



The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

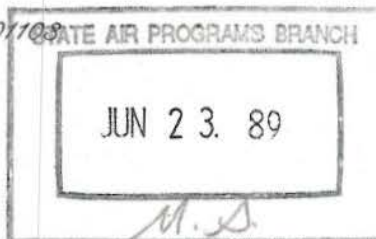
Department of Environmental Quality Engineering

Western Region

436 Dwight Street, Springfield, Mass. 01103

413-784-1100

June 20, 1989



DANIEL S. GREENBAUM
Commissioner

JOHN J. HIGGINS
Regional Director

George A. Lemos, Environmental Operations Manager
Monsanto Chemical Company
Indian Orchard Plant
730 Worcester Street
Springfield, MA 01151

Re: PVAPCD - SPRINGFIELD
REGULATION 310 CMR 7.18(17)
MONSANTO CHEMICAL COMPANY;
Implementation of Reasonably Available
Control Technology for Control of
Volatile Organic Compound Emissions
from the Indian Orchard Plant

RACT COMPLIANCE PLAN CONDITIONAL APPROVAL; FINAL

SUMMARY:

Regulation 310 CMR 7.18 (17) (a) of the "Regulations for the Control of Air Pollution in the Pioneer Valley Air Pollution Control District" required that on or after December 31, 1983, no facility with the potential to emit 100 tons or more per year of volatile organic compounds (VOC's) and not specifically regulated and required to reduce its emissions by any other section of Regulation 310 CMR 7.18, shall fail to install and thereafter operate in compliance with Reasonably Available Control Technology (RACT) except as provided in 310 CMR 7.18 (17) (b).

Regulation 310 CMR 7.18 (17) (b) required that said facility shall document to the satisfaction of the Department of Environmental Quality Engineering, Pioneer Valley Air Pollution Control District (Department) that they cannot feasibly meet the RACT requirement by December 31, 1983, and shall submit to the Department by December 31, 1982 a plan which demonstrates compliance with RACT as expeditiously as practicable but no later than December 31, 1986. Such a plan, subject to Department review and approval, shall contain a schedule providing for periodic increments of progress, and a final compliance date.

Monsanto Chemical Company's Indian Orchard Plant (Monsanto), located at 730 Worcester Street, Springfield, Massachusetts (formerly the Indian Orchard Plant and the Springfield Plant) is a facility subject to the above mentioned

regulations. Monsanto submitted to the Department on December 20, 1982, notification that they could not have RACT installed and operating by December 31, 1983, and that they would submit a RACT Implementation Plan to the Department detailing compliance with RACT by December 31, 1986.

Monsanto submitted an Implementation Plan on June 3, 1983. The Department issued a conditional approval of the Implementation Plan, with a revised schedule towards compliance that was negotiated by the Department and Monsanto, on December 5, 1983.

The Department received technical assistance for the determination of RACT for the Polyvinyl Alcohol, Polyvinyl Butyral-East and South, Polyvinyl Acetate, Polyvinyl Formal, and Melamine & Urea/Formaldehyde Resins processes at Monsanto from GCA Corporation/Technology Division of Bedford, Massachusetts. Their final report, issued in September, 1984, was used extensively by the Department in determining RACT for Monsanto.

Monsanto submitted a series of nine RACT definition documents according to the Implementation Plan schedule. The Department issued a Conditional Approval for six of the documents on December 1, 1985, and for three others on April 29, 1986. The tenth process, Polyvinyl Alcohol, was dealt with in an Administrative Order dated December 1, 1984, a Consent Order and Agreement signed June 17, 1985, and a notification from Monsanto to the Department dated December 12, 1985. This notification stated that the Polyvinyl Alcohol process would be shut down permanently by year's end, and that Monsanto would operate the Polyvinyl Acetate part of the Polyvinyl Alcohol process for four weeks in 1986 under the enforceable operation restriction provision of the Consent Order and Agreement. Thereafter, the entire process would be permanently shut down.

The Department issued an Administrative Order to Monsanto on December 3, 1984, (amended on July 30, 1985), ordering Monsanto to implement, as part of RACT, a Leak Detection and Repair Program plant-wide by April 1, 1986. Then, the Department issued on April 14, 1987 a Conditional Approval for Monsanto's RACT Leak Detection and Repair Program. This Conditional Approval, along with an explanation of how this RACT leak detection program integrates with the Department's Regulation 310 CMR 7.18(19) (SOCMI leak detection), is included in APPENDIX F.

Monsanto implemented the remainder of RACT at the Indian Orchard Plant in close adherence with the original Implementation Plan schedule. This RACT COMPLIANCE PLAN CONDITIONAL APPROVAL; FINAL includes in section "III. APPROVAL" those items necessary to ensure continuing compliance on the part of Monsanto with the previously cited "Regulations".

The plant-wide emissions, including those from the Polyvinyl Alcohol process, based on Monsanto's 1985 Source Registration emission information and adjusted to reflect pre- and post-RACT emissions, decreased from 1606.3 tons per year to 383.5 tons per year. This is a 76% reduction (1222.8 tons per year). This reduction is greater than that specified for Monsanto in the MASSACHUSETTS 1982 STATE IMPLEMENTATION PLAN FOR OZONE & CARBON MONOXIDE; AUG. 1982.

I. HISTORY

A. IMPLEMENTATION PLAN SUBMITTAL

The Department of Environmental Quality Engineering, Pioneer Valley Air Pollution Control District (Department), received in correspondence dated December 20, 1982, notification from Monsanto Chemical Company (Monsanto) that their Indian Orchard Plant, located at 730 Worcester Street, Springfield, Massachusetts, could not have Reasonably Available Control Technology (RACT) installed and operating by December 31, 1983 as required by Regulation 310 CMR 7.18 (17) (b) of the "Regulations for the Control of Air Pollution in the Pioneer Valley Air Pollution Control District". This was due to the fact that RACT for the Indian Orchard Plant had not yet been defined and that RACT for a source the size and complexity of Monsanto required evaluation of each process individually, a difficult and time consuming process.

This December 20, 1982 letter also served to notify the Department that Monsanto would submit a RACT Implementation Plan which would lead to compliance with RACT for each process at the Indian Orchard Plant as expeditiously as practicable but in no case later than December 31, 1986.

The Department received on June 3, 1983, Monsanto's proposed Implementation Plan for the Indian Orchard Plant. This Implementation Plan, with a revised timetable for implementation for RACT (negotiated in a series of conferences held between the Department and Monsanto on June 30th, July 15th, and November 30th of 1983) was conditionally approved by the Department on December 5, 1983.

B. IMPLEMENTATION PLAN CONTENTS

This Implementation Plan:

- 1.) identified the basic product lines at the Indian Orchard Plant,
- 2.) specified, for each product line, a schedule for the submittal of RACT definition documents and a final RACT compliance date, along with establishing intermediate progress milestones where appropriate,
- 3.) required that Monsanto publish a notice of the Department's Conditional Approval of the Implementation Plan and allow for public inspection of and comments on the Implementation Plan for a period of 30 days,
- 4.) required that Monsanto submit quarterly reports, beginning on April 1, 1984, to the Department detailing Monsanto's progress in complying with the Implementation Plan, and,
- 5.) required that Monsanto evaluate for each product line the effectiveness of a Leak Detection and Repair Program for controlling fugitive VOC emissions. The results of this evaluation would be submitted to the Department by June 1, 1984.

C. IMPLEMENTATION PLAN SCHEDULES

Table 1 on the following page details the schedules for the Monsanto processes as set forth in the Implementation Plan and, where applicable, documents Monsanto's adherence to them:

TABLE 1

#	PROCESS	DEFINE RACT	DESIGN CONTROLS	RACT COMPLIANCE
1)	FORMALDEHYDE	08/05/83	NA	IN COMPLIANCE
2)	POLYVINYL BUTYRAL SHEETING	08/05/83	NA	IN COMPLIANCE
3)	POLYSTYRENE	09/21/83	NA	IN COMPLIANCE
4)	PHENOL/FORMALDEHYDE RESINS	NA - PROCESS WILL BE SHUT DOWN IN 1984		
5)	POLYVINYL ALCOHOL	07/01/84	¹	10/01/85
6)	POLYVINYL BUTYRAL-SOUTH FACILITY	07/01/84	10/01/84	07/01/85
7)	MELAMINE & UREA/FORMALDEHYDE RESINS	09/01/84	12/31/84	07/01/85
8)	POLYVINYL FORMAL	10/01/84	01/01/85	10/01/85
9)	POLYVINYL ACETATE PRODUCTS	05/01/85	NA	²
10)	POLYVINYL ACETATE MULTIPOLYMER SOLNS.	05/01/85	06/01/85	12/31/85
11)	POLYVINYL BUTYRAL-EAST FACILITY	07/01/85	³	12/31/86

¹ Monsanto was uncertain of the future of this process, and agreed to inform the Department by October 1, 1984 as to whether the line would operate or be shut down.

² Monsanto originally intended to offset these process emissions with reductions below RACT obtained in other parts of the plant but later decided to submit a RACT document for the process.

³ At the time of the Implementation Plan submittal, Monsanto had planned to shut down this process at the end of 1986 in order to achieve compliance; however, Monsanto subsequently chose to submit a RACT document for the process.

Monsanto agreed at a conference between Monsanto and the Department held on November 13, 1984, to submit separate RACT definition documents for the Polyvinyl Acetate Products facility and for the Polyvinyl Butyral-East facility.

D. IMPLEMENTATION PLAN COMPLIANCE

Monsanto published a notice in the Springfield Daily News on January 20, 1984 stating that the Department had issued a Conditional Approval of Monsanto's Implementation Plan and that the public could inspect the Implementation Plan and submit their comments on the Implementation Plan in writing for a period of 30 days from when the notice was published. No person(s) came forward with any comments.

Monsanto began submitting quarterly reports to the Department beginning April 1, 1984, and continued with the reports thru April, 1985 when the Department deemed them no longer necessary.

Monsanto submitted to the Department on June 1, 1984 their evaluation of the effectiveness of a Leak Detection and Repair Program at their Indian Orchard Facility. The document did not meet the criteria that the Department set forth in the Implementation Plan Conditional Approval. The Department therefore issued an Administrative Order on December 3, 1984 (amended on July 30, 1985) ordering Monsanto to implement, by April 1, 1986, a plant-wide Leak Detection and Repair Program according to the procedures detailed in the "Control of Volatile Organic Compound Leaks from Synthetic Organic Chemical and Polymer Manufacturing Equipment" CTG document published March, 1984.

The Department received and evaluated six quarters of leak detection results from Monsanto before issuing on April 14, 1987 a Conditional Approval for Monsanto's RACT Leak Detection and Repair Program. This Conditional Approval, along with an explanation of how this RACT leak detection program integrates with the Department's Regulation 310 CMR 7.18(19) (SOCMI leak detection), is included in APPENDIX F.

Monsanto submitted the RACT definition documents as specified by the Implementation Plan schedule for all of their processes with one exceptions: the submittal of the RACT document for the Polyvinyl Butyral-South facility was delayed 60 days from July 1, 1984 until September 1, 1984 by mutual consent between the Department and Monsanto. Also, the chronology of approving and implementing the Polyvinyl Alcohol process RACT control is detailed in APPENDIX H.

E. IMPLEMENTATION PLAN APPROVAL

The Department was provided technical assistance for the determination of RACT for the Polyvinyl Alcohol, Polyvinyl Butyral-East and South, Polyvinyl Acetate, Polyvinyl Formal, and Melamine & Urea/Formaldehyde Resins processes for Monsanto by GCA Corporation/Technology Division (GCA) of Bedford, Massachusetts, who was under contract to the Environmental Protection Agency, EPA Contract 68-02-3510, work assignment No. 37. GCA engineers Robert R. Hall and Michael Kravett conducted a series of site visits to Monsanto as well as

examining the files that both the Department and Monsanto maintained on the Indian Orchard Plant's VOC emissions. A final report was completed in September, 1984, and was relied upon extensively by the Department in the analysis of Monsanto's RACT definition documents.

On December 1, 1984, the Department issued a Conditional Approval for the control strategies proposed in Monsanto's RACT definition documents for the Formaldehyde, Polyvinyl Butyral Sheeting, Polystyrene, Polyvinyl Butyral-South, Melamine & Urea/Formaldehyde Resins, and Polyvinyl Formal processes. Another Department Conditional Approval was issued on April 29, 1986 covering the Polyvinyl Acetate Products, Polyvinyl Acetate Multipolymer Solutions, and the Polyvinyl Butyral-East processes. The schedule followed in approving and implementing the Polyvinyl Alcohol RACT control is detailed in APPENDIX H.

F. RACT COMPLIANCE

Monsanto has implemented RACT (including Leak Detection & Repair) in close agreement with the Implementation Plan schedule timetable and Departmental ORDERS with one exception. On June 25, 1985, Monsanto requested that the RACT compliance date for the Polyvinyl Butyral-South facility be changed from July 1, 1985 to October 1, 1985 due to late delivery from vendors of various parts that were key elements of the control strategy. This permission was granted by the Department.

II. EMISSION REDUCTIONS ACHIEVED

Monsanto has in the past not reported in their emission inventory those VOC emissions from fugitive sources. Some of these types of emissions were readily quantifiable for the purposes of RACT determination for both the Polyvinyl Alcohol and Polyvinyl Butyral-East facilities. In these two cases, an elaborate "elephant trunk" hose pickup system served to duct these VOC emissions from leaking process points to a large exhaust fan located on the respective process roof. These fugitive emissions were included in the RACT analyses submitted by Monsanto, and were addressed by GCA Corporation in their technical evaluation for the Department. They are also currently being reported in Monsanto's source registration submittals.

Other fugitive emissions that are not so readily quantifiable are not reported in Monsanto's emission inventory. Additionally, Monsanto has in the past utilized methods of VOC emission estimation that resulted in overestimation for some process points. These sets of facts serve to explain why earlier compilations of Monsanto's VOC emissions differ from the best current estimates.

Monsanto implemented a plant-wide Leak Detection and Repair Program for fugitive VOC emissions in accordance with the guidelines in the CTG document previously mentioned. Even though only relatively small VOC sources at Monsanto's Indian Orchard Plant are subject to Synthetic Organic Chemical Manufacturing Industry (SOCMI) leak detection and repair (most of the plant produces polymer products, not organic chemicals), the Department nonetheless was of the opinion that there were real emission reductions to be achieved if this program were implemented plant-wide. The data gathered during the initial

phases of the program seems to indicate much lower leak frequencies than predicted for SOCOMI. The emission reductions resulting from the program, if based on EPA emission factors and the number of component types of each category at the plant, amount to approximately 195 tons per year (tpy) of VOC.

Monsanto complied with RACT for other specific processes, and with the specified actual VOC reductions (emission reductions based on 1985 emission levels, assuming full year control device operation) as follows:

- 1) Polyvinyl Butyral Sheetting:
 - a) Phased out the use of toluene resulting in a 17.0 tpy reduction.
- 2) Polyvinyl Butyral-South:
 - a) Installed mechanical seals on the hydro-reactors resulting in a 30.0 tpy reduction.
 - b) Installed a packed-tower scrubber on the dryer, resulting in a 165.1 tpy reduction.
 - c) Installed chilled condensation on eleven storage tanks, resulting in a 22.2 tpy reduction.
- 3) Melamine & Urea/Formaldehyde Resins:
 - a) Installed a packed-bed scrubber on one kettle used for "spill over" production, resulting in a 0.5 tpy reduction.
- 4) Polyvinyl Formal:
 - a) Redesigned the venting system from the soak tanks, resulting in a 23.9 tpy emission reduction.
- 5) Polyvinyl Butyral-East:
 - a) Installed a packed-tower scrubber on the dryer, resulting in a 51.3 tpy emission reduction.
 - b) Will implement an intensive Leak Detection and Repair Program, along with engineering fixes, resulting in a 96.6 tpy emission reduction from the roof-mounted process exhausts.
- 6) Polyvinyl Alcohol:
 - a) This process will be completely shut down in 1986. However, projections based on 1985 production levels and a RACT limit to be achieved through a variety of control options of 5.8 pounds of VOC per 100 pounds of product, would have resulted in an emission reduction of 601.0 tpy.

It should be noted that Monsanto had controls already installed on several process VOC emission points before these additional controls were added. These emission reductions therefore only reflect the additional reductions achieved as a result of bringing all of the plant up to a level of control equivalent to RACT.

As a result of the implementation of RACT at Monsanto, overall VOC emissions, including the VOC emissions from the Polyvinyl Alcohol process (see item 6) above) and using 1985 as a base year, were reduced from 1606.3 tpy to 383.5 tpy, a difference of 1222.8 tpy.

See APPENDIX A for a detailed summary of the support calculations for these figures.

III. APPROVAL

As specified in the MASSACHUSETTS 1982 STATE IMPLEMENTATION PLAN FOR OZONE & CARBON MONOXIDE; AUG. 1982, each source of VOC must reduce emissions of VOC to a level based on Reasonably Available Control Technology (RACT) by 1987. For each year between 1980 and 1987 a target reduction was established and actual reductions in any given year are compared to the target to determine whether reasonable further progress (RFP) is being met. In the 1983 RFP demonstration for Western Massachusetts, the actual reductions exceeded the target by several thousand tons. For Monsanto Chemical Company in particular, the VOC emission reductions achieved amount to 1222.8 tons per year, a reduction from 1606.3 tons per year to 383.5 tons per year.

It is the opinion of the Department that Monsanto's implementation of RACT at its Indian Orchard facility meets the requirements of 310 CMR 7.18 (17). Therefore the Department conditionally approves this plan as delineated in this RACT COMPLIANCE PLAN CONDITIONAL APPROVAL; FINAL pursuant to Regulation 310 CMR 7.18 (17), of the "Regulations for the Control of Air Pollution in the Pioneer Valley Air Pollution Control District", subject to the following COMPLIANCE/ENFORCEMENT REQUIREMENTS:

A. FORMALDEHYDE PROCESS

<u>PROCESS STEP</u>	<u>PROCESS EQUIPMENT</u>	<u>RACT</u>	<u>COMPLIANCE/ENFORCEMENT REQUIREMENTS</u>
<u>Methanol Storage</u>	2 storage tanks 1 surge tank	Chilled condensers on Storage Tanks No VOC Controls	Appendix E NA
<u>Absorber</u>	Process off-gas from Large and Small unit absorbers	Used as fuel in the off-gas boiler.	Boiler process charts kept on site for 2 yrs.
<u>Fractionation & Recovery</u>	1 surge tank	Conservation vent	NA
<u>Formaldehyde Storage</u>	3 storage tanks & 2 off-grade tanks	No VOC Controls	NA
<u>Tank Truck Loading</u>	Loading Dock	Packed Tower Absorber	Appendix G
<u>Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

B. POLYVINYL BUTYRAL SHEETING PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Printing</u>	Rotogravure press	Process change	Press not used
<u>Extrusion</u>	Extruder	No VOC Controls	NA
<u>Mixing</u>	Mixer	No VOC Controls	NA
<u>Ink Preparation</u>	Homogenizer	No VOC Controls	NA
<u>Paste Mfg. & Scrap Recycle</u>	Misc. tanks	No VOC Controls	NA
<u>Ext. Vac. Exh.</u>	Extruder	Water Cooled Condenser	Appendix B
<u>Fugitive Sources</u>	Valves, Pumps, etc.	No VOC Controls VOC not used in process	NA See 6/8/87 letter in Appendix F

C. POLYVINYL BUTYRAL-SOUTH PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Vinyl Acetate Refining</u>	Distillation Column; Storage Tank	Water cooled condenser on column	Appendix B
<u>Polymerization</u>	2 Reactors	Water cooled condensers on reactors	Appendix B
<u>Dissolving & Storage</u>	Dissolving Pot; 2 Storage Tanks	Water cooled condensers on storage tanks	Appendix B
<u>Hydrolysis</u>	4 Reactors	Mech. Seals on Agitators Water cooled condensers on Reactors	Appendix C Appendix B
<u>Acetilization</u>	3 Reactors 2 Varnish storage tanks	Water cooled condensers on Reactors and storage tanks	Appendix B
<u>Washing</u>	2 Wash tanks 6 other tanks	No Controls	NA
<u>Drying</u>	Resin Dryer	Packed Tower Absorber	Appendix D
<u>Solvent Recovery</u>	5 Distillation Columns 11 Storage Tanks	No Ctrl's (Water cooled cond. reqd. for operation) Chilled condensers on Storage Tanks	NA Appendix E
<u>Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

D. MELAMINE & UREA/FORMALDEHYDE RESINS PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Reactors</u>	Bldg.44 weigh tank	No Controls	NA
	Bldg.44 Reactor vent	No Controls	NA
	Bldg.81 polykettle	Venturi scrubber & Packed column scrubber	Appendix D
<u>Filtration</u>	1 Bldg.44 Resin filter	No Controls	NA
	4 Bldg.81 Filt. tnks	Conservation vents	NA
	2 Bldg.81 Filters	No Controls	NA
<u>Storage & Blending</u>	1 Bldg.44 Storage tank	No Controls	NA
	15 Bldg.81 Storage and Blend tanks	Conservation vents	NA
<u>Solvent Recovery</u>	Formalin dist.col.	No Ctrl's (Water cooled cond. reqd. for operation)	NA
	Methanol dist.col.	Conservation vent	NA
	5 Distillation Columns	No Ctrl's (Water cooled cond. reqd. for operation)	NA
	12 Storage tanks	Consv. vents/no controls	NA
<u>Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

E. POLYVINYL FORMAL PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Hydrolysis</u>	4 Hydro tanks	Water cooled condensers	Appendix B
<u>Storage</u>	3 Storage tanks	No VOC controls	NA
<u>Washing</u>	Soak tank	Sealing and Ventilation modifications	Appendix F (CONDITIONAL APPROVAL ADDENDUM)
	2 Wash tanks & 1 Neut. tank	No VOC controls	NA
	Cone tank	No VOC controls	NA
<u>Solvent Recovery</u>	3 Dist.Col., Decanter 1 transfer line, & 6 Storage tanks	No VOC controls	NA
<u>Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

F. POLYVINYL ACETATE PRODUCTS PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Emulsion & Polyvinyl Acetate</u>	5 Reactors	Water cooled condensers	Appendix B
	2 Head tanks 2 Delay tanks	Conservation vents	NA
	1 Collector tank 1 Decanter	No VOC Controls	NA
<u>Dispersion</u>	1 Mixer & 1 storage tank	No VOC Controls	NA
<u>Dissolving Tank</u>	1 - 75 gallon tank used to make P.V. Butyral-East windshield grade product	Restricted to 750 hours/year	Enforcement log maintained in P.V. Butyral-East operating supervisor's office.
<u>Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

G. POLYVINYL ACETATE MULTIPOLYMER SOLNS. PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Vinyl Acetate Refining</u>	1 distillation tank	Water cooled condenser	Appendix B
	1 storage tank	No VOC Controls	NA
<u>Polymerization & Storage</u>	6 Reactors	Water cooled condensers	Appendix B
	3 varnish storage tanks in Tank Pit (TP) 4,4A	Water cooled condensers	Appendix B
	9 storage tanks in TP 1,3	Conservation vents	NA
	16 storage tanks in TP 2,3 & Bldg.117	No VOC Controls	NA
<u>Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

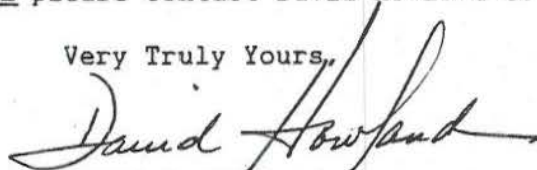
H. POLYVINYL BUTYRAL-EAST PROCESS

PROCESS STEP	PROCESS EQUIPMENT	RACT	COMPLIANCE/ENFORCEMENT REQUIREMENTS
<u>Hydrolysis</u>	6 Reactors	Water cooled condensers	Appendix B
	4 Slurry tanks	Water cooled condensers	Appendix B
	1 Centrifuge	No VOC Controls	NA
<u>Acetilization</u>	7 Reactors	Water cooled condensers	Appendix B
	6 Storage tanks	No VOC Controls	NA
<u>Washing</u>	12 Washing & Neut. tanks	No VOC Controls	NA
<u>Drying</u>	Resin Dryer	Packed Tower Absorber	Appendix D
<u>Solvent Recov. & Storage</u>	4 Dist. Columns	No Ctrl's (Water cooled cond. reqd. for operation)	NA
	1 Decanter	No VOC Controls	NA
	13 Storage Tanks	Chilled condensers on Storage tanks	Appendix E
<u>Acetal/Hydro & Wash Tank Fugitives</u>	2 Roof Vents	Intensive Leak Detection and Repair	Appendix F (CONSENT ORDER AND AGREEMENT)
<u>Other Fugitive Sources</u>	Valves, Pumps, etc.	Leak Detection and Repair	Appendix F

Failure to comply with the provisions of this approval will constitute a violation of the "Regulations".

If you have any questions regarding any of the issues involved in this RACT COMPLIANCE PLAN CONDITIONAL APPROVAL; FINAL please contact David Howland or John Kirzec of this office.

Very Truly Yours,



David E. Howland
Regional Environmental Engineer
Bureau of Waste Prevention

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pcw:monsanto.si2 AQ30

cc: Marcia Spink, Chief; Air Management Division
Planning & Technical Evaluation Section
USEPA Region 1
JFK Federal Building, Room 2311
Boston, MA 02203

Springfield Health Department
George Lemos, Environmental Operations Manager, Monsanto
Robert Donaldson, Engineering, DAQC, Boston