or faster permit application development or approval) in developing a new Rule that would provide an exemption from R 225 for proposed changes that do require a permit (i.e., for proposed modifications that do not qualify for an exemption from needing a PTI under Rule 285 or any other exemption Rule). It should be further discussed with the ATW, if it would suffice to correct the deficiencies in R 285 by defining the key terms, or if an additional exemption from R 225 is also recommended. This issue is carried forward to the "Key Issues" list below.

The proposed key definitions (which would appear in the Part 1 Rules) are:

**"Meaningful increase in the quantity of the emission"** means an increase in the potential to emit (hourly averaging time) of a toxic air contaminant that is 10% or greater compared to a baseline potential to emit, or which causes an exceedance of a permit limit or of an odor threshold in the ambient air. The baseline is the potential to emit established in an approved PTI application on or after 4/17/92 that has not been voided or revoked, unless it has been voided due to incorporation into a renewable operating permit.

**"Meaningful change in the quality and nature"** means a change in the toxic air contaminants emitted that results in an increase in the cancer or noncancer hazard potential that is 10% or greater, or which causes an exceedance of a permit limit or of an odor threshold in the ambient air. The hazard potential is the value calculated for each toxic air contaminant involved in the proposed change, before and after the proposed change, and it is the potential to emit (hourly averaging time) divided by the IRSL or the adjusted annual ITSL, for each toxic air contaminant and screening level involved in the proposed change. The adjusted annual ITSL is the ITSL that has been adjusted as needed to an annual averaging time utilizing averaging time conversion factors in accordance with the models and procedures in 40 CFR 51.160(f) and Appendix W adopted by reference in R 336.1299. The percent increase in the hazard potential is determined from the highest cancer and noncancer hazard potential before and after the proposed change. The potential to emit before the proposed change is the baseline potential to emit established in an approved PTI application on or after 4/17/92 that has

not been voided or revoked, unless it has been voided due to incorporation into a renewable operating permit.

The proposed definitions continue the AQD policy and practice of considering air toxics emission increases or hazard potential (HP) increases of less than 10% as not meaningful for purposes of the Rule 285 exemption. However, the definitions make clear that proposed changes are not exempt if they would result in the exceedance of a permit limit or pose an odor concern, even if the increases in a TAC emission or in the HP are less than 10%. And carcinogenic and noncarcinogenic effect-based SLs should be segregated from each other, not mixed together as in the current guidance. Many air toxics have IRSLS and ITSLs, and some have two ITSLs; the draft language makes clear that an HP must be calculated for all SLs. As a consequence of the segregation of carcinogenic and noncarcinogenic effects, a baseline would be needed for each in order to perform the HP calculation for each and potentially qualify for the exemption. The draft definitions also continue the practice of converting ITSLs to adjusted annual average ITSLs using the EPA scaling factors (in the AERSCREEN guidance), despite the reservations of at least one Member about the accuracy of those conversion factors; the practice is proposed to continue due to a lack of a known more appropriate method.

The proposed language clarifies what serves as the baseline for the HP calculation; the approach would address the concern that, currently, the baseline can change outside of PTI review and HP increases could potentially be aggregated over multiple rounds of process changes. The proposed language also makes reference to the date of the promulgation of the air toxics rules on April 17, 1992. This is intended to prevent the grandfathering of sources that have never undergone PTI review under the air toxics rules.

As noted by one Member, there is a significant link between the “meaningful change” issue and the proposed restricted TAC list. If the ATW recommends that the AQD adopt a defined list of TACs, and if AQD proceeds to adopt that approach, that will have ramifications on how Rule 285 is applied under the proposed definitions. The key issue is, should non-TACs be accounted for in the HP calculation. If they are not, then the exemption would be more “streamlined”, and, it may encourage some companies to switch to the use / emission of non-TACs. If that occurs to some extent, would that be generally good for the environment, or, would it raise significant concerns? If the HP calculations only involve the defined list of TACs, then a company may lose the basis for their baseline; also, post-change non-TACs would not be accounted for in the HP calculation. If a broader definition of air toxics is utilized for R 285 than the restricted TAC list applied for R 225, that may address concerns that companies could switch to non-TACs that are untested and could be relatively toxic. However, if that resulted in excluding such sources from using the exemption and thus requiring a PTI application and R 225 review, the R 225 review would still generally/routinely be limited to the TAC list. This issue is carried forward to the “Key Issues” list below. If there is a non-TAC that has a permit limit, the company could still not make a change that would cause an exceedance of the permit limit.

With the historical implementation of the Rule 285 exemption, as well as under the proposed definitions, there is reliance on whatever SLs are “current.” It is recognized that screening

levels can change over time. For example, permitted emissions may have accounted for a PTI review of noncarcinogenic effects (ITSLs), while more recently one of the substances has been identified and regulated as a carcinogen. Or, an ITSL may have been changed to a less stringent value due to recalculation based on better data. Permits to Install do not expire, and permitted air toxics emissions are not re-visited according to any schedule or based on emerging toxicological data and SL changes. A PTI reflects a level of public health protection that is approvable at the time of the permit issuance. The AQD recognizes that the proposed definitions are somewhat simplistic, and would continue to allow some potential for a distorted picture of what changes are “meaningful” in complex situations where SLs may have changed over time.

### **Key Issues to Discuss With the ATW In Order to Draft an ATW Recommendation**

1. If the agency can support the R 285 exemption from requiring a PTI based on air toxics, by defining the key terms in Rules generally following the Avery (1993) method as described above, would it still be important to pursue a similarly worded R 225 exemption?
2. Should an R 285 exemption HP calculation be limited to the same R 225 defined list of TACs, or should it require an accounting for a broader list of air toxics?

### **References**

Avery, G. 1993. A Description of the New Air Toxic Permit Exemptions Relating to Pollution Prevention. Presented at the 17<sup>th</sup> Annual Meeting and Spring Conference, Michigan Chapter, East Central Section, Air and Waste Management Association, Detroit, MI; May 11, 1993. Contained as Appendix G in: MDEQ (2005).

MDEQ. 2005. Permit to Install – Determining Applicability Guidebook. [http://www.michigan.gov/documents/deq/deq-ess-caap-pti-determiningapplicabilitygdbk\\_281875\\_7.pdf](http://www.michigan.gov/documents/deq/deq-ess-caap-pti-determiningapplicabilitygdbk_281875_7.pdf)