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Via Electronic Mail

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RE: Supplemental Information for Process Vent Subcategorization for Reconsideration of Limits: *National Emission Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production* (“PVC MACT”), 77 Fed. Reg. 22,848 (April 17, 2012)

Approach for Establishing Process Vent Limits

Dear Ms. Howard:

As we discussed during our March 9, 2015 call, this letter presents a brief overview of the approach the Vinyl Institute PVC MACT Working Group (hereinafter, “Working Group”)¹ proposes to the U.S. Environmental Protection Agency (EPA) as a basis for setting process vent limits during the PVC MACT reconsideration. We expect this letter to serve as an outline for the process vent discussion during our conference call scheduled for March 25, 2015.

In our July 12, 2011 letter, the Working Group provided a layout of the categories of process vents operating within the PVC industry. The information presented in this letter adds clarity to the categories and provides a view of subcategorization of process vents more in line with the data provided by the S114 surveys and test results. The Working Group provides the following information for the Agency’s consideration for establishing process vent limits for the PVC and Copolymers Source category:

¹ In addition to Vinyl Institute (“VI”) members Formosa Plastics Corporation, U.S.A., Occidental Chemical Corporation/Oxy Vinyls, LP, MexiChem Specialty Resins Inc. (formerly PolyOne Corporation), Shintech Inc., Westlake Chemical Corporation, Lubrizol Corporation, and Wacker Chemicals, the PVC MACT Working Group has included non-VI members Axiall Corporation. The Vinyl Institute, Inc., founded in 1982, is a U.S. trade association representing the leading manufacturers of vinyl, vinyl chloride monomer, vinyl additives and modifiers, and vinyl compound materials.

- A. There are a total of 39 control devices within the PVC Source Category and their type and size are directly related to the process vent load they are designed to treat, as briefly described below:
- a. Two control devices are of the non-combustion recovery type (Mexichem Henry and Pedricktown);
 - b. Two control devices treat process vents from non-chlorinated sources (Dow Midland reported it treats a mere 2 to 6% vinyl chloride waste gas, meaning that 94 to 98% is from non-ethylene dichloride/vinyl chloride sources, whereas Lubrizol treats 95%+ vinyl chloride waste gas or about only 5% from non-ethylene dichloride/vinyl chloride sources). The rest of the industry treats waste gases almost entirely derived from vinyl chloride sources;
 - c. Eighteen control devices are used in dedicated PVC only service (ranging in size from 1.75 to 12 MM BTU/hr),
 - d. Seventeen control devices treat process vents that are nearly if not entirely made up of vinyl chloride waste gases (and range in size from 21 to 87 MM BTU/hr.);
- B. Proper subcategorization of these 39 control devices is necessary to establish representative dioxin furan limits. The predominant HAP to be controlled by process vent control devices is vinyl chloride (ranging in concentration from 0.2 to 740,000 ppm according to EPA S114 test data). Vinyl chloride is readily absorbed by vent gas absorber fluids at those facilities employing VGA technology, and quickly and efficiently thermally destroyed at those facilities using a combustion device. As the Agency is aware, however, unwanted byproducts such as dioxins and furans can form during thermal destruction. Although the typical approach to controlling dioxins and furans is through the use of proper combustion practices and control device design, other important factors influencing formation of dioxin and furans, include chlorinated load and corresponding combustion capacity. Indeed three of the four process vent limits (vinyl chloride, HCl, and dioxin/furan) are directly related to incoming chloride load.
- C. EPA's S114 Surveys, Sampling and Testing Requests in 2009, 2011, and 2014 provide sufficient information to develop appropriate process vent loads (or emissions profiles) when considering subcategorizations for determining limits. The information is recapped in Table 1. Upon analyzing the information and considering all the industry process vents, the Working Group submits that these process vents can be subcategorized by non-combustion

devices, and redefined for PVC-Only and PVC-Combined process vent stream characteristics.

- D. The PVC MACT Working Group proposes that EPA provide a narrower definition of a PVC-Combined process vent. Upon closer review of the data for the process vents characterized as PVC-Combined, the Working Group has determined that the critical difference for the combined vents is the role played by chlorine laden streams from non-PVC facilities. The current PVC-Combined definition applies too broadly to include the Dow Midland facility, whose chlorine laden waste gas stream is not only miniscule in comparison to the amount treated by other PVC-Combined facilities but also whose non-PVC waste gas stream is from a non-ethylene dichloride/vinyl chloride source. The Working Group contends that Dow's dioxin furan results are more reflective of its low vinyl chloride load than any technology performance. More importantly, because this second Dow stream does not originate from a vinyl chloride source, it is dissimilar to all the other PVC-Combined facilities. As such, Dow would be better categorized with PVC only. Accordingly, the Working Group is proposing that EPA abandon its "PVC and any other source" definition for PVC –Combined and be more specific that PVC-Combined means process vents are combined for treatment with waste gases from a facility producing ethylene dichloride / vinyl chloride monomer.
- E. In the PVC industry, combustion capacity is indicative of process vent load. Facilities cannot increase control, especially of dioxins and furans, simply by increasing the combustion capacity (i.e., an increase in the amount of fuel burned) of the thermal oxidizer. Rather dioxin/furan control is governed by incoming chlorinated load, combustion temperature, residence time in the combustion chamber, quench speeds and temperatures, and particulate contamination. Moreover, any energy recovery practiced would be to enhance the fuel efficiency of the control device itself, and is not considered to be additive to the combustion capacity. As a result, the combustion capacity of a process vent control device within the industry is an indicator of process vent load. Thus the Agency should be able to use combustion efficiency, heat content of waste gases, amounts of waste gases to be destroyed and supplemental fuel needed to maintain proper destruction temperatures as the basis for subcategorizing process vents. The indicator for this in the industry is design capacity heat input in MM BTU per hour for the control device.

Specifically, **Table 1** illustrates that, compared with the PVC-Only group, the 17 control devices at those facilities combined with other ethylene dichloride/vinyl chloride waste gases have a higher combustion capacity. The Working Group believes that the minimum capacity for PVC –Combined

reflect the smallest control device in the comingled grouping at 20 MM
BTU/hr.

- F. In its S114 Testing Requests, EPA has obtained measured outflows from control devices at each facility. While these outflows are an indication of the size of the device, they can also serve as a basis for further defining the process vent subcategories. The outflow gas volume in DSCMM is a measure of the treated load from the process vent, since no supplemental fuel is used for any other function than destruction of the waste gases. The Working Group believes that the minimum outflow for PVC –Combined be established at 150 DSCMM, which lies approximately two-thirds of the way between the smallest measured amount in the comingled grouping (198 DSCMM) and the largest measured amount in the PVC –only group (56 DSCMM).
- G. EPA should redefine the PVC-Only subcategory in a manner similar to PVC-Combined to reflect process vent loads. The Working Group proposes that this subcategory exclude any devices treating process vents comingled with ethylene dichloride/vinyl chloride production waste gases from non-PVC sources. The Working Group further believes that PVC-Only subcategory control devices have combustion capacities below 20 MM BTU per hour and outflows between 1 and 150 DSCMM.
- H. EPA must create a subcategory for non-combustion type control devices. Three facilities rely on vent gas absorber technology for recovery of vinyl chloride from the process vent and ultimate control of those facilities' waste gas stream prior to being vented to the atmosphere. For load based parameters, the Working Group proposes outflow volumes of less than 1 DSCMM for this subcategory.

VI PVC MACT Working Group Process Vent Subcategorization Proposal
 Draft originally submitted March 19, 2015, final version submitted June 4, 2015 with one
 added data point in Table 1

Table 1: Proposed Subcategorization for Process Vents in PVC MACT					
<u>Facility</u>	<u>PVC Process Vent Combined with EDC/VC Waste Gas Streams</u> (1)	<u>Design Capacity Heat input, including process vent and supplemental fuels, MM BTU/ Hr.</u> (2)	<u>Average of 3 Run Average Outflow Flow Rate, DSCMM</u> (3)	<u>Source of Non-PVC Waste Gas</u> (4)	<u>% of Waste Gas from Vinyl Chloride Source</u> (5)
Subcategorization 1: Non-Combustion Control Device					
	No	0	< 1 DSCMM		
Mex NJ VGA	No	0	0.05		100
Mex IL VGA	No	0	0.14		100
Subcategorization 2: PVC-Only Threshold:					
	No	<20	1 to 150 DSCMM		
GGA	No	12, 12	11		100
SHTFP	No	5, 5, 5, 7, 7	11		100
SHTA	No	5, 5	14		100
OVPA	No	2, 2	15		100
FPC DE	No	1.75, 2	16		100
DOWMI	No	3	32	Pharma, Pesticides	2 to 6
CTLC	No	3.5, 3.5, 3.5	33		100
LUB	No	2.2	33	MON	95
WLCC-2	No	5	43		100
FPC SPVC TX	No	11	56		100
Subcategorization 3: PVC-Combined Threshold					
	Yes	>20	> 150 DSCMM		
GGP	Yes	67, 67, 70	336	EDC/VC	100
SHTP-1, -2	Yes	72, 72, 72, 72	245	EDC/VC	100
FPC TX-2	Yes	21, 30, 40, 40	412	EDC/VC	100
FPC BR-2	Yes	60, 60	198	EDC/VC	100
WLG	Yes	31, 87	650	EDC/VC	100
OVLADP2	Yes	87, 87	1,052	EDC/VC	100
Notes:	(1) VI Information (2) As reported in S114 Survey (3) From EPA S114 Test Data (4) S114 and VI Information (5) S114 and VI Information				

The parameters for the proposed process vent subcategorization are summarized in
 Table 2 below.

Table 2: Subcategory Proposals				
Number	Subcategory Type	PVC Vent Combined with EDC/VCM Waste Gas	Design Capacity Heat Input, MM BTU/Hr.	Outflow, DSCMM
1	Non-Combustion	No	0	Less than 1
2	PVC-Only	No	Greater than 0 and less than 20	1 to 150
3	PVC-Combined	Yes	Greater than or equal to 20	Greater than 150

The Vinyl Institute Working Group members look forward to discussing process vent subcategorization approaches for controlling airborne HAPs with EPA during the teleconference scheduled for Wednesday, March 25, 2015. Please do not hesitate to contact me with any questions.

Sincerely,

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