

## APPENDIX 14 AIR TOXIC INCLUDING AIR TOXIC PERMITTING

### CONTROL OF MERCURY EMISSIONS: 15A NCAC 2D .0537

**15A NCAC 2D .0537**, Control of Mercury Emissions, applies to:

1. industrial processes that use, handle, or process mercury or mercury compounds, such as battery manufacturing, and
2. ore roasting where mercury or mercury compounds are recovered.

It does not apply to:

1. industrial processes where mercury or mercury compounds are an incidental impurity in the materials being processed,
2. ore roasting where mercury or mercury compounds are a non-recovered impurity,
3. fuel combustion,
4. incinerators, whose mercury and mercury compound emissions are covered under **15A NCAC 2D .1205**, Emission Standards,
5. sources covered under national emission standards for hazardous pollutants for mercury, or
6. sources covered under prevention of significant deterioration for mercury.\*

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\*Thomas Allen to Assistant Chiefs, *et al.*, "15A NCAC 2D .0537, Control of Mercury Emissions" (memorandum).

A facility or source covered under **15A NCAC 2D .0537** may be required to reduce its mercury emissions below that allowed by this Rule in order to comply with the air toxic rules.\*

## **TOXIC AIR POLLUTANT GUIDELINES: 15A NCAC 2D .1104**

Fluorides excludes hydrogen fluoride. It includes all other fluorides. Only the weight of the fluoride part of the compound is used when comparing to the acceptable ambient level.

## **DETERMINATION OF AMBIENT AIR CONCENTRATION: 15A NCAC 2D .1106**

### **Division of Air Quality Modeling Option**

Rule **15A NCAC 2D .1106** provides an option for the permit applicant to request the Division of Air Quality (DAQ) to perform the initial modeling analysis. (The permit applicant has the option of doing the modeling himself or having the DAQ do the modeling.) If the DAQ performs the modeling, the permit applicant has to provide the emission rates, stack parameters, and other information that the DAQ needs to do the modeling. If the initial review of the modeling request indicates extensive or inappropriate use of state resources or if the DAQ's modeling analysis fails to show compliance with the AAL, the modeling demonstration becomes the responsibility of the permit applicant.

### **Modeling Peak 15-Minute Emission Rates for Certain Pollutants**

Modeled emission rates for ten toxic air pollutants that are acute irritants are based on the highest emission rate occurring in any single 15-minute period. The ten pollutants are acetaldehyde, acetic acid, acrolein, ammonia, bromine, chlorine, formaldehyde, hydrogen chloride,

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\*Thomas Allen to Assistant Chiefs, *et al.*, "15A NCAC 2D .0537, Control of Mercury Emissions," 7 Dec. 1995 (memorandum).

hydrogen fluoride, and nitric acid and are listed in Paragraph (d) of **15A NCAC 2D .1106**.

### **Modeling Plan**

Elements of the modeling plan require only discussions. In addition, the modeling plan is to include a discussion of sources emitting the pollutants that are not to be included in the model with an explanation of why they are being excluded, i.e., why the source will not affect the modeling analysis. The purpose of this requirement is to assure that no source that should be included in the modeling analysis is left out.\*

### **Modeling Procedures for Lease Arrangements**

The following procedures are used when modeling air toxic emissions where one facility is located within another facility's property boundaries (i.e., the "doughnut" effect). If the larger facility is required to perform air toxics modeling, the larger facility must place its modeling receptor array at its own outer property boundary. The larger facility need not place receptors along the inner facility's leased space or property boundary (i.e., the hole in the "doughnut"). A facility that leases space or property within another facility's property boundaries and that is required to perform air toxics modeling may place its modeling receptor array at the larger facility's outer property boundary. In making the required modeling demonstration, neither facility considers the other facility's emissions in its modeling analyses. (However, the DAQ may do a combined impact analysis under **15A NCAC 2D .1107**, Multiple Facilities, to ensure that the combined impacts do not adversely affect human health.) This procedure is only applicable to industrial facilities that are separate corporate entities contained within each other's property boundary and is not to be construed to be an alteration of the definition of "facility."<sup>†</sup>

### **Emission Rates and Process Weight Rates**

The air toxic rules have three averaging times: hour, day, and annual. Many industrial processes may have varying process rates on an hourly, daily, and annual basis. Consequently, the use of different process

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\**Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, p. I-42.

<sup>†</sup>Laura S. Butler to Regional Supervisors, *et al.*, "Lease Arrangement Modeling Procedures for 15A NCAC 2D .1100" (memorandum)

weight rates for each or a combination of the averaging time is acceptable for demonstrating compliance with the air toxic rules as long as compliance with all other rules are achieved. The process weight rates and their respective averaging times must be in the issued permit.\*

## APPLICABILITY: 15A NCAC 2Q .0701

### **Restarted Facilities**

A facility that has previously shutdown but is planning to reopen may avoid the air toxic evaluation if the following conditions are met:

1. The facility must have had an air quality permit in good standing (expired or unexpired) before the shutdown and normal renewal of that permit would not have triggered an evaluation.
2. During the shutdown period, the facility has not and upon restart will not be making any physical change or change in method of operation of the facility as described by the previously good standing permit.
3. The facility must provide documentation with the application that it intended to keep the facility operational after the shutdown. Such documentation may include records of maintenance on the facility or equipment or proof of periodic, cyclical, or seasonal manufacturing demands. For periods greater than 24 months, documentation must show that equipment within the facility received continuous maintenance consistent with the intent to maintain the facility for a future restart. If such documentation is unavailable, the intent to maintain the facility for future operations is questionable.

Any reopening of a facility whose SIC code has been previously called must be evaluated for air toxics.<sup>†</sup>

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\*Laura Butler to Regional Air Quality Supervisors, *et al.*, "Permitting Procedures, Process Weight Rates Applicable Regulations: 2D .0515 et al.; 2D .1100; 2H .0610," 18 Aug. 1994 (memorandum)..

<sup>†</sup>Alan Klimek to Regional Engineers and Assistant Chiefs, "Applicability of 2H .0610 to Restarted Facilities," 21 Mar. 1994 (memorandum).

## EXEMPTIONS: 15A NCAC 2Q .0702

### Combustion Sources

The combustion source exemption applies to boilers, space heaters, process heaters, internal combustion engines, and combustion turbines that burn only unadulterated wood or unadulterated fossil fuels. The combustion of other substances such as hazardous waste, used solvent, or industrial process gases, disqualifies the sources from this exemption. Included under this exemption are:

- (1) most industrial, commercial, and institutional boilers;
- (2) most heaters used to heat asphalt, residual oil, or other viscous material so that it will flow; and
- (3) most generators (peak shaving generators, emergency generators, etc.) and engines used to operate pumps and compressors.

Not eligible for this exemption are sources where the combustion gases and process gases mix, such as asphalt dryers, brick kilns, lightweight aggregate kilns, and lumber kilns. This exemption does not apply to incinerators.\*

Rules **15A NCAC 2Q .0701(c)** and **.0702(a)(18)** require the Commission to decide within 18 months whether to keep or remove the combustion source exemption. **15A NCAC 2Q .0701(c)** requires the DAQ to assess, within one year after promulgation, the combustion source maximum achievable control technology (MACT) standard developed under the federal Industrial Combustion Coordinated Rulemaking (ICCR) to determine if additional measures are necessary with respect to toxic air pollutant emissions from combustion sources. If the EMC decides to remove the exemption, it shall initiate rulemaking procedures to remove this exemption. (An apparent conflict exists in **15A NCAC 2Q .0702(a)(18)** between the stated exemption and the parenthetical explanation. The parenthetical explanation is correct. The exemption does not automatically cease 18 months after promulgation of the combustion source MACT. It can only cease by the Commission removing it through rulemaking.)

### Research and Development Laboratories

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\**Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, p. I-52.

Title V permits are now required to contain all sources at the facility including research and development laboratories that were previously exempted from Title V permitting. The air toxic permit exemption rule, **15A NCAC 2D .0702**, exempted research and development laboratories unless they were required to have a Title V permit. Before the elimination of all exemptions at Title V facilities, research and development laboratories were required to have a Title V permit only if it was major by itself. In keeping with the original intent of **15A NCAC 2Q .0702(a)(17)**, research and development laboratories would have to be a major source by itself before it would lose its air toxic permitting exemption.\*

### **Wood Furniture Manufacturing Operations**

The exemption for wood furniture manufacturing applies only to operations defined in and covered under the wood furniture manufacturing operations MACT, 40 CFR Part 63, Subpart JJ. It does not extend to other sources subject MACT standards for other industrial source categories.<sup>†</sup>

Smaller wood manufacturing facilities not currently subject to the wood furniture MACT may opt via permit to comply with the requirements of 40 CFR Part 63, Subpart JJ, and thus be exempted from the state air toxic rules.<sup>‡</sup>

### **Gasoline Dispensing Facilities**

Gasoline fuel terminals at airports covered under **15A NCAC 2D .0928**, Gasoline Service Stations Stage I, are exempted from the toxic air pollutant rules.<sup>¶</sup>

### **Bulk Gasoline Terminals**

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\*Thomas Allen to Donald van der Vaart, "Re: R&D exemption from toxics," 23 June 2000 (e-mail).

<sup>†</sup>*Report of Proceedings of Public Hearing on Proposed Amendments to Air Toxic Rule 15A NCAC 2Q .0702 Exemptions to Exempt Wood Furniture Operations Complying with Maximum Achievable Control Technology*, May 6, 1999, p. I-21. Tom McKinney to Holly Gross, *et al.*, "Homes by Oakwood," 10 Feb. 2000 (e-mail).

<sup>‡</sup>*Report of Proceedings of Public Hearing on Proposed Amendments to Air Toxic Rule 15A NCAC 2Q .0702 Exemptions to Exempt Wood Furniture Operations Complying with Maximum Achievable Control Technology*, May 6, 1999, p. I-20.

<sup>¶</sup>"Air Toxic Regulations: 15A NCAC 2D .1100 and 2H .0610: Question &Answers," 9 March 1990.

All activities at a bulk gasoline terminal involved with the handling and storage of gasoline, fuel oils, kerosenes, and jet fuels are covered under the bulk gasoline terminal exemption. Other materials stored at a bulk gasoline terminal may be exempted under the storage tank exemption if the material has a vapor pressure less than 1.5 psia. Tanks at a bulk gasoline terminal exempted under the storage tank exemption are not included in an air toxic evaluation. (The storage tank exemption in **15A NCAC 2Q .0702** differs from the storage tank exemption in **15A NCAC 2Q .0102**.)\*

### **Affects of Modifications on Exempted Sources**

The addition or modification of an activity exempted by **15A NCAC 2Q .0702** does not cause the source or facility to be evaluated for emissions of toxic air pollutants. However, if the facility is required to be evaluated, emissions from gasoline dispensing facilities or gasoline service stations, ethylene oxide commercial sterilization of medical devices and subsequent storage, bulk gasoline plants, and bulk gasoline terminals are included in the evaluations. These activities may be included in the permit if necessary to assure compliance with the air toxic rules. Emissions from all other sources exempted by this Rule are ignored in the evaluation and are not included in the permit.

## **DEFINITIONS: 15A NCAC 2Q .0703**

### **Actual Rate of Emissions**

This definition of “actual rate of emissions” applies only for the purpose of determining net increases in emissions. It should not be used in the context of actual emissions in **15A NCAC 2Q .0711**, Emission Rates Requiring a Permit. For an annual averaging period, the average rate at which the source actually emitted the pollutant during the two years preceding the date of the modification that represents normal operation of the source is used. For a 24-hour or one-hour averaging period, the maximum actual emission rate at which the source actually emitted for the applicable averaging period during the two years preceding the date of the modification that represents normal operation of the source is used. If the period does not represent normal operation,

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*\*Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules, Nov. 18, 1997, pp. I-52, I-72, I-73, I-81.*

the Director may allow the use of a different, more representative, period.\* For new or modified sources, the average rate is the rate that the source will actually emit the pollutant as determined by engineering evaluation for the applicable averaging period.

For the purposes of **15A NCAC 2Q .0711**, actual emissions are the actual emissions during the most recent appropriate time period, i.e., during the last hour for pollutants with an hourly AAL.†

### Normal Operation

“Normal” operation is how the source has been typically operated historically. For example, if historically the source has operated 6000 hours per year, but because of a recession it has only operated 2000 hours per year over the last two years, the applicant can request that the Director allow calculating emissions using 6000 hours instead of 2000 hours. If the applicant can make a satisfactory showing that 6000 hours is more representative of the source’s operation, the Director may, but is not required to, allow the applicant to use the longer period. Likewise, with batch operations, if historically the source has typically done six batches per day, but because of a recession, the source has been doing two batches per day, the Director could allow emissions to be calculated on the basis of six batches per day. For a chemical batch process, the review and evaluation of what is representative and normal may be more in depth and detailed because of possible chemical changes over time.‡

### Net Increase in Emissions

“Net increase in emissions” is the sum of any increases in permitted allowable and decreases in the actual rates of emissions from the proposed modification of the sources at the facility for which the air permit application is being filed. If the net increase in emissions from the proposed modification is greater than zero, all other increases in permitted allowable and decreases in the actual rates of emissions at the facility within five years immediately preceding the filing of the air permit application for the proposed modification that are otherwise

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\**Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, pp. I-79, I-80.

†*Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, p. I-80.

‡*Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, p. I-80.

creditable emissions may be included. Thus, if a modification does not result in a net increase in emissions, no five-year netting demonstration is required. If the modification does result in a net increase in emissions, a five-year netting demonstration may be used if it shows no net increase in emissions of the five-year period including the modification.

### **Unadulterated Fossil Fuel**

Unadulterated fossil fuel means fuel oils, coal, natural gas, and liquefied petroleum gas to which no toxic additives have been added. The term toxic additives refers to additives or contaminants that could result in the emission of toxic air pollutants. \*

Used oil is considered equivalent to unadulterated fossil fuel if the toxics are demonstrated to be at a level of no greater concern than those of unadulterated fossil fuels. The permit applicant or supplier of the used oil must show to the satisfaction of the Director that the used oil toxic additives or contaminants are at a level such that it could be defined as unadulterated.<sup>†</sup> That is, the permit applicant or supplier needs to show that the used oil toxic additives and contaminants have been reduced to a level such that the used oil is equivalent to unadulterated fossil fuel.<sup>‡</sup>

The following parameters may be used to determine if used oil<sup>¶</sup> is “unadulterated fossil fuel”:

<u>Constituent/Property</u>	<u>Allowable Level</u>
arsenic	1 ppm maximum
cadmium	2 ppm maximum
chromium	5 ppm maximum
lead	100 ppm maximum
total halogens	1000 ppm maximum
flash point	100°F minimum

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\*Russell Hageman to Sammy Amerson, “Definition of Unadulterated Fuel,” 11 June 1991 (memorandum).

<sup>†</sup>*Ibid.*

<sup>‡</sup>Lee A. Daniel to Bill Noble, “Noble Oil Services, Inc.: Used Oil Demonstration,” 14 June 1991 (letter).

<sup>¶</sup>Earl McCune to Lee Daniel, “Used Oil Analytical Guidelines” 11 June 1991, (memorandum). Earl McCune to Lee Daniel, “Used Oil; Noble Oil Services, Inc.” 14 June 1991, (memorandum). Lee A. Daniel to Bill Noble, “Noble Oil Services, Inc.: Used Oil Demonstration,” 14 June 1991 (letter).

sulfur	1.0%
ash	1.0%

## MODIFICATIONS: 15A NCAC 2Q .0706

An air toxic evaluation is not required for modifications at a facility whose emissions of toxic air pollutants result only from sources exempted under Rule **15A NCAC 2Q .0102**, Activities Exempted from Permit Requirements, unless the facility is subject to a previously promulgated MACT or GACT or unless the SIC of the facility has previously been called.\*

Under **15A NCAC 2Q .0706(b)(2)**, if the Division finds that a modification may result in an acceptable ambient level being exceeded for a toxic air pollutant, then it can require the facility to do an air toxics evaluation for that pollutant. Also, if the Division suspects that a modification could or would result in an acceptable ambient level being exceeded, it can require the facility to provide a showing (modeling demonstration) of the effect of the modification on ambient concentration.<sup>†</sup>

## PREVIOUSLY PERMITTED FACILITIES: 15A NCAC 2Q .0707

Any facility with a permit that contains a restriction based on the evaluation of a source exempted under **15A NCAC 2Q .0702** may request a permit modification to adjust the restriction by removing from consideration the portion of emissions resulting from the exempt source. However, if the Director determines that the removal of the exempt source will result in an AAL being exceeded, the source shall not be removed from the permit. For example, a facility has a process with emissions in common with its boiler, which is now exempt. The permit contains a restriction on either the process or boiler to prevent an AAL from being exceeded. If removal of the boiler emissions from the

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\**Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, p. I-87.

<sup>†</sup>Thom Allen to William Willets, "Re: Permitting Modifications Under Air Toxics," 18 May 2000(e-mail).

evaluation would remove or lessen the restriction, the boiler would have to remain on the permit because the unrestricted emissions would cause the AAL to be exceeded. If a restriction has been placed on the process and if the AAL would not be exceeded if the boiler were removed from consideration, i.e., the boiler's emissions do not contribute to the exceedance of the AAL or its contribution is negligible, then that restriction would remain as it is, and the boiler can be removed from the permit. Emissions from exempt sources removed from a permit are ignored in future evaluations. Likewise, emissions from exempt sources added later to a facility are ignored.

The newly exempted sources are not automatically removed from the permit. The permittee must request the removal. No fee is charged solely for such permit modification. If the permit is also being modified for other reasons, the appropriate fee should be paid.

A facility may not request revision and relaxation of permit conditions, emission rates, and acceptable ambient levels, on the grounds they will be subject to a maximum achievable control technology rule in the future. However, once a facility subject to MACT demonstrates compliance with the acceptable ambient levels, future demonstration shall only be required on a five-year basis (**15A NCAC 2Q .0701**). The rules still require a compliance demonstration when the last MACT, except the combustion source MACT, is applied to the facility.\*

## **COMPLIANCE SCHEDULE FOR PREVIOUSLY UNKNOWN TOXIC AIR POLLUTANT EMISSIONS: 15A NCAC 2Q .0708**

To qualify for Rule **15A NCAC 2Q .0708**, the emissions of the pollutant would have to had been unknown to the facility. Furthermore, the permitting agency must not have known about the emissions of this pollutant during the permitting process, or if it did know, it failed to notify the facility of this fact. If the facility knew about such emissions and failed to disclose these emissions, it would not be eligible for this Rule.†

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\*Alan W. Klimek to Jim Warren, 1 May 1998 (letter on revising permits in light of revised air toxic rules).

†*Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules*, Nov. 18, 1997, p. I-91.

## DEMONSTRATIONS: 15A NCAC 2Q .0709

### Area Exceeding Acceptable Ambient Level Is Not Inhabitable or Occupied

The Scientific Advisory Board on Toxic Air Pollutants has provided guidelines for the demonstration allowed under **15A NCAC 2D .0709(a)(2)(A)**. This Part allows emissions from a facility to exceed an acceptable ambient level if the facility can show that the area where the exceedance occurs is not inhabited or occupied for the duration of the averaging time of the pollutant of concern.

The first portion of the demonstration is a detailed modeling exercise according to the DAQ's modeling guidelines and procedures. A detailed presentation of the modeling results must be submitted to and approved by the DAQ. A graphic representation of the modeled results for each compound exceeding the acceptable ambient level should be presented on a USGS topographic map or equivalent (with sufficient detail to depict local features) including:

1. isopleths of concentration at and above the acceptable ambient level in areas beyond the property line described as uninhabitable, sufficient to characterize concentration gradients,
2. isopleths of concentration in habitable areas of highest modeled concentration, sufficient to characterize concentration gradients, and
3. points of highest modeled concentration beyond the property line.

These detailed maps are used as a basis for the exposure assessment.

Current and potential future activity patterns and development must be considered. Elements of an exposure assessment should include:

1. documentation of factors that preclude habitation or continuous occupancy of the areas where the appropriate dispersion model indicates the acceptable ambient level is exceeded, e.g., physical or regulatory constraints;
2. documentation of all human activities that occur where the acceptable ambient level is exceeded;
3. documentation of specific activities of population segments subject to longest duration of exposure or the highest modeled concentrations, which will be used to

estimate the duration of exposure to concentrations above the acceptable ambient level;

4. characterization of emission timing, i.e., continuous versus periodic, to be considered (Periodic release of the compound of concern could result in significantly higher than modeled concentration at given locations during particular times of the day. This may apply to two situations: (a) a compound that causes both chronic and acute health effects may be regulated by a 24-hour AAL, but if the emission of the compound occurs during a short period, exposure to high short-term concentrations may result in acute health effects, which are not acceptable, and (b) if total emissions of a specific carcinogen or chronic toxicant are released for a short time each day, a population active in the area during such time may be exposed to concentrations greater than estimated by the dispersion model. In these cases, a time-weighted averaging of the exposure should be performed if the emissions are markedly periodic.)
5. consideration of all routes of exposure relevant to the health effects of concern.

The acceptable cancer risks due to exposure to carcinogenic compounds are reflected in the acceptable ambient levels. Any combination of exposures to a specific carcinogen from a specific source should be equal to or less than the average acceptable ambient level concentration. The total annual exposure to the population most exposed to the pollutant should be calculated using a method of summation to arrive at a time weighted average exposure. The proportion of the year a population is estimated to be exposed to a specific model concentration above the acceptable ambient level should be multiplied by that concentration, and added to the proportion of the rest of the year multiple by the concentration at the habitable area that has the highest modeled concentration. For example, if a person spent 50 percent of his time in a noninhabitable area where the concentration of a particular air pollutant was 150 percent of the acceptable ambient level and if the highest concentration of that pollutant in an inhabitable area is 50 percent of the acceptable ambient level, the following calculation would be performed:  $(0.5 \times 1.5 \text{ AAL}) + (0.5 \times 0.5 \text{ AAL}) = 1 \text{ AAL}$ . If the average annual exposure calculated as described above is equal to or below the acceptable ambient level, the risk may be described as acceptable.

The criteria described above for carcinogens should be used for estimation of acceptable exposure to chronic toxicants regulated by 24-hours acceptable ambient levels. The time-weighted averaging period in this case would be 24 hours.\*

### **Pollution Prevention Plan**

Rule 15A NCAC 2Q .0709 requires the owner or operator of a facility to develop and implement a pollution prevention plan when the economic hardship, technical infeasibility, or site-specific risk assessment compliance options are used. The minimum elements of the pollution prevention plan are specified in the Rule and are:

- (1) a statement of corporate and facility commitment to pollution prevention;
- (2) identification of current and past pollution prevention activities;
- (3) a time line and strategy for implementation;
- (4) a description of ongoing and planned employee education efforts;
- (5) identification of internal pollution prevention goals selected by the facility and expressed in either qualitative or quantitative terms.

Along with the permit application, the facility shall submit the pollution prevention plan. The pollution prevention plan shall be maintained on the site. A progress report on implementation of the plan shall be prepared by the facility annually and shall be made available to DAQ personnel for review upon request. This pollution prevention plan is not limited to air emissions, but may cover all media.

## **EMISSION RATES REQUIRING A PERMIT: 15A NCAC 2Q .0711**

The toxic permitting exemption rates apply to the entire facility.<sup>†</sup>

### **Calculation of Toxic Permitting Exemption Rates**

#### **Original Calculations – May 1990 to July 1996**

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\*Lori Cherry to Alan Klimek, *et al.*, "Final guidelines for site-specific risk assessment," 6 Dec. 1994.

<sup>†</sup>"Air Toxic Regulations: 15A NCAC 2D .1100 and 2H .0610: Question &Answers," 9 March 1990.

Toxic Permitting Exemption Rate (TPER) is also called Permit Exemption Level (PEL), Modeling Exemption Emission Rate (MEER), and Permit Exemption Emission Rate (PEER).

Most of the TPERs contained in **15A NCAC 2Q .0711** have been computed using the following equations:

for 1-hour AAL

$$[(\text{AAL (mg/m}^3\text{)}) \times (1 \text{ lb/hr})] \div (3.932 \text{ mg/m}^3) = \text{lb/hr}$$

for 24-hr AAL

$$[(\text{AAL (mg/m}^3\text{)}) \times (1 \text{ lb/hr}) \times (24 \text{ hr/day})] \div [(2.864 \text{ mg/m}^3) \times (0.4)] \\ = \text{lb/day}$$

for annual AAL

$$[(\text{AAL (mg/m}^3\text{)}) \times (1 \text{ lb/hr}) \times (8760 \text{ hr/yr})] \div [2.864 \text{ mg/m}^3 \times (0.045)] \\ = \text{lb/year}$$

The PTPLU-2 model, which is a point source gaussian dispersion screening model, has been used to calculate the 1-hour concentrations. The model incorporates a set of worst case meteorological data. Stack parameters have been selected that would result in conservatively high ground level concentrations. The input parameters are as follows:

emission rate	0.126 grams/sec (1 lb/hr)
physical stack height	5 meters
stack gas temperature	293° kelvin
stack gas velocity	0.1 meter/sec
stack diameter	1.0 meter

The highest modeled concentration is 3.932 mg/m<sup>3</sup>. This concentration has been used for the 1-hour averaging period. Because this concentration occurs with a wind speed of less than 0.5 m/s, it is assumed not to be realistic for the 24-hour or annual period. The highest modeled concentration for a wind speed at or greater than 1.0 m/s is 2.864 mg/m<sup>3</sup>. This concentration has been used for the 24-hour and annual averaging periods. The denominators in these equations (i.e., 0.4 for 24-hour averaging period and 0.045 for the annual averaging period) convert the 1-hour concentration to the other averaging periods.

### *Calculations from July 1998*

TPERs for toluene diisocyanate, 2,4- and 2,6-isomers and the one hour value for methylene chloride have been computed using the following equations:

for 1-hour AAL

$$[(\text{AAL (mg/m}^3)) \times (1 \text{ lb/hr})] \div (4.52 \text{ mg/m}^3) = \text{lb/hr}$$

for 24-hr AAL

$$[(\text{AAL (mg/m}^3)) \times (1 \text{ lb/hr}) \times (24 \text{ hr/day})] \div [(4.52 \text{ mg/m}^3) \times (0.4)] \\ = \text{lb/day}$$

for annual AAL

$$[(\text{AAL (mg/m}^3)) \times (1 \text{ lb/hr}) \times 8760 \text{ hr/yr}] \div [(4.52 \text{ mg/m}^3) \times 0.08] \\ = \text{lb/yr}$$

SCREEN2 (92245), a gaussian dispersion screening model, has been used to estimate ambient concentrations based on a very conservative modeling scenario. The model automatically uses a set of worst case meteorological data. The following input parameters are expected to result in a conservatively high ambient concentration:

emission rate	0.126 grams/sec (1 lb/hr)
physical stack height	5.0 meters
stack gas temperature	293° kelvin
stack gas velocity	0.001 meter/sec
stack diameter	1.0 meter

The highest modeled concentration from this scenario was 4.52 mg/m<sup>3</sup>, which occurred with a wind speed of 1 m/sec. This concentration is higher than the modeled concentration used to develop the original TPERs (2.864 mg/m<sup>3</sup>, 1 m/sec wind speed) above. The original calculations used an exit velocity of 0.1 m/sec. The new exit velocity of 0.001 m/sec significantly increases the maximum concentration. For horizontal stacks or non-buoyant plumes, the EPA recommends a 0.001 m/sec exit velocity for worst case determinations.

Another difference in the equations is the annual conversion factor. The 0.45 annual conversion factor used in the earlier calculations has changed to 0.08 as recommended in the EPA's SCREEN2 guidelines.

## **POLLUTANTS WITH OTHERWISE APPLICABLE FEDERAL STANDARDS OR REQUIREMENTS: 15A NCAC 2Q .0713**

Rule **15A NCAC 2Q .0713** applies only to situations where a facility desires to substitute different control measures that it has in place under the

toxics program in lieu of a federal MACT standard. It requires that toxics permits for Title V facilities subject to Section 112 of the federal Clean Air Act contain levels of control no less stringent and in the same form and units of measure as the applicable federal standard. A facility using the provisions of this Rule would have to achieve compliance by the same date that it would be required to comply with the MACT standards. The permit needs to contain the level of control and compliance schedule\*.

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*\*Report of Proceedings of Public Hearing on Proposed Amendments to Rules 15A NCAC 2D, 2H, and 2Q Air Toxic Rules, Nov. 18, 1997, p. I-10.*