

STAPPA and ALAPCO's Recommended MACT Limits for Polyvinyl Chloride Plants **July 6, 2006**

Introduction

On June 18, 2004 the U.S. Court of Appeals for the District of Columbia Circuit vacated the Maximum Achievable Control Technology (MACT) standard for polyvinyl chloride (PVC) and copolymer production that EPA adopted on July 10, 2002 under Section 112 of the Clean Air Act. EPA must now develop a new standard. In the meantime, since there is no rule in effect and it is more than 18 months after the deadline for EPA to establish standards, state and local air agencies could be required to develop their own regulation pursuant to Section 112(j) of the Clean Air Act, commonly known as the MACT "hammer".

EPA's 2002 MACT was woefully inadequate and merely re-adopted the agency's outdated hazardous air pollution standards for vinyl chloride from the 1970s. Therefore, it should not serve as a model for state and local agencies that wish to regulate emissions from PVC plants today. Accordingly, the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO) convened a workgroup of state and local experts on PVC plants and developed the associations' own recommended emission limits for these facilities, based upon the parameters for establishing MACT mandated by Section 112(d) of the Clean Air Act. These recommendations cover only vinyl chloride and do not purport to address the other hazardous air pollutants that PVC plants emit and for which EPA must also establish standards.

Who are STAPPA and ALAPCO?

The State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO) are the two national associations of air quality officials in the states, territories and major metropolitan areas throughout the country. The members of STAPPA and ALAPCO have primary responsibility for implementing our nation's air pollution control laws and regulations. The associations serve to encourage the exchange of information and experience among air pollution control officials; enhance communication and cooperation among federal, state and local regulatory agencies; and facilitate air pollution control activities that will result in clean, healthful air across the country. STAPPA and ALAPCO share joint headquarters in Washington, DC.

For further information, contact STAPPA and ALAPCO at 444 North Capitol Street, NW, Suite 307, Washington, DC 20001 (telephone: 202-624-7864; fax: 202-624-7863; email 4cleanair@4cleanair.org) or visit our associations' web site at www.4cleanair.org.

History of the PVC MACT Standard

EPA issued standards for vinyl chloride in 1976, 14 years prior to the Clean Air Act Amendments of 1990 that established the Maximum Achievable Control Technology (MACT)

program. The 1976 standard was issued under the risk-based National Emission Standards for Hazardous Air Pollutants program (Section 112) that existed at the time.

In 1990, when Congress amended the Clean Air Act, it revamped the air toxics control program by including provisions under Section 112(d) calling for EPA to establish technology-based MACT standards to limit emissions of a list of hazardous air pollutants. Pursuant to the Clean Air Act, EPA is required to establish standards for new sources consistent with the following:

The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator.

For existing sources in a source category in which there are fewer than 30 sources (which is the case for PVC facilities), the Clean Air Act states that the standards shall not be less stringent, and may be more stringent than:

the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory....

In developing the MACT standard for PVC plants, EPA concluded that the existing vinyl chloride standard satisfied the requirements of the 1990 Clean Air Act Amendments and determined that those limits constituted the minimum MACT – or the MACT “floor”. The agency then decided not to propose standards more stringent than the floor. Additionally, EPA determined it would not establish individual standards for other hazardous air pollutants (HAPs) emitted by PVC manufacturing facilities and would use vinyl chloride as the surrogate for those other HAPs. EPA issued its final rule for Polyvinyl Chloride and Copolymers Production on July 10, 2002.

Several environmental groups sued EPA over the final PVC MACT, basing their challenge on, among other things, STAPPA and ALAPCO’s February 8, 2001 letter to the docket commenting on the proposed MACT standard. In general, STAPPA and ALAPCO’s comments indicated that the proposal was not stringent enough to meet the requirements of the Clean Air Act and failed to include other HAPs besides vinyl chloride.

The U.S. Court of Appeals vacated the PVC MACT rule on June 18, 2004. The court agreed that EPA should not have used vinyl chloride as a surrogate for other HAPs. The court did not side with the litigants on their claim that EPA did not establish a stringent-enough MACT standard, largely because the plaintiffs had not raised their concerns in sufficient detail during the comment period. However, the entire standard was vacated and remanded to EPA to resolve the surrogate issue. (EPA subsequently petitioned for a rehearing. However, on April 19, 2005, the court denied the petition and issued the mandate.)

EPA is currently developing a new standard. However, Section 112(j) of the Clean Air Act – the MACT “hammer” provisions – calls upon state and local air agencies to develop their own limits on a case-by-case basis if there is no rule in effect and it is over 18 months after the deadline for EPA to establish standards. That is the situation that exists today. Because state and local agencies could be in the position of having to determine MACT for this source category on their own, STAPPA and ALAPCO have undertaken the development of a “presumptive MACT”, or limits for agencies to use if faced with the need for a case-by-case MACT. Additionally, the associations urge EPA to consider these limits in developing the revised MACT standards, because they are more reflective of what MACT should be than the previous regulation was.

About PVC Plants in the United States

PVC is used to manufacture many plastic products, including insulation, pipes, raincoats, packaging, latex paint and numerous other items. There are approximately 19 PVC plants in nine states. Those states are: Alabama, Delaware, Illinois, Kentucky, Louisiana, Michigan, Mississippi, New Jersey and Texas.

In PVC and copolymer production, vinyl chloride is pressurized and agitated in a reactor, which causes polymerization. It can then be transformed into various products. Emissions occur when gas escapes through equipment that is opened for maintenance, through leaks in the system or through recovery systems in the exhaust stream. Also, there is residual vinyl chloride in the PVC (called “residual vinyl chloride monomer” or RVCM). The residual is removed from the PVC through stripping, which also results in emissions.

Health Effects of Exposure to Emissions from PVC Plants

Plants that manufacture PVC emit large amounts of vinyl chloride gas, a known human carcinogen, as well as vinyl acetate, vinylidene chloride, methanol, chlorine, hydrogen chloride, ethylene dichloride, chloroethane and chloromethane.

According to EPA, vinyl chloride is a known human carcinogen. Additionally, chronic exposures to vinyl chloride have resulted in liver damage and animal studies raise concerns about possible reproductive and developmental hazards to humans. Specifically, EPA includes the following passage related to health effects in its proposed regulation of December 8, 2000 (65 *Federal Register* 76960):

Acute (short-term) exposure to high levels of vinyl chloride in air has resulted in central nervous system effects, such as dizziness, drowsiness and headaches in humans. Chronic (long-term) exposure to vinyl chloride through inhalation and oral exposure in humans has resulted in liver damage. There are positive human and animal studies showing adverse effects which raise a concern about potential reproductive and developmental hazards to humans from exposure to vinyl chloride. Cancer is a major concern from exposure to vinyl chloride via inhalation, as vinyl chloride exposure has been shown to increase the risk of a rare form of liver cancer in humans.

The *Federal Register* notice also indicates that the effects of exposure to vinylidene chloride include impacts on the central nervous system, depression, convulsions, spasms and liver effects. The effects of exposure to vinyl acetate include eye and upper respiratory tract irritation.

Development of STAPPA and ALAPCO's Recommended MACT Limits

In order to address concerns about the lack of an adequate standard, STAPPA and ALAPCO formed a workgroup to develop recommended PVC MACT limits that state and local agencies could use in case-by-case determinations and that could serve as a guide for EPA to consider as it developed a new standard. The associations invited the state and local air quality agencies with affected facilities within their jurisdictions to participate in the workgroup. Many of these agencies were active participants in the development of the STAPPA and ALAPCO recommendations and contributed valuable data, input and expertise to the process. The associations are very grateful to those individuals who worked tirelessly to develop these recommendations.

STAPPA and ALAPCO's PVC workgroup gathered facility-by-facility information about the PVC facilities around the country. This information included locations, type (e.g., suspension or dispersion), permit limits, stack test results, Toxics Release Inventory emissions, actual emissions, and control technologies. The workgroup examined both permit allowable limits contained in state permits issued to PVC manufacturing facilities and their actual performance, as demonstrated by Residual Vinyl Chloride Monomer (RVCM) measurements. Because the Clean Air Act calls for standards that reflect emission limitations or reductions that are "achievable" and "achieved", the workgroup agreed that actual emissions should be used in the calculation of the recommended MACT. As stated above, the STAPPA and ALAPCO recommendations cover only vinyl chloride emissions and do not address the other HAPs from PVC plants, for which EPA must also establish standards.

Limits Contained in EPA's Regulation (Remanded by the Court)

NESHAP RVCM Limit (weight VCM/weight PVC)

Dispersion Process – 2,000 ppm (Daily Average)
Suspension Process – 400 ppm (Daily Average)

NESHAP Equipment Leaks Limit

New Sources – 500 ppm (40 CFR 63 Subpart UU)
Existing Sources – 10,000 ppm (40 CFR 61 Subpart V)

STAPPA and ALAPCO's Recommended MACT for PVC and Copolymers Production

Having reviewed both the permit allowable limits contained in state permits issued to PVC production facilities, and their actual performance as demonstrated by RVCM

measurements, STAPPA and ALAPCO recommend that the following limits be considered to represent “presumptive” MACT limits. These limits can be used by state or local agencies if they need to make Section 112(j) case-by-case MACT determinations. The associations also recommend that EPA propose new MACT standards (to replace those that were vacated) that are at least as stringent as the limits described below. STAPPA and ALAPCO will most certainly review and comment on any EPA proposal in the light of the information that the associations have gathered in this joint effort.

1. RVCM Limits for Existing Suspension Plants
(With Method 107 to determine compliance)

Daily Average: 60 ppm

Quarterly Average: 20 ppm

These limits were calculated using five of the best six performing facilities in the country, as shown in Table A. The test results from the very best performing facility were not used since they were a factor of six (daily average) to 10 (quarterly average) more stringent than any other facility.

2. RVCM Limits for Existing Dispersion Plants
(With Method 107 to determine compliance)

Daily Average: 1,250 ppm

Quarterly Average: 750 ppm

This value is based on information from three facilities. (There are only four major dispersion plants in the country.) When data from other plants become available, this limit may be adjusted to reflect the more recent information.

NOTE: This RVCM limit should not include seed resin batches.

3. Equipment Leak Standards for New and Existing Sources

All facilities (both suspension and dispersion) should be required to comply with 40 CFR 63 Subpart UU requirements for identifying equipment leaks, which sets a trigger level of 500 ppm. This is consistent with the limit set by the Hazardous Organic NESHAP.

TABLE A: RVCM Actual Emissions at Suspension Plants

Facility	Maximum Daily Average (ppm)	Included in the Presumptive MACT Calculation?¹	Maximum Quarterly Average (ppm)	Included in the Presumptive MACT Calculation?
C	1,452	No	178	No
E	24	Yes	Not Available	No
F	337	No	30	Yes
I	4	No	1	No
L	131	No	6	Yes
N	60	Yes	12	Yes
P	46	Yes	49	No
Q	121	Yes	39	Yes
R	28	Yes	12	Yes

TABLE B: RVCM Actual Emissions at Dispersion Plants

Facility	Maximum Daily Average (ppm)	Included in the Presumptive MACT Calculation?	Maximum Quarterly Average (ppm)	Included in the Presumptive MACT Calculation?
B	Not Available	No	166	Yes
C	973	Yes	130	Yes
D	1,500	Yes	649	Yes

¹ For source categories in which there are fewer than 30 sources, the standards must be at least as stringent as the best performing five sources in the category.