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MAR 1 3 2006

STATE OF ILLINOIS
Pollution Control Board

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
ORGANIC MATERIAL EMISSIONS	)	R 06-21
STANDARDS AND LIMITATIONS FOR	)	(Rulemaking Air)
THE CHICAGO AND METRO-EAST	)	
AREAS: PROPOSED AMENDMENTS	)	
TO 35 ILL. ADM. CODE 218 AND 219	)	

NOTICE

TO: Dorothy Gunn, Clerk
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PLEASE TAKE NOTICE that I have filed with the Office of the Pollution Control Board the WRITTEN TESTIMONY OF GARY E. BECKSTEAD, ALONG WITH EXHIBIT A TO THAT TESTIMONY, AND A SUPPLEMENTAL STATEMENT on behalf of the Illinois Environmental Protection Agency, a copy of which is herewith served upon you.

Date: March 8, 2006

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: [signature]
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TO 35 ILL. ADM. CODE 218 AND 219	)	

TESTIMONY OF GARY E. BECKSTEAD

Good Morning. My name is Gary Beckstead and I am the Manager of the Regulatory Unit in the Air Quality Planning Section of the Illinois Environmental Protection Agency's ("Illinois EPA") Bureau of Air. I have worked in the field of regulatory rulemakings with Illinois EPA since 1991. My formal education consists of a Bachelor of Ceramic Engineering degree from Georgia Institute of Technology, which I received in 1968 and a Master of Science degree in Applied Earth Sciences from Stanford University, which I completed in 1976. In regards to the proposed regulatory amendments before you today, I was involved in the development of the amendments and was responsible for preparing the Technical Support Document ("TSD"). *See Exhibit A.*

The Illinois EPA is proposing amendments to 35 Illinois Administrative Code Part 218 and 219, Subpart E, Sections 218.182 and 219.182 to provide the option for add-on controls for cold cleaning degreaser operations located in the Chicago and Metro East St. Louis ozone nonattainment areas. These amendments will provide sources with the option to use add-on controls to comply if they are unable to meet the solvent vapor pressure limits specified in the existing cold cleaning regulations.

The proposed provisions for add-on controls will result in less volatile organic material ("VOM") emissions than if solvents meeting the required vapor pressure limits were used. Meeting the control efficiency level recommended in the proposed amendments will assure the integrity of the 1999 – 2002 Rate of Progress ("ROP") Plan and will prevent the need for contingency measures to be implemented to makeup for any emission reduction deficiencies, as required by the Clean Air Act as amended in 1990.

Source Category Description

Solvent cleaning, or degreasing as it is commonly called, is a process using aqueous liquids or non-aqueous organic solvents to clean and remove soils from surfaces. Solvent cleaning is divided into the following three major types: cold cleaning, open-top vapor degreasing, and conveyorized degreasing. Cold cleaning is defined in 35 Ill. Adm. Code 211.1310 as "the process of cleaning and removing soils from surfaces by spraying, brushing, flushing, or immersion while maintaining the organic solvent below its boiling point. Wipe cleaning is not included in this definition."

Cold cleaning degreasing predominantly takes place at auto repair shops, machine shops, and other metal fabrication and manufacturing businesses. Cold cleaning degreasers typically consist of a holding tank containing solvent, connecting hoses, and a small vat where components are sprayed and brushed clean. The solvent is usually used at ambient temperatures, but if it is heated, the temperature is kept below the solvent's boiling point.

However, cold cleaning degreasing also takes place on a larger scale at printing and publishing operations and at surface coating operations. Typically large-scale batch degreasers use automatic parts washers. An automatic parts washer is a closed-loop solvent wash system that is designed to wash, rinse, and dry parts in an enclosed cabinet. Generally, the washer utilizes an integrated solvent distillation unit to reclaim solvent and minimize waste generation. Dirty parts are placed onto a specially designed cart that is rolled into the wash cabinet. The vapor tight cabinet doors are securely closed. The parts are spray washed and rinsed with solvent at room temperature or slightly above. Following the rinse cycle, dirty solvent is pumped out of the wash cabinet to the dirty solvent tank. During the drying cycle, air is circulated inside the wash chamber to dry parts. Solvent contaminated air in the wash chamber is exhausted to the control device. The cabinet door is then opened and the cart of dried, cleaned parts is removed.

The proposed amendments impact these larger cold cleaning sources that are highly controlled.

Emissions Impact

Four cold cleaning sources were identified in the 2003 annual emissions reports ("AER") data that were using solvents with vapor pressures ("VP") greater than the 1.0 mmHg limit. All four are in the Chicago ozone nonattainment area and all of them are capturing 100 percent of their cold cleaning emissions and controlling the emissions to at least a 95 percent level. Two reported using solvents with a VP of 55.19 mmHg and controlling emissions to 98 percent, one reported using 33.00 mmHg VP solvents and controlling to 99 percent, and the other reported using 19.12 mmHg VP solvents and controlling to 95 percent. The four sources reported total controlled emissions in 2003 of 0.033 tons per day, which equates to approximately 8.25 tons of VOM emissions on an annual basis.

Discussion of Proposed Amendments

In the 1997 modifications to the cold cleaning degreaser rule (Rulemaking R97-24), the Illinois EPA implemented a VP limit on solvents of 2.0 mmHg in 1999 and decreasing to 1.0 mmHg in 2001. This modification was modeled after an adopted rule of the State of Maryland, which assumed that only small sources, which are designated area sources in emissions inventories, would be impacted and no add-on control options were necessary. The State of Maryland anticipated that larger degreasing operations would be regulated by their vapor degreaser regulation, which does allow for add-on controls. Illinois EPA followed Maryland's rationale and did not provide for an add-on controls option in the 1997 rule modifications.

In May 2003, Illinois EPA was contacted by Diversapack, a printing source located in the Chicago nonattainment, which requested a variance to use solvents with VP of 55.19 mmHg and a control system with overall capture and control of 98 percent. They also informed Illinois EPA that their sister company Printpack is also using a similar solvent and control system.

Through an inventory search, Illinois EPA identified two additional sources that were also using add-on controls and solvents with VP greater than 1.0 mmHg. Based on these findings, Illinois EPA decided that a revision to the cold cleaning regulations was more practical and a better use of resources than filing individual variances for each of these sources. [Reference Table 1 (p.10 of TSD)] This approach would also cover new sources and sources that may have been missed in the inventory search.

The impacted sources' cost effectiveness of using add-on controls for controlling emissions is in the range of $115 to $562 per ton of VOM reduced, according to cost and emission data provided by the companies. In using the closed-loop solvent parts washers and distillation units, the sources are able to re-use wash solvent not only for washing parts but also for the printing processes. Costs and inefficiencies would occur if the impacted sources were required to convert to the low VP solvents. Quality problems in printing and varnishing processes would be prevalent, increased waste would be created, and more supplemental fuel would be needed to operate the add-on controls, which are also handling emissions from other plant processes besides cold cleaning.

Based on information reported in their 2003 Annual Emissions Reports and additional data provided by the impacted sources, Illinois EPA analyzed the emissions that would result from their cold cleaning operations using the VP of the solvents and overall capture and control of their respective systems. These emissions were compared to the emissions that would occur if a 1.0 mmHg solvent were used in their cold cleaning operations without any controls. From this analysis Illinois EPA determined that if the sources maintained their reported capture and control levels that the emissions would be less than if they met the VP limit and used no controls. [Reference Table 2 (p. 18 of TSD)].

In the proposed amendments, Illinois EPA recommends that an overall capture and control level of 95 percent be met by sources wanting to use add-on controls as an option to the VP limits. The impacted sources are currently operating at overall control levels of 95 to 98 percent. Control levels lower that the 95 percent presents the possibility of a deficiency in emission reductions that would require contingency control measures be implemented to maintain the integrity of the 1999 – 2002 ROP. At an overall control level of 90 percent, a VOM emissions deficiency of 3.192 tons per year is estimated. At an overall control level of 81 percent, an emissions deficiency of 9.925 tons per year is estimated. [Reference Table 3 (p. 22 of TSD)]. These estimates are only based on the four cold cleaning operations identified in the inventory search. Any new or additional operations would further increase these deficiency estimates.

Alternative equivalent control plans, which need Illinois EPA and U.S. EPA approval, will also be required to have at least 95 percent reduction of emissions. The emissions from using a solvent with the 1.0 mmHG VP will be the standard used to determine equivalency.

Summary

The Illinois EPA believes that the proposed control level of 95 percent is reasonable and economically feasible for source wishing to use add-on controls as an option to the solvent VP limits. The four identified sources using add-on controls are in compliance with the proposed option, which eliminates the need for them to file variances. The emissions from sources using add-on controls and solvents with VP's greater than the prescribed limit is less than if the source used solvents with the prescribed VPs and no add-on controls. The proposed changes to the cold cleaning regulation have been reviewed by the impacted sources and U.S.EPA and have been found acceptable by them.

This concludes my testimony of the proposed amendments before you today.

EXHIBITS

Exhibit A: Technical Support Document For Proposed Revisions to Allow for an Add-on Control Option for Cold Cleaning Degreasers in the Chicago and Metro-East St. Louis Ozone Nonattainment Areas

EXHIBIT A

Technical Support Document

For Proposed Revisions to Allow for an

Add-on Control Option for Cold Cleaning Degreasers in the

Chicago and Metro-East St. Louis Ozone Nonattainment Areas

March 2006

Illinois Environmental Protection Agency
Bureau of Air
Air Quality Planning Section
1021 North Grand Avenue, East
Springfield, Illinois

1.0 Background

Section 182 (c)(2) of the Clean Air Act ("CAA"), as amended in 1990, requires that any ozone nonattainment area ("NAA") that is designated "serious" and above to achieve reductions of volatile organic material ("VOM") or nitrogen oxides ("NOx") of at least 3 percent of per year, averaged over each consecutive 3-year period beginning November 15, 1996, until the area achieves the 1-hour national ambient air quality standard ("NAAQS"). In Illinois, the Chicago and Metro-East St. Louis ("Metro-East") areas have been designated as "severe" and "moderate" ozone NAAs for the 1-hour standard, respectively. The Chicago NAA was subject to these post-1996 Rate of Progress ("ROP") provisions until 2007, the attainment date prescribed by Section 181(a) of the CAA; however, the 1-hour ozone standard was revoked on June 15, 2005 and a new 8-hour NAAQS has been established. Regulations to comply with the ROPs under the 1-hour standard are required to be maintained.

The Illinois Environmental Protection Agency ("Illinois EPA") developed and submitted a plan to the United States Environmental Protection Agency ("USEPA") on September 8, 1997, outlining the VOM and NOx emissions control measures that would be implemented in order to satisfy the ROP requirements for the years 1999 to 2002[1]. In order to comply, in part, with the post-1996 ROP requirements and to help the areas reach attainment for the ozone NAAQS, the Illinois EPA proposed a modification to the cold cleaning solvent degreasing regulations at 35 Illinois Administrative Code ("Ill. Adm.Code") Parts 218 and 219, Subpart E, Solvent Cleaning (218/219.182) to limit the vapor pressure of solvents used in cold cleaning to 2.0 millimeters of mercury ("mm Hg") measured at 20^{o} Centigrade ("C"), 68^{o} Fahrenheit ("F"), beginning on March 15, 1999, and to 1.0 mm Hg beginning March 15, 2001. The proposed modifications to the cold solvent cleaning regulations were adopted by the Illinois Pollution Control Board on

June 5, 1997, (21 Ill. Reg. 7708) and approved as a State Implementation Plan ("SIP") revision through a direct final rule by U.S EPA on November 26, 1997 (62 FR 62951).

The November 1997 approved modifications were based on a State regulation adopted by Maryland and predicated on the assumption that the potentially impacted cold cleaning operations would be small operations, which are defined as area sources in the Illinois emissions inventory. Therefore, only material limits were specified as a compliance option since add-on controls were considered economically unreasonable for these small area sources. As a result, the existing provision for add-on controls to accommodate larger impacted sources defined as point sources in the Illinois inventory was precluded in the USEPA approved SIP revisions of November 1997.

In May 2003, Diversapack informed Illinois EPA of their desire to obtain a variance from 35 Ill. Adm. Code Section 218.182(c) of the revised regulation citing the need to use solvents compatible with their printing operations that do not meet the vapor pressure requirements of the 1997 adopted rule revisions. Diversapack is recycling their solvent in a totally enclosed parts washer, using add-on controls for the abatement of process emissions. Three additional point sources in the Chicago NAA have been identified that are also using solvents that do not meet the lower vapor pressure limits of Section 218.182, and these sources are also using add-on controls. All four sources are reporting 95 percent or greater overall capture and control of the emissions from their cold cleaning operations. At these control levels, fewer VOM emissions are being released to the environment than if the required low vapor pressure solvent were being used without add-on controls. Therefore, in lieu of site-specific rulemakings for each of these facilities, the Illinois EPA is proposing a revision to 35 Ill. Adm. Code 218.182(c) and 219.282(c). The proposed revisions to Sections 218.182 and 219.182 make provisions for add-on controls as an option for compliance, provided that the emission reductions are equivalent to or greater than using the required low vapor pressure solvents. Additional revisions are also being proposed for testing and recordkeeping for add-on controls and to facilitate the purchase of solvents with vapor pressures greater than 1.0 mmHg.

1.1 Potential Environmental Impacts

Emissions of VOM from cold cleaning solvent degreasing result from the evaporation of the solvents utilized. Emissions occur during periods when parts are actually being cleaned and also when the degreasing unit sits idle. These VOM emissions react with other pollutants, such as oxides of nitrogen and carbon monoxide to form ozone. Ozone formation is most active during the summer months because the chemical reactions are dependent on direct sunlight and high ambient temperatures. Ozone is a powerful oxidant and, as such, reacts readily with a wide range of substances. In humans, ozone irritates the respiratory system and reduces lung function, and laboratory studies suggest that it may damage lung and other tissue. There is concern that this damage can impair breathing and reduce immunity to disease for people in good health, and the effect may be more severe for young children, the elderly and people with pre-existing respiratory diseases such as asthma, bronchitis and emphysema. The American Lung Association estimates that there are approximately 346,000 people in the Chicago area who suffer from asthma, the symptoms of which are exacerbated by elevated ozone levels. Ozone oxidation can also damage plant tissue and reduce the yield of some crops, as well as damage certain materials such as rubber products.

2.0 Source Category Description

Solvent cleaning, or degreasing as it is commonly called, is a process using aqueous liquids or non-aqueous organic solvents to clean and remove soils from surfaces. Solvent cleaning is divided into the following three major types: cold cleaning, open-top vapor degreasing, and conveyorized degreasing. Cold cleaning is defined in 35 Ill. Adm. Code 211.1310 as "the process of cleaning and removing soils from surfaces by spraying, brushing, flushing, or immersion while maintaining the organic solvent below its boiling point. Wipe cleaning is not included in this definition." Open-top vapor degreasing is a batch process of cleaning and removing soils from surfaces by heating the solvent to boiling and condensing the hot solvent vapor on the colder metal parts. Conveyorized degreasing is the continuous process of cleaning and removing soils from surfaces utilizing either cold or vaporized solvents. Only cold cleaning operations that are batch processes and that are unable to meet the solvent vapor pressure limits required by 35 Ill. Adm. Code 218.182 and 219.182 are affected by the proposed revisions.

Cold cleaning degreasing predominantly takes place at auto repair shops, car dealerships, machine shops, and other metal fabrication and manufacturing businesses. Cold cleaning degreasers typically consist of a holding tank containing solvent, connecting hoses, and a small vat where components are sprayed and brushed clean. The solvent is usually used at ambient temperatures, but if it is heated, the temperature is kept below the solvent's boiling point. Cold cleaning degreasing also takes place on a larger scale at printing and publishing operations. Typically, large-scale batch degreasers use automatic parts washers. An automatic parts washer is a closed-loop solvent wash system that is designed to wash, rinse, and dry parts in an enclosed cabinet. Generally, the washer utilizes an integrated solvent distillation unit to reclaim solvent and minimize waste generation. Dirty parts are placed onto a specially designed cart that is rolled into the wash cabinet. The vapor tight cabinet doors are securely closed. The parts are spray washed and rinsed with solvent at room temperature or slightly above. Following the rinse cycle, dirty solvent is pumped out of the wash cabinet to the dirty solvent tank. During the drying cycle, air is circulated inside the wash chamber to dry parts. Solvent contaminated air in the wash chamber is exhausted to the control device. The cabinet door is then opened and the cart of dried, cleaned parts is removed. Photographs of a typical automatic parts washer are provided in Figure 1A and 1B. Figure 1A shows the unit open preparing to receive parts that are to be washed and Figure 1B shows the unit closed, as it would be during the washing cycle.

During the wash cycle, dirty solvent is continuously pumped to the dirty solvent holding tank where it can be re-circulated to the parts washer for use during another wash cycle, or processed in batches in the solvent distillation unit. Spent inks or solvents from other areas of the plant such as a printing press department also may be batch processed through the distillation unit. Clean solvent generated by the distillation unit is pumped to the clean solvent storage tank or to the bulk solvent storage tank for later use by the parts washer or as clean up solvent. A process flow schematic is provided in Figure 2.

3.0 Technical Feasibility

The use of add-on controls to control cold cleaning process emissions is currently being demonstrated by all four of the sources impacted by the proposed rule revisions. (Reference Table 1 -*Cold Cleaning Operations Using Add-on Controls*). Three of the sources are using thermal oxidizers and the fourth is using a carbon adsorber.

FIGURE 1A

Automatic Parts Washer – Open

FIGURE 1B

Automatic Parts Washer - Closed

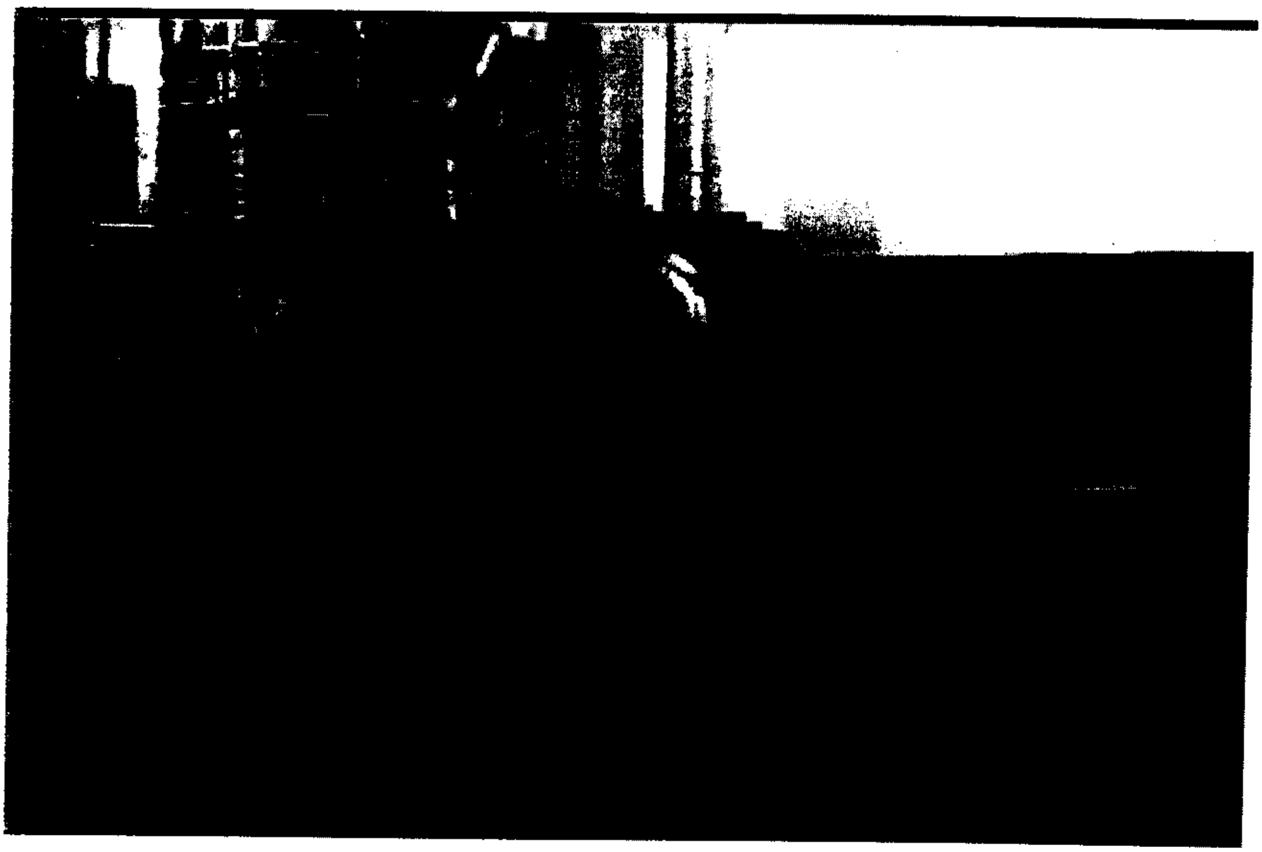
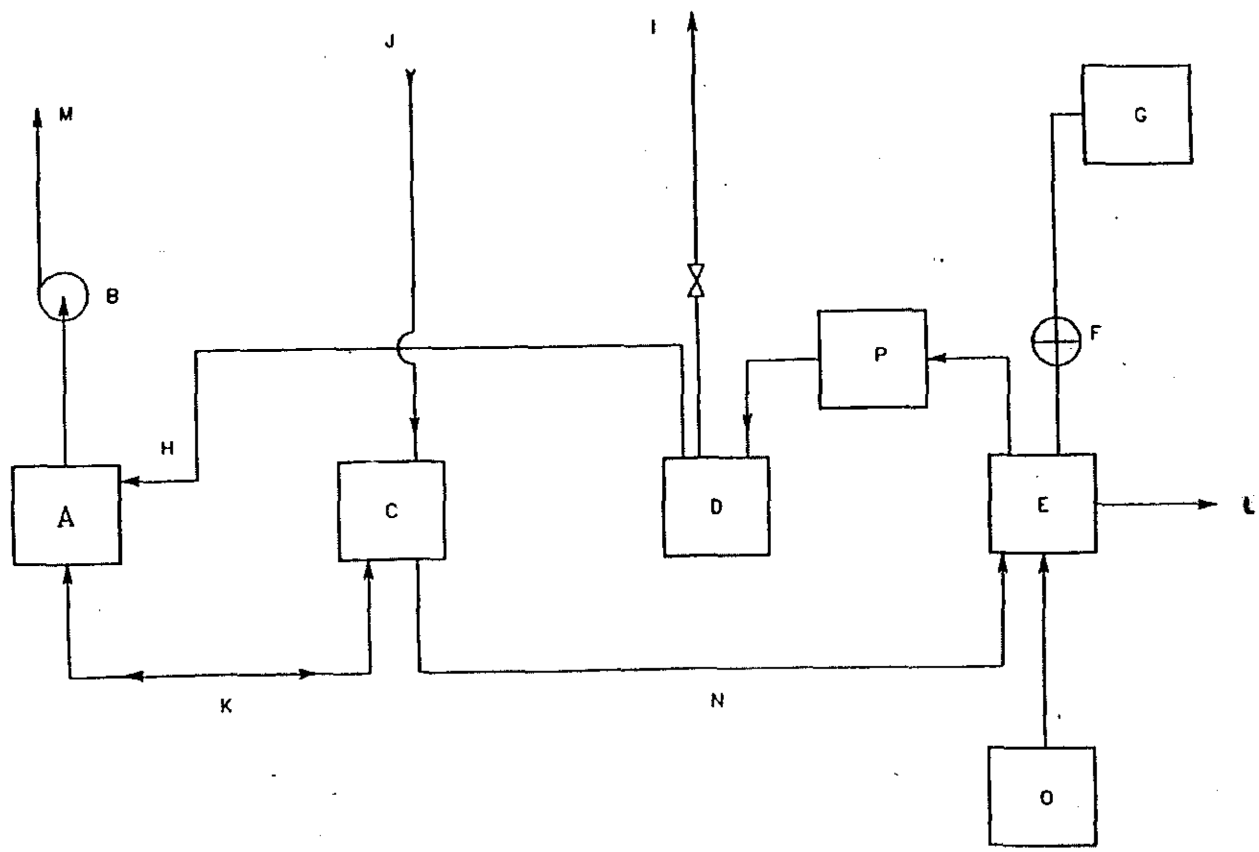


FIGURE 2
PROCESS FLOW DIAGRAM
AUTOMATIC PARTS WASHER WITH INTEGRATED DISTILLATION UNIT



A. Parts Washing Chamber	I. Wash-Up Solvent to Bulk Solvent Storage
B. Exhaust Blower	J. Wash-Up Solvent from Bulk Solvent Storage
C. Dirty Solvent Holding Tank	K. Wash Solvent Line
D. Intermediate Clean Solvent Tank	L. Sludge to Bulk Waste Holding Tank or Drums
E. Distillation Unit	M. Volatiles to Oxidizer
F. Rupture Disk	N. Dirty Solvent Line
G. Knock-Out Drum (Solvent Containment in event of upset)	O. Drumed Dirty Solvent & Ink from Press Dept.
H. Clean Rinse Solvent	P. Vacuum Pump

Table 1 : Cold Cleaning Operations Using Add-on Controls

Facility Name	Facility ID	Permit	Unit	SCC	Control Device	Capture	Control	Solvent VP(mmHg)	Controlled Emissions (Lb/Hr)	Operating Hours per Day	VOM Emissions (Tons/Day)
Diversapack	111065AAR	95090172	0003	40100399	CatalyticThermal Oxidizer	100%	98%	55.19	1.77	18	0.016
Printpack	089438ADW	95090157	0016	40100399	Regenerative Thermal Oxidizer	100%	98%	55.19	1.23	24	0.015
Pechiney	089010ACC	95080006	0011	40100399	Regenerative Thermal Oxidizer	100%	95%	19.12	0.17	24	0.002
MPC Products	031201AEI	01110039	0006	40100307	Carbon Adsoption System	100%	99%	33.00	0.20	1.5	0.000
							Total Controlled VOM (Tns/Day)				0.033

Thermal oxidizers typically operate in the 1200° to 2000° Fahrenheit range with the exception of catalytic thermal oxidizers, which operate in the 300° to 900° Fahrenheit range. All these thermal oxidizers are capable of destruction efficiencies as high as 99.99 percent for influent air stream containing highly volatile compounds such as the solvents that the impacted sources are using[3]. Of the three sources using thermal oxidizers, two reported 98 percent and one reported 95 percent overall control efficiencies in their 2003 Annual Emissions Reports ("AERs"). The source using the carbon adsorber reported 99 percent overall control efficiency of the VOM emissions from their cold cleaning operation in 2003.

3.1 Add-on Controls Utilized

Catalytic, regenerative, and recuperative thermal oxidizers are the various types of incinerator technology that is being utilized by the impacted sources to control VOMs from cold cleaning operations. The catalytic type oxidizer employs a material (catalyst), which has the effect of increasing the combustion reaction rate, thereby enabling the removal of the VOMs at a lower operating temperature than the other two types of thermal oxidizers. By operating at lower temperatures in the range of 300° to 900° Fahrenheit, catalytic thermal oxidizers provide cost savings due to lower fuel consumption without loss of destruction efficiency. The regenerative thermal oxidizer operates at higher temperatures (1200° to 2000° F) but is designed to recover up to 95 percent of the energy released in the reaction chamber due to the combustion process. This recovered energy is then used to preheat the incoming gas stream to a temperature near its combustion temperature thereby reducing the amount of auxiliary fuels needed. The recuperative thermal oxidizer, like the regenerative thermal oxidizer, operates in the 1200° to 2000° Fahrenheit range but uses heat exchangers to capture heat from the exiting gases and then uses the recovered heat to pre-heat the incoming gas stream, the combustion air, or both.

Because the heat exchangers are capable of capturing and re-using up to 70 percent of the energy in the exhaust gases, considerable savings in fuel is also realized in this design.

All three types of oxidizers operate optimally when the influent process stream has a high concentration of VOMs. Ideally the VOM concentration in the stream is high enough to support combustion with minimal supplemental fuel being needed. The destruction efficiency of oxidizers is dependent on the operating temperature and the length of time that the VOMs are held in the reaction chamber, which is referred to as the retention time.

The carbon adsorber technology is a much less costly add-on control technology than thermal oxidation. In general, capital costs run approximately 60 to 70 percent and annual operating costs 20 to 30 percent of those of thermal oxidation[3]. Furthermore, it can be designed to control VOM containing streams over a wide range of flow rates, ranging from several hundred to several thousand cubic feet per minute. The fixed bed carbon design can operate either continuously or intermittently. Adsorbent media other than activated carbon such as alumina and silica is currently being used by industry. These media can be designed to capture a particular range of molecular sizes if the influent stream has only a few species of VOMs. Desorbing or removing trapped VOMs in the adsorbent is accomplished by using either high temperatures or low pressures and back flushing through the beds.

3.2 Solvent Conversion Issues

Three of the impacted sources, Diversapack (Facility ID 111065AAR), Printpack (084438ADW), and Pechiney (089010ACC), have printing operations and are using cold cleaning to remove the inks, grease and oils from various printing parts. The clean-up solvents from the closed loop parts cleaners are recycled for use in the printing process or for additional clean-up, thereby reducing solvent purchases, solvent waste, and operating costs. The fourth source, MPC (Facility ID 031220AEI), manufactures airplane components used in the commercial aviation industry. Cold cleaning is used intermittently to clean parts prior to varnishing. The cold cleaning emissions as well as emissions from all other process units at the facility are routed to a carbon adsorber system for removal.

Requiring the four impacted printing sources to use low vapor pressure solvents and remove their cold cleaning emissions from being directed to add-on controls presents three problems. First, with add-on control systems, waste is minimized. Using low vapor pressure solvent would result in a continuous stream of liquid waste material because the wash solvent is not compatible with or useable with other plant operations, and therefore, would not be reclaimed. The waste solvent would have to be handled as hazardous material and be sent to hazardous waste recyclers. Second, it would require impacted sources to utilize a solvent that, according to the sources, is less efficient in cleaning and removing the inks, grease, and oils from the parts that are being washed. Even when cleaned with the low vapor pressure solvent, the sources report that the result is a part with a surface condition that is not compatible or desirable when used in the printing operations or for varnishing. Poor surface conditions create quality problems in printing and varnishing. (See Attachments – Exhibit 1) Third, the operation of the existing thermal oxidizers would be less efficient due to the loss of the VOM concentration in the influent stream from the cold cleaning operations, which would then require additional supplemental fuel. In the case of MPC Products, which is using a carbon adsorber for control, only the first and second issues would be of concern.

In summary, the technical feasibility of add-on controls for point source cold cleaning degreasers is being demonstrated. Forcing the impacted sources to switch to low vapor solvents creates unwanted hazardous waste, quality problems, and inefficiencies. Moreover, using add-on controls for solvents exceeding the required 1.0 mmHg solvent vapor pressure results in fewer VOM emissions being released to the atmosphere.

4.0 Economic Reasonableness

In the 1997 rule revisions to the cold cleaning solvent regulations, the cost effectiveness of lowering the vapor pressure limits to 1.0 mmHg was estimated to be in range of $238 to $779 per ton of VOM reduced [2]. Using data supplied by impacted sources, the cost effectiveness of using thermal oxidizers as add-on controls is estimated to be $115 to $562 per ton of VOM reduced.

4.1 Cost Effectiveness Analysis for Add-on Controls

To improve the cost effectiveness of an add-on control, sources vent emissions from all operating units to the control system. In general, the emissions coming from the cold cleaning operations at the impacted plants are not sufficient by themselves to justify the capital expenditures and annual operating costs for add-on controls. When all the plant wide emissions are captured and vented to the add-on device the economics become more reasonable. Conversely, if it is required to remove an influent stream to the control device that has high concentrations of VOM, such as the cold cleaning operations, it may necessitate the addition of more supplemental fuel for the combustion process at the oxidizers to produce the desired destruction efficiencies.

Based on information provided by Diversapack, the estimated capitol cost of installing a new catalytic thermal oxidizer ("CTO") for their operations was $600,000. This capital investment cost is for an oxidizer handling an input stream volume of 35,000 cubic feet per minute ("cfm"). The actual annual operating costs for their CTO in FY2005 was $289,877. Diversapack routed 1,598.5 tons of process emissions to the CTO in 2004; therefore, the cost effectiveness of this add-on control was $181 per ton of VOM reduced. Of the 1,598.5 tons of VOM emissions, approximately 516 tons are due to the parts washer cold cleaning emissions. If the 1082.5 tons per year emissions from other plant-wide processes were eliminated and only the 516 tons from cold cleaning were considered for the calculation, the cost effectiveness of the add-on control for cold cleaning exclusively would be $559 per ton of VOM reduced assuming no additional supplemental fuel is needed. The subject facility advised that the CTO that they installed was purchased from an affiliated company at a reduced price; therefore, actual cost effectiveness at Diversapack is less than the estimated values presented.

For Printpack, a recuperative thermal oxidizer designed to handle 75,000 cfm is being used to reduce the VOMs from its cold cleaning operation. Based on data provided by Printpack, the total capital investment for installation of the unit was $1,200,000 and annual operating costs for FY 2005 (July to June) was $210,000. Printpack vented 1830 tons of uncontrolled VOM emissions to the oxidizer in FY2005. Based on Printpack's provided data, the cost effectiveness of their oxidizer is $115 per ton of VOM reduced.

Specific detailed data for the Pechiney (Facility ID 089010ACC) regenerative thermal oxidizer (RTO) was not made available; therefore, USEPA's CCM methodology and tables were relied on to make capital investment and annual operating costs estimates[3]. Pechiney's 2003 annual emissions report was used for VOM emissions data and to calculate cost effectiveness. Equipment costs for a 60,000 cfm RTO is estimated to be $900,000 and total capital investment costs are estimated to be in the range of $1,500,000. The 2004 annual operating costs for the RTO is estimated to be $527,500 based on USEPA's CCM methodology. The uncontrolled VOM emissions that were directed to the RTO totaled 1,135 tons in 2003, which equates to a cost effectiveness of $465 per ton of VOM removed.

MPC Products (Facility ID 031201AEI) reported operating their cold cleaning operation one and a half hours per day five days per week and fifty weeks per year. MPC reported that the 2003 the VOM emissions from this plant was 0.944 tons per year, and on a daily basis their cold cleaning emissions are 0.30 lbs per day (0.0002 tons per day) Their carbon adsorber is used to control emissions from all the sources at the plant and a 99 percent overall control efficiency is being reported. MPC uses isopropyl alcohol and acetone, which USEPA has de-classified as a VOM, for cleaning aviation parts. Analysis of cost effectiveness for this plant was not undertaken because emissions were considered insignificant.

4.2 Cost of Conversion Analysis

In regards to the issue of the cost of converting to compliant low vapor pressure solvents, Diversapack provided cost data for their operations. By requiring Diversapack to meet the vapor pressure requirement of the existing cold cleaning regulation would require them to replace solvents that cost $4.82 per gallon and purchase a solvent that currently costs approximately $23.00 per gallon. During 2004, their parts washer used 60,450 gallons of solvent. The purchase costs for compliant solvent based on $23.00 per gallon would be $1,390,350, whereas the current costs are $291,370. Therefore, it would cost Diversapack an additional $1,100,000 per year in solvent purchases to convert to the 1.0 mmHg vapor pressure solvent.

Diverspack's cost to use the add-on control without the benefit of the highly concentrated VOM influent stream from their cold cleaning degreaser would increase from $181 per ton to $268 per ton of VOM reduced. For the remaining 1,082.5 tons of uncontrolled emissions, the cost to reduce them would increase $94,200 per year. Furthermore, this would be a conservative estimate since it assumes no additional supplemental gas would be necessary to attain the 98 percent reduction that they are currently reporting for their thermal oxidizer. Moreover, this does not take into consideration the additional cost of handling the waste stream generated by using a low vapor pressure solvent. Since this solvent is not recyclable and useable in both the process operations or again in the wash cycle, this waste stream will be much larger than the current closed-loop parts wash system produces. Diversapack estimated that waste disposal would cost approximately $2.50 per gallon. Using 60,450 gallons of compliant VP solvent in place of using add-on controls would cost an additional $161,100 per year for waste handling.

4.3 Economic Reasonableness Summary

In Table 2 *Emission Calculations for Automatic Parts Washer*, a comparison of the emissions from the use of a low vapor pressure solvent without controls to the use of the high vapor pressure solvents with controls is made. The comparison demonstrates

Table 2
Emission Estimates
From
Automatic Parts Washers

Operating Condition	(L) Number of Loads [2] (loads/yr)	(C) Cabinet Internal Dimensions (ft^3)	(D) Vapor Density (lb/ft^3)	(P) Vapor Pressure (mmHg)	VOM Emissions (lbs/load)	(E) VOM Emissions (tons/yr)	Emissions Differential (tons/yr) to 1.0 mmHg Solvent
Compliant Solvent 1.0 mmHg	12,480	250	0.2825	0.99	0.091	0.574	
CE @ 95% + 19.12 mmHg	12,480	250	0.2588	19.12	0.081	0.508	-0.066
CE @ 98% + 55.19 mmHg	12,480	250	0.2428	55.19	0.088	0.550	-0.024

(1) Based on a typical self-enclosed automatic parts washer exhausting a saturated air volume to a control device with varying control efficiencies and solvents. Emissions calculated in accordance with the following formula:

$$E = (L \times C \times D \times P/760) / F \times (1 - CE))$$

Where:

E =VOM Emissions
L = Number of Loads
C = Cabinet Internal Dimensions
D = Vapor Density
P = Vapor Pressure
F = Conversion Factor (2000 lb/ton)
CE = Overall Control Efficiency (Capture Efficincy x Control Efficiency)

(2) Potential emissions are based on washing 2 loads/hr, 24 hrs/day, 5 days/wk, 52 wks/yr.

(3) Washup solvent composition based on actual plant usage presented in Tables 2A and 2B.

Table 2A
Automatic Parts Washer
Washup Solvent Composition @ 55.19 mmHg VP

Chemical	Percent Mixture [1] (%)	Chemical Vapor Pressure (mmHg@20°C)	Mixture Vapor Pressure (mmHg)	Chemical Relative Vapor Density (air = 1)	Vapor Density Dry Air (lb/ft^3)	Chemical Vapor Density (lb/ft^3)	Mixture Vapor Density (lb/ft^3)
Ethyl Acetate	62%	76	47.12	3.0	0.08071	0.24213	0.15012
N.P. Acetate	25%	25	6.25	3.5	0.08071	0.28249	0.07062
N. P. Alcohol	13%	14	1.82	2.1	0.08071	0.16949	0.02203
Mixture	100%		55.19				0.24278

(1) Washup solvent composition based on percentage of actual solvent usage. Provided by Printpack Inc.

Table 2B
Automatic Parts Washer
Washup Solvent Composition @ 19.12 mmHG VP

Chemical	Percent Mixture [1] (%)	Chemical Vapor Pressure (mmHg@20°C)	Mixture Vapor Pressure (mmHg)	Chemical Relative Vapor Density (air = 1)	Vapor Density Dry Air (lb/ft^3)	Chemical Vapor Density (lb/ft^3)	Mixture Vapor Density (lb/ft^3)
N.P. Acetate	79%	23	18.17	3.5	0.08071	0.28249	0.22316
N. P. Alcohol	21%	4.5	0.95	2.1	0.08071	0.16949	0.03559
Mixture	100%		19.12				0.25876

(1) Washup solvent composition based on percentage of actual solvent usage. Provided by Pechiney (Alcan).

Table 2C
Automatic Parts Washer
Compliant Solvent Composition @ 1.0 mmHg VP

Operating Temperature	Percent Mixture (%)	Chemical Vapor Pressure (mmHg)	Chemical Relative Vapor Density (air = 1)	Vapor Density Dry Air (lb/ft^3)	Chemical Vapor Density (lb/ft^3)	Mixture Vapor Density (lb/ft^3)
@ 20 °C (70 °F) [1]	100%	0.7	3.5	0.08071	0.282485	0.282485
@ 40 °C (100 °F) [2]	100%	0.99	3.5	0.08071	0.282485	0.282485

(1) Assumes compliant solvent is similar to the characteristics of HCS 402 Ink Remover.
(2) Compliant solvents must be heated to 100-120 °F to properly clean parts based on the manufacturer.

that for the impacted sources fewer emissions are being released to the atmosphere using add-on controls than if low vapor pressure solvents meeting the 1.0 mmHg vapor pressure were used. Furthermore, emissions from other areas of the plant are also being removed at the high rate of efficiency of the add-on controls.

The cost effectiveness of add-on controls is in the range of $181 to $562 per ton of VOM reduced. The comparable cost effectiveness range of compliant low vapor pressure solvents was estimated to be $238 to $779 per ton in the 1997 rule revision.

Additional costs and inefficiencies would occur if the existing sources were required to convert to low VP solvents. Those costs include replacing solvents costing $3-$6 per gallon with solvents costing $23 per gallon. The efficiency of the thermal oxidizers would suffer and additional supplemental fuel would be necessary to maintain destruction efficiencies levels. The newly generated hazardous waste stream would have to be handled appropriately adding approximately $2.50 per gallon to the costs of the conversion.

The economic reasonableness analysis for converting to low VP solvents indicates that add-on controls coupled with closed loop automatic parts washers offer cost benefits that out weigh converting to low VP solvents for cold cleaning operations.

5.0 Existing and Proposed Illinois Cold Degreasing Regulations

Illinois EPA implemented regulations affecting solvent degreasing in 35 Ill. Adm. Code Sections 218.182 and 219.182 as part of its Reasonable Available Control Technology ("RACT") I requirements. The RACT I regulations have been in effect since the late 1970's. These RACT regulations are minimum standards required by U.S. EPA to be adopted for certain industrial processes. The regulations include work practices that require waste solvent to be stored in covered containers; the degreaser to remain closed when parts are being handled; and parts to be drained until dripping ceases. Equipment requirements include covers for the degreaser and drainage of parts. These regulations provided for the use of add on controls such as carbon adsorbers if approved by the Agency at 35 Ill. Adm. Code Section 218.182(b)(3)(B).

The revisions to the cold cleaning degreaser regulations, submitted September 8, 1997, lowered the allowed solvent vapor pressure for operations located in the Chicago and Metro-East ozone NAAs in two steps. The first step lowered the allowed vapor pressure of solvent used to 2.0 mmHg by 1999 and the second step lowered the allowed vapor pressure to 1.0 mmHg by 2001. The anticipated VOM reductions from this control measure in the Chicago ozone NAA was estimated to be 11.35 tons per day in 1999 and an additional 11.68 tons per day in 2001. These reductions were used to satisfy the 1999 ROP requirements.

However, in requiring the lower solvent vapor pressures, the Agency also precluded the option for add-on controls consistent with the Maryland rule from which the revisions were modeled. The currently proposed regulations allow the use of add-on controls as an option to meeting the material requirements. Consistent with the intent of the 1997 revisions, which was to reduce VOM emissions in the NAAs, the proposed provision for the use of add-on controls requires that total process emissions be equivalent to using the specified lower vapor pressure solvents.

To prevent any deficiencies in emission reduction credits counted on from the cold cleaning degreaser control strategy, which was used to meet the 1999 ROP Plan requirements, the recommended overall capture and control efficiency for add-on controls is set at 95%. At this control level, the proposed rule will result in fewer emissions from the existing sources than if they used 1.0 mmHg VP solvents in their cold cleaning operation. (Reference Table 2: *Emissions Estimates from Automatic Parts Washers*). Furthermore, for future start-ups or equivalent alternative control plans, the emissions from a 1.0 mmHg VP solvent is recommended as the comparative standard and at least 95 percent reduction of emissions from cold cleaning operations be achieved if higher VP solvents are used. As required by the CAA and USEPA SIP guidance, failure to obtain equivalent emissions reductions from the cold cleaning point sources as that being obtained from area sources would require the Agency to make-up the deficiency through the implementation of contingency control measures.

As an example, if the 1970's RACT standard of 81% overall control efficiency were recommended for the four impacted point sources, there would be a potential deficiency of 9.925 tons per year of reduction credits from them. In addition, any new sources exercising the add-on control option and meeting the 81 percent control efficiency standard would add to the deficiency. Therefore, to prevent any shortfalls in emissions credits and the necessity to implement contingency measures to cover these shortfalls, Illinois EPA recommends adopting a 95 percent overall capture and control requirement for point sources using add-on controls on cold solvent cleaning operations in the Chicago and Metro East St. Louis ozone NAAs, which makes this proposed revision emissions neutral. USEPA has reviewed this proposal and is in agreement with Illinois EPA's control level recommendation.

6.0 Affected Sources and Emissions Reductions

In order to comply with Section 182 of the CAA requirements, the Illinois EPA prepared a comprehensive inventory of ozone precursor emissions being emitted from stationary

Table 3
Potential Emissions From Automatic Parts Washers

Operating Condition	(L) Number of Loads (2) (loads/yr)	(C) Cabinet Internal Dimensions (ft3)	(D) Vapor Density (lb/ft3)	(P) Vapor Pressure (mmHg)	VOM Emissions (lbs/load)	(E) Potential VOM Emissions (tons/yr)	Emissions Differential per Parts Washer (tons/yr)	Emissions Differential for Impacted Sources (tons/yr)	Emissions Differential for Impacted Sources (tons/day)
Compliant Solvent 1.0 mmHg	12,480	250	0.2825	0.99	0.091	0.574			
CE @ 94.4% + 19.12 mmHg	12,480	250	0.2588	19.12	0.092	0.574	0.000		
CE @ 97.9% + 55.19 mmHg	12,480	250	0.2428	55.19	0.092	0.574	0.000		
			Emissions compared to 1.0 mmHg Solvent				0.000		
CE @ 95% + 19.12 mmHg[1]	12,480	250	0.2588	19.12	0.081	0.508	-0.066	-0.066	-0.0003
CE @ 98% + 55.19 mmHg[2]	12,480	250	0.2428	55.19	0.088	0.550	-0.024	-0.048	-0.0002
							-0.090	-0.114	-0.0005
CE @ 95% + 19.12 mmHg	12,480	250	0.2588	19.12	0.081	0.508	-0.066	-0.066	-0.0003
CE @ 95% + 55.19 mmHg	12,480	250	0.2428	55.19	0.220	1.375	0.801	1.602	0.0064
			Emissions compared to 1.0 mmHg Solvent				0.735	1.536	0.0061
CE @ 90% + 19.12 mmHg	12,480	250	0.2588	19.12	0.163	1.016	0.442	0.442	0.0018
CE @ 90% + 55.19 mmHg	12,480	250	0.2428	55.19	0.441	2.751	1.375	2.751	0.0110
			Emissions compared to 1.0 mmHg Solvent				1.817	3.192	0.0128
CE @ 81% + 19.12 mmHg	12,480	250	0.2588	19.12	0.309	1.930	1.356	0.621	0.0029
CE @ 81% + 55.19 mmHg	12,480	250	0.2428	55.19	0.838	5.226	4.652	9.304	0.0372
			Emissions compared to 1.0 mmHg Solvent				6.008	9.925	0.0402

Notes:

1. One source (Pechiney) is using 19.12 mmHg VP Solvent and controlling to 95 percent.
2. Two sources (Printpack and Diversapack) are using 55.19 mmHg VP solvent and controlling to 98 percent
3. Emissions from MPC Products are considered insignificant. (See Table 1)

<u>Assumptions</u>:

(1) Based on a typical self-enclosed automatic parts washer exhausting a saturated air volume to a control device with varying control efficiencies and solvents.
Emissions calculated in accordance with the following formula:

$$E = (L \times C \times D \times P/760) / F \times (1 - CE))$$

Where:

E = VOM Emissions
L = Number of Loads
C = Cabinet Internal Dimensions
D = Vapor Density
P = Vapor Pressure
F = Conversion Factor (2000 lb/ton)
CE = Overall Control Efficiency (Capture Efficiency x Control Efficiency)

(2) Potential emissions are based on washing 2 loads/hr, 24 hrs/day, 5 days/wk, 52 wks/yr.
(3) Washup solvent composition based on actual plant usage presented in Tables 2A and 2B.
(4) Assumes compliant solvent characteristics similar to HCS 402 Ink Remover. See Table 2C
(5) Based on manufacturer's recommendation to heat compliant solvent to 100 - 120°F to clean press parts.

point and area sources in the Chicago and Metro-East NAAs. Point sources are facilities for which individual permit records are maintained. These records include emissions that occur from specific processes and are released to the atmosphere through identifiable stacks or vents. Area sources are those activities that individually produce a relatively small amount of emissions, but due to the large number of such operations, the total amount of emissions is significant. Examples of area sources include gasoline service stations, auto refinishing shops, dry cleaning operations, and cold cleaning degreasing. Area source emissions are estimated by applying emission factors to aggregated source information, such as the amount of gasoline sold in an area is used to estimate vehicle-refueling emissions.

To estimate cold cleaning emissions from area sources, USEPA emissions inventory guidance recommends the use of a per capita emission factor of 3.6 pounds per year. This factor includes an estimate of 2.5 pounds per year per capita for automotive repair activities and 1.1 pounds per year per capita for manufacturing activities. Using this methodology, the Illinois EPA estimated that the 1990 VOM emissions from cold cleaning were 32.41 tons per day ("TPD") in the Chicago ozone NAA and 2.38 TPD in the Metro-East area. The grown emissions in 1999 were estimated to be 34.39 TPD in Chicago and 2.39 TPD in Metro East. The estimated emissions after the 1999 and 2001 step down in vapor pressure limits were 11.69 TPD in Chicago and 0.81 TPD in Metro East.

A list of the cold cleaning degreaser point sources that are using add-on controls are presented in Table 1: *Cold Cleaning Degreaser Operations Using Add On Controls.* These sources were identified from information provided in annual emission reports ("AERs") for the year 2003. In 2003, the controlled VOM emissions from these sources totaled 0.033 tons per day in the Chicago NAA. There are no cold cleaning degreaser operations large enough in the Metro East NAA to be classified as point sources.

7.0 Discussion of Proposed Regulation

The Illinois EPA proposes to include a provision within Sections 218.182 and 219.182 that, retroactive to March 15, 1999, provides for the use of add-on controls as a compliance option for cold cleaning degreasing operations. The use of add-on controls as provided in the original RACT rule was precluded in the adoption of the material requirement modifications of the 1997 rulemaking R97-024. The 1997 Illinois rule is modeled after an adopted Maryland rule (COMAR 26.11.19.09)[2]. The Maryland rule specified that only smaller (area) sources would be impacted by the cold cleaning degreasers material requirements. Larger (point) sources would be regulated by Maryland's vapor degreaser rule (COMAR 26.11.19.10), which allows add-on controls as an option.

Illinois EPA has identified four point sources in its inventory that are operating cold cleaning degreasers and add-on controls to reduce emissions. The level of emissions from these operations at their current reported control levels are less than if materials meeting the required lower solvent vapor pressure limits of 1.0 mmHg were used. Reference Table 2: *Emission Estimates from Automatic Parts Washers*

The proposed revisions require an overall control efficiency of 95 percent, which is the product of the capture efficiency multiplied by the destruction efficiency. This requirement enables the four impacted sources to be in compliance and eliminates their need to obtain site-specific relief. All four impacted sources are reporting capture efficiency of 100 percent. Two of the impacted sources are reporting control efficiencies of 98 percent and are using solvents with vapor pressures of 55.19 mmHg: one is reporting control efficiency of 99 percent and using solvents with vapor pressures of 33.00 mmHg; and the remaining source is reporting control efficiencies of 95 percent and is using solvents with vapor pressures of 19.12 mmHg. (Reference Table 1: *Cold Cleaning Operations Using Add-on Controls*)

Table 3: *Potential Emission Estimates From Automatic Parts Washers* presents the potential VOM emissions that the environment would experience from these sources and compares it to the emissions that would occur if a solvent with 1.0 mmHg of vapor pressure were used in the absence of add-on controls. Potential emissions based on company provided solvent data indicates that Printpack and Diversapack would each emit 0.024 tons per year less using a 55.19 mmHg VP solvent and controlling emissions to a 98 percent control efficiency level than from using a 1.0 mmHg vapor pressure solvent, and Pechiney would emit 0.066 tons per year less using a 19.12 mmHg VP solvent and controlling emissions to a 95 percent level. The three sources would potentially emit a total 0.114 tons per year less than if the sources were using 1.0 mmHg solvents and no controls. Thus, potential emissions from these highly controlled sources are consistent with the overall intent of the Illinois EPA control strategy to keep emissions from cold cleaning operations equivalent or less than the emissions meeting the solvent material requirement of 1.0 mmHg vapor pressure established by the 1997 rulemaking.

It is assumed that these sources will continue to operate their add-on controls at or near the efficiency levels reported in their 2003 AERs. However, as shown in Table 3, if a 95 percent control level is met by all the impacted sources as proposed in the rule, there would be a potential emissions deficit of 1.536 tons per year (0.0064 tons per day) when compare to a 1.0 mmHg VP solvent. However from discussions with USEPA Region V, the proposed 95 percent control level is considered RACT and an acceptable proposal level for impacted sources in the ozone nonattainment areas.

Lowering the required level of control efficiency would further increase this deficit and jeopardizes the integrity of the 1999 – 2002 ROP Plan. At 90 percent control, the potential emissions deficit increases to 3.192 tons per year (0.0126 tons per day) and at an 81 percent control level the potential deficit becomes 9.925 tons per year (0.0402 ton per day). The emission reductions counted on toward meeting the requirements of the 1999 ROP from cold cleaning was 11.68 tons per day as a result of lowering the required vapor pressure of solvents from 2.0 mmHg to 1.0 mmHg in 2001.

Sections 218. 182 (b) and 219.182 (b) are provided for equivalent alternative emissions plans. These Sections also stipulate that emissions from a solvent with a vapor pressure of 1.0 mmHg shall be the basis for assessment of equivalent emissions for any proposed control plan.

Revisions are also proposed at Section 218.182(c)(2) and Section 219.182(c)(2) to allow the purchase of solvents with vapor pressure greater than 1.0 mmHg by sources that have valid permits, are in compliance with the add-on control requirements, or are exempt.

Testing procedures and recordkeeping provisions for add-on controls are consistent with the provisions at 218.105 and 219.105 which require the control devices be operated and maintained at manufactures specifications and continuously monitored to assure that the control device is operating at required levels to meet compliance requirements. All records must be kept for three years

8.0 Other States' Cold Cleaning Regulations

Many States have tightened or proposed to tighten their cold cleaning regulations in order to comply with CAA ROP requirements. Noted in the 1997 rule making were the State of Maryland and the South Coast Air Quality Management District ("SCAQMD"), which is responsible for air quality planning for the Los Angeles area.

As previously mentioned, the State of Maryland included a 1.0 mm Hg solvent vapor pressure limit in its 15% ROP plan, which Illinois EPA modeled in its 1997 rule revision. According to Maryland Department of Environment officials, the State originally proposed a solvent vapor pressure limit of 0.3 mm Hg, but after an extensive rule negotiation process, settled on a two-phase limit of 2.0 mm Hg until May 1996, and a 1.0 mm Hg limit thereafter. However, the regulation did not provide an option for add-on controls. It was believed that larger sources would use vapor degreasing, in which Maryland provides for an add-on control option of 81 percent overall capture and control. This 1.0 mm Hg limit is currently in effect in Maryland and low VP solvent is being provided and effectively used.

Similarly, South Coast Air Management District (SCAQMD) adopted a solvent cleaning regulation that would require, beginning in 1999, that the volatile organic compound ("VOC") limit of solvents used in general repair and maintenance cleaning be reduced from 900 grams per liter (7.5 pounds per gallon) to 50 grams per liter (0.42 pounds per gallon). That rule does not specify add-on controls either. Their proposal essentially requires the use of aqueous cleaners for such cleaning. The Illinois EPA believed in the 1997 submittal that although some aqueous cleaning systems work quite well for certain applications, a solvent vapor pressure-based regulation would be more appropriate. Such solvent is currently available and in use and is currently suitable in a broader range of applications.

States that do specify add-on controls are listed below with the corresponding overall control level requirements:

1. New York State Department of Environmental Regulations Part 226

   §226.3 (a)(iii) Permanent total enclosure and 90% control

2. California Bay Area AQMD Section 8-16

   §303.4 (4.4) Abatement device to control emissions by at least 90%

3. California Kern County APCD Rule 410.3

   §410.3 (IV)(A)(3)(a) Overall capture and control at least 85%

Copies of these State rules are provided in the Attachment section of the document Exhibits 2, 3, and 4.

9.0 Conclusion

In 1997 as part of the 9% ROP Plan, Illinois EPA implemented a control measure that impacted cold cleaning degreaser operations in the Chicago and Metro East NAAs. This control measure required cold cleaning operations to use solvents with vapor pressures of 2.0 mmHg or less by 1999 and 1.0 mmHg or less by 2002. The control measure was aimed at small operations referred to as area sources. Modeled after an adopted Maryland rule, the 1997 rule revisions had no provisions for add-on controls for cold cleaning degreasers.

Four cold cleaning degreaser operations located in the Chicago NAA have been identified that are using add-on controls and solvents with VP greater than the required 1.0 mmHG. Three are using thermal oxidizers to control emissions from closed loop cold cleaning systems that are recycling spent solvents. These systems capture 100 percent and remove or destroy at least 95 percent of the VOM emissions from the cold cleaning process. The fourth source is using carbon adsorption with an overall capture and control efficiency of 99 percent. Using these systems, there are less emissions being emitted to the atmosphere from the impacted sources than if the compliant low vapor pressure solvent were being used without controls.

Therefore, Illinois EPA is proposing to revise its cold cleaning degreaser rules in Chicago and Metro East NAAs to allow the option for add-on controls in lieu of meeting the solvent VP limit. Two subsections are being added at 218.182(c)(3) and 219.182 (c)(3) that require sources using solvents with vapor pressures greater than 1.0 mmHg to control their emissions to an overall capture and control efficiency of no less than 95 percent. The four identified impacted sources are currently meeting these requirements.

Any new source may use add-on controls if it demonstrates that the emissions from their cold cleaning operations are equivalent or less than the emissions from using a solvent with a vapor pressure of 1.0 mmHg and are achieving at least 95 percent overall control. An alternative equivalent control plan must have Illinois EPA and U.S. EPA approval, and they become effective only when included in a federally enforceable permit or approved in a SIP revision.

Testing procedures, monitoring, and recordkeeping are to be performed pursuant to 35 Ill. Adm. Code Sections 218.105 and 219.105, which require control devices be operated and maintained at manufacturers' specifications and continuously monitored to assure compliance. Add-on controls operating at a source prior to the effective date of this rule shall be tested by March 1, 2006 and add-controls constructed after the effective date shall be tested 90 days of initial start-up.

These control standards assure the integrity of the 9% ROP Plan and prevents emission shortfalls that would require contingency measures to be implemented. Outreach efforts to the impacted sources and U.S. EPA found the proposed revisions to be acceptable.

10.0 References

1. *Approval and Promulgation of Implementation Plans: Illinois* (Federal Register/ Vol. 62, No. 228/ Wednesday/ November 26, 1997.
2. *Technical Support Document for the Proposed Regulation Limiting the Vapor Pressure of Solvents in Cold Cleaning Solvent Degreasers in the Chicago and Metro-East St. Louis Ozone Nonattainment Areas,* AQPSTR 96-5, Illinois Environmental Protection Agency, Bureau of Air, Air Quality Planning Section, Springfield, IL, December 1996.
3. *OAQPS Control Cost Manual, Fourth Edition,* EPA 450/3-90-006, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, January 1990.
4. *Title 35 Environmental Protection, Subtitle B: Air Pollution, Chapter I, Pollution Control Board,* State of Illinois Rules and Regulations, Illinois Secretary of State, Springfield, IL, January 2000. http://www.ipcb.state.il.us/title35/

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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MAR 1 3 2006

STATE OF ILLINOIS
Pollution Control Board

IN THE MATTER OF:	)	
	)	R06- 21
	)	(Rulemaking Air)
ORGANIC MATERIAL EMISSION	)	
STANDARDS AND LIMITATIONS FOR	)	
THE CHICAGO AND METRO-EAST	)	
AREAS: PROPOSED AMENDMENTS	)	
TO 35 ILL. ADM. CODE 218 AND 219	)	

SUPPLEMENTAL STATEMENT

NOW COMES the Illinois Environmental Protection Agency ("Illinois EPA") by and through one of its attorneys, Annet C. Godiksen, and submits the following SUPPLEMENTAL STATEMENT to the Illinois Pollution Control Board ("Board") and the participants on the Service List.

This SUPPLEMENTAL STATEMENT addresses 35 Ill. Adm. Code 102.202(e), which was unintentionally left unaddressed in the Illinois EPA's proposal filed with the Board on December 22, 2005. The Board requested the Illinois EPA address subsection 102.202(e) in the Board Order dated January 19, 2006. Therefore, the Illinois EPA pursuant to 35 Ill. Adm. Code 102.202(e) and 102.202(k) states the following:

The following studies or research reports were used in developing the proposed 35 Ill. Adm. Code 218 and 219 amendments:

Approval and Promulgation of Implementation Plans: Illinois (Federal Register/ Vol. 62, No. 228/ Wednesday/ November 26, 1997).

OAQPS Control Cost Manual, Fourth Edition, EPA 450/3-90-006, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, January 1990.
http://www.epa.gov/ttncatc1/dir1/c_allchs.pdf

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By: ____________________

Annet C. Godiksen
Assistant Counsel
Division of Legal Counsel

Dated: March 7, 2006
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62794-9276
(217) 782-5544

THIS FILING SUBMITTED ON RECYCLED PAPER

STATE OF ILLINOIS)
) SS.
COUNTY OF SANGAMON)

PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached the Written Testimony of Gary E. Beckstead, along with Exhibit A to that Testimony, and a Supplemental Statement upon the person to whom it is directed, by placing it in an envelope addressed to:

TO: Dorothy Gunn, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601

Matthew Dunn
Illinois Attorney General's Office
James R. Thompson Center
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General Counsel
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271

and mailing it by First Class Mail from Springfield, Illinois on March 8, 2006, with sufficient postage affixed.

Cynthia Sims

SUBSCRIBED AND SWORN TO BEFORE ME

this 8th day of March, 2006

Brenda Boehner
Notary Public

OFFICIAL SEAL
BRENDA BOEHNER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11-3-2009

THIS FILING IS SUBMITTED ON RECYCLED PAPER