

ORIGINAL

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APR 22 2003

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

STATE OF ILLINOIS
Pollution Control Board

IN THE MATTER OF:)

PETITION OF)
ARGONNE NATIONAL LABORATORY)
FOR AN ADJUSTED STANDARD)
FROM 35 Ill. Adm. Code 218.182)

3-3
AS xx-xxx
(Adjusted Standard - X)

NOTICE OF FILING

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the PETITION OF ARGONNE NATIONAL LABORATORY FOR AN ADJUSTED STANDARD FROM 35 Ill. Adm. Code 218.182, a copy of which is herewith served upon you.

PLEASE TAKE NOTICE ALSO that the above-referenced PETITION has been printed on recycled paper meeting the terms of The Pollution Control Board's regulation on that subject.

For THE UNIVERSITY OF CHICAGO:

William D. Luck.

William D. Luck
Assistant General Counsel
Argonne National Laboratory
Operated by The University of Chicago
For the U.S. Department of Energy
9700 S. Cass Avenue
Argonne, Illinois 60439
(630) 252-7300

17 April 2003 -

Date

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APPEARANCE

I hereby file my appearance in this proceeding, on behalf of the U.S. Department of Energy.

For U.S. DEPARTMENT OF ENERGY:

Gloria Walach

Gloria Walach
Counsel
U.S. Department of Energy
9800 S. Cass Avenue
Argonne, Illinois 60439
(630) 252-2036

4-17-03

Date

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AS xx-xxx
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APPEARANCE

I hereby file my appearance in this proceeding, on behalf of The University of Chicago.

For THE UNIVERSITY OF CHICAGO:

William D. Luck

William D. Luck
Assistant General Counsel
Argonne National Laboratory
Operated by The University of Chicago
For the U.S. Department of Energy
9700 S. Cass Avenue
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STATE OF ILLINOIS
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AS xx-xxx
(Adjusted Standard - X)

CERTIFICATE OF SERVICE

I, the undersigned, certify that I have served the original and nine (9) duplicate copies of the attached PETITION OF ARGONNE NATIONAL LABORATORY FOR AN ADJUSTED STANDARD FROM 35 Ill. Adm. Code 218.182, upon the following person, by depositing it with FEDERAL EXPRESS on this date:

Pollution Control Board
Attention: Clerk
100 W. Randolph Street
James R. Thompson Center
Suite 11-500
Chicago, Illinois 60601-3218

I further certify that I have served one (1) copy of the attached PETITION OF ARGONNE NATIONAL LABORATORY FOR AN ADJUSTED STANDARD FROM 35 Ill. Adm. Code 218.182 upon the following person, by depositing it with FEDERAL EXPRESS on this date:

Rachel Doctors
Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

For THE UNIVERSITY OF CHICAGO:

William D. Luck

William D. Luck
Assistant General Counsel
Argonne National Laboratory
Operated by The University of Chicago
For the U.S. Department of Energy
9700 S. Cass Avenue
Argonne, Illinois 60439
(630) 252-7300

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Date

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STATE OF ILLINOIS
Pollution Control Board

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

ORIGINAL

3-3

IN THE MATTER OF:

PETITION OF)	AS xx-xxx
ARGONNE NATIONAL LABORATORY)	(Adjusted Standard - X)
FOR AN ADJUSTED STANDARD)	
FROM 35 Ill. Adm. Code 218.182)	

Pursuant to Section 28.1 of the Illinois Environmental Protection Act and 35 Ill. Adm. Code Part 104, Subpart D, Argonne National Laboratory, as represented by the United States Department of Energy and The University of Chicago, respectfully submits this petition for an adjusted standard from 35 Ill. Adm. Code 218.182.

Argonne National Laboratory is a government-owned, contractor-operated facility, owned by the United States Department of Energy and operated by The University of Chicago under a Prime Contract between the parties. Argonne National Laboratory occupies a 1,500-acre site in DuPage County, Illinois, and is located about 27 miles southwest of downtown Chicago. It is north of the Des Plaines River valley, south of Interstate Highway 55, west of Illinois Highway 83, and east of Lemont Road.

Argonne National Laboratory conducts broad programs of fundamental and applied research in the physical, biomedical, and environmental sciences and serves as major center of energy research and development. About 120 buildings are located on the site, 30 of which house either administrative offices or major research programs. The facility is surrounded by the 2,240-acre Waterfall Glen Forest Preserve, owned by the DuPage County Forest Preserve District.

The information in this petition is presented in sections organized in conformance with the petition content requirements of 35 Ill. Adm. Code 104.406, as follows:

a. Description Of Regulation From Which Adjusted Standard Is Sought.

Petitioner Argonne National Laboratory (Argonne) seeks an adjusted standard from 35 Ill. Adm. Code 218.182, Cold Cleaning, effective date June 9, 1997 (hereafter also referred to in this petition as the regulation), a regulation of general applicability, which specifies, among other requirements, that after March 15, 2001, no person in the Chicago ozone non-attainment area may operate a cold cleaning degreaser with a solvent vapor pressure which exceeds 1.0 mm Hg (0.019 psi) measured at 20°C (68°F).

Petitioner Argonne seeks an adjusted standard to exempt it from otherwise applicable requirements of the regulation, including the vapor pressure requirements of Section 218.182(c), as well as the associated equipment

requirements of Section 218.182(b), and the recordkeeping requirements of Section 218.182(d), for those cold cleaning applications involving the preparation of sample material and associated apparatus used for research and development testing and analysis activities where (1) the research and development-related cold cleaning activities include, but are not limited to, washing and rinsing slides, drying glassware, sample preparation, specimen cleaning, gel stain/de-staining, membrane rinsing, and the cleaning of small parts and equipment and the preparation of sample materials and associated apparatus for testing and (2) solvents meeting the vapor pressure limit of the cited regulation cannot be used without compromising the quality of the equipment being used or the validity of research results.

b. Reason For Promulgation Of Regulation.

The regulation derives from requirements of the Clean Air Act (42 USC 7401 et seq.), although it is not specifically directed by that statute. Because the Chicago metropolitan region was designated an ozone non-attainment area under the 1990 amendments to the Clean Air Act, Illinois has instituted a number of measures, including the regulation at issue, as part of its program to bring the region into attainment as required by the Clean Air Act.

On March 4, 1997, a representative of the Illinois Environmental Protection Agency (IEPA), in presenting to the Pollution Control Board the proposal for the rulemaking that resulted in the regulation at issue, declared that "[t]he rulemaking is being submitted to the Illinois Pollution Control Board to ratify Illinois' commitment under the Clean Air Act to reduce emissions of volatile organic material by three percent each year from 1990 baseline levels until attainment is reached." (Docket R97-24 (Rulemaking), Transcript at Page 10) The rulemaking record makes clear that while the rate of progress provisions are mandated by the Clean Air Act, the regulation itself is not. Modeled after a similar State of Maryland provision, the regulation was designed as a means to achieve the rate of progress being sought, but neither its subject matter nor its terms are required by the U.S. Environmental Protection Agency.

c. Justification For Adjusted Standard Specified In The Regulation (Or Statement That No Justification Is Specified).

The regulation does not specify any level of justification for obtaining an adjusted standard. In such a circumstance, 35 Ill. Adm. Code 104.406, the regulation that sets forth the requirements for the contents of a petition for adjusted standard, in Paragraph (c) directs one to 35 Ill. Adm. Code 104.426 for the applicable justification requirements. Specifically, Section 104.426(a) addresses the showing required for a petitioner to meet the burden of proof to justify an adjusted standard consistent with Section 28.1 of the Illinois Environmental Protection Act. The four factors set forth in 35 Ill. Adm. Code 104.426(a) are discussed in Section h. of this petition.

d. Description Of Nature Of Petitioner's Activity That Is The Subject Of The Proposed Adjusted Standard.

Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, Illinois, 60439, is a United States Government-owned, contractor-operated research and development facility located on a 1,500 acre site in DuPage County, Illinois, approximately 27 miles southwest of downtown Chicago and 24 miles due west of Lake Michigan.

The facility is surrounded by the 2,240 acre Waterfall Glen Forest Preserve, owned by the DuPage County Forest Preserve District. Much of the Waterfall Glen Forest Preserve was part of the Argonne site until 1973, when it was deeded to the DuPage County Forest Preserve District for use as a public recreational area, nature preserve, and demonstration forest. The Laboratory is operated for the United States Department of Energy by The University of Chicago, under Prime Contract No. W-31-109-ENG-38.

The University of Chicago has been the management and operating contractor of Argonne National Laboratory from its inception at its current site in 1946, and prior to that was the contractor with the Manhattan District for the project at the University campus during World War II that included the Fermi experiment, conducted under the stands of the football field, that ushered in the nuclear age. Today Argonne is a multiprogram basic research and development laboratory employing approximately 3,200 people at the DuPage County, Illinois site (and approximately 1,300 more at another site near Idaho Falls, Idaho).

Argonne conducts a broad program of research in the basic energy and related sciences (physical, chemical, material, computer, nuclear, biomedical, and environmental) and serves as an important engineering center for the study of nuclear and nonnuclear energy sources. Other areas of research are basic biological research, heavy-ion research into the properties of super-heavy elements, fundamental coal chemistry studies, the immobilization of radioactive waste products for safe disposal, fundamental studies of advanced computers, and the development of chips for the rapid assay of gene composition. Environmental research studies include the biological activity of mutagens and carcinogens, characterization and monitoring of energy-related pollutants, and new technologies for cleaning up environmental contaminants. Recent work at Argonne also has focused on supporting government anti-terrorism efforts through the development of biological, chemical, and nuclear detection systems.

Argonne's IEPA air pollution control site identification number is 043802AAA. The site's major source of emissions is the Central Heating Plant that consists of five boilers. Other sources of emissions include a number of underground gasoline storage tanks, an engine test facility, bulking operations of liquid wastes generated by research activities, and a number of diesel generators. The site applied for a permit pursuant to Title V of the

Clean Air Act on September 13, 1995; the Title V permit (#95090195) was issued on April 3, 2001.

With respect to cold cleaning at Argonne, many types of activities are in compliance with the vapor pressure limit of the current regulation. For example, the Laboratory does have shops that perform conventional machining operations. For these activities, Argonne does employ cold cleaning solvents that meet the vapor limitation of 35 Ill. Adm. Code 218.182(c)(2)(B). Other small parts degreasers also are operated around the site using solvents that are in compliance with the regulation. With respect to pollution control, all of the requirements of Section 218.182 are followed for these types of operations.

However, some research applications involve equipment (e.g., x-ray equipment, vacuum systems, and analytical instrumentation for research at the atomic and sub-atomic levels) that requires sample surface areas completely free of any residual contamination. This necessitates the use of a number of common laboratory solvents, such as methanol, ethanol, isopropanol, hexane, and toluene, all of which have vapor pressures that exceed the limitation of the regulation. For a number of reasons, the cold cleaning activities associated with these research applications cannot be accomplished in such a manner as to take advantage of any existing exemption from the regulation.

With respect to the potential use of wipe cleaning, which specifically is excluded from the definition of cold cleaning in 35 Ill. Adm. Code Part 211 (and which definition is made applicable to 35 Ill. Adm. Code Part 218 by 35 Ill. Adm. Code 218.104), in connection with sample preparation, in many cases this approach cannot be used in sample preparation applications due to problems resulting from low levels of particulate residue, which could have an adverse effect on analytical results. For example, the preparation of various types of metal samples prior to analysis with electronic instrumentation often requires cutting and cleaning. In some cases methanol or isopropanol is used to clean the cutting blade during cutting operations. Various types of alcohol or hexane also are used to decontaminate radiological samples and to remove lubricants from sample materials after grinding and polishing. Methanol and ethanol also are used to clean samples in preparation for x-ray scattering measurements. The method used for sample cutting and sample preparation can be either spraying or immersion in milliliter volumes of solvent. It is noted that the analytical activity itself is categorized in the Argonne Title V permit as bench scale research which is considered to be an insignificant activity.

Also with respect to the potential use of wipe cleaning in sample preparation, wipe cleaning often cannot be used to clean small parts and equipment associated with the preparation of sample materials for testing and analysis, again because of the problem of contamination caused by residue from the wipe cleaning process. For example, the experimental use of a number of particle accelerators, such as the Argonne Tandem Linac Accelerator

System (ATLAS), Intense Pulsed Neutron Source (IPNS), and the Advanced Photon Source (APS), requires that such items as beam line conduits (which are essentially metal tubes) and associated vacuum pumping equipment be cleaned so that a state of high vacuum can be maintained. Solvents that can evaporate with zero residue must be employed on such systems because any residual contamination can cause out-gassing that can destroy vacuum conditions and thereby affect research results. The methods used for preparation of vacuum equipment can include immersion, brushing, and spraying. In other instances wipe cleaning of parts or equipment is not feasible because the presence of small confined areas or delicate parts precludes that approach.

With respect to the potential use of the Section 218.182(f) exemption from the Section 218.182 requirements for the cold cleaning of electronic components, although certain of the equipment employed in the Laboratory's testing and analysis activities would be considered to be electronic components, that is not true of all parts and equipment associated with the testing and analysis process, and certainly the research samples themselves cannot be considered as electronic components.

Attached as Exhibit 2 is a summary by building of Argonne research-related cold cleaning activities, involving preparation of sample materials and associated apparatus for testing and analysis, which would be encompassed by the requested adjusted standard.

e. Efforts Necessary For Compliance With The Regulation Of General Applicability.

Argonne has made a concerted effort since 1998 to identify and substitute replacement solvents that would comply with the Section 218.182(c) vapor pressure standard for the entire range of its activities; however, there remain cases where acceptable substitutes have not been found. Organic solvent substitutes with an acceptable vapor pressure can leave residues which can compromise the integrity of fabricated items and the quality of research results. This is particularly true for materials being handled in a vacuum environment. In addition, wiping is not an option because of the residue that would be left by the wiping cloth or other material. As a consequence, meeting the regulatory requirements for low vapor pressure solvents would jeopardize a number of particular Argonne research programs, and thereby, the research and development mission of the Laboratory.

Acetone, which is a solvent that is not categorized as a volatile organic material due to its negligible photochemical activity, has been used as an acceptable substitute in some applications. However, the very low flashpoint of acetone makes this solvent a potential fire hazard, and for safety reasons it cannot be substituted in all cold cleaning applications.

Because the issue of compliance with the current Section 218.182(c) vapor pressure standard is a quality control issue where there are no feasible

alternatives, rather than an issue of the cost of compliance, this petition does not discuss compliance alternatives or their corresponding costs.

The difficulty of complying with the equipment requirements of Section 218.182(b) in the case of cold cleaning involving research samples is that cold cleaning of research samples is not conducted in equipment designed for degreasing operations. For example, small laboratory beakers containing milliliter volumes of solvent often are employed, and they do not meet the equipment requirements specified in Section 218.182(b). Requirements such as a permanent conspicuous label, as set forth in Section 218.182(b)(4), would serve little purpose for a beaker used only for short periods of time for sample cleaning and then subsequently used in other laboratory activities.

With respect to the recordkeeping requirements in Section 218.182(d), Argonne does track chemical usage on a sitewide basis using a computerized database known as the Chemical Management System (CMS). The CMS can indirectly track by Chemical Abstract Service (CAS) number the types of laboratory solvents used in research-related cold cleaning activities.

However, the CMS tracks total usage, rather than usage by specific activity. For example, a one liter bottle of isopropanol may have a total annual usage of 600 milliliters, which could include a variety of research applications including, but not limited to, cold cleaning. To isolate the usage dedicated to research sample cold cleaning activities would necessitate individual researchers keeping a manual record of amounts used. Argonne does not believe that such a burdensome procedure would be practical, due to the large number of ever-changing research activities, many of which are bench scale in size and ordinarily involve only small amounts of organic solvents.

f. Description Of The Proposed Adjusted Standard.

Argonne proposes the following adjusted standard, to exempt the Laboratory from the applicable vapor pressure and other associated requirements of 35 Ill. Adm. Code 218.182 for the specified cold cleaning activities conducted at the Laboratory:

The adjusted standard from 35 Ill. Adm. Code 218.182 applies to Argonne National Laboratory, a research laboratory located near Waterfall Glen Forest Preserve, in DuPage County, Illinois. The requirements of this adjusted standard shall apply only to cold cleaning involving the preparation of sample materials and associated apparatus used for research and development testing and analysis activities. These activities are subject to the following requirements.

- (1) The research and development related cleaning activities include, but are not limited to, washing and rinsing slides, drying

glassware, sample preparation, specimen cleaning, gel stain/de-staining, membrane rinsing, and the cleaning of small parts and equipment associated with the preparation of sample materials for testing and analysis.

- (2) The requirements of this adjusted standard do not apply where solvents meeting the vapor pressure limits of 35 Ill. Adm. Code 218.182 can be used without compromising the quality of the equipment being used or the validity of research results.

As indicated in Section h. of this petition, Argonne submits that the quality control issues associated with its research and development cleaning activities are highly similar to those associated with the cleaning of electronic components, for which 35 Ill. Adm. Code 218.182(f) provides an exemption from the otherwise applicable vapor pressure limit. The proposed adjusted standard would achieve for Argonne's research and development cleaning activities a result similar to what the regulation already provides for electronic component cleaning activities.

g. Quantitative And Qualitative Description Of Impact On Environment, Comparing Compliance With Standard To Compliance With Proposed Adjusted Standard.

While it obviously would be difficult to measure, as indicated in Section e. above, the qualitative and quantitative impact on Argonne's work, were it to have to comply with the regulation's vapor pressure limitation, nevertheless it is clear that the Laboratory would experience a significant inability to conduct research programs important to its research and development mission. The anticipated impact on the environment, were the proposed adjusted standard to apply, is somewhat difficult to quantify. However, for the reasons discussed in this Section g., it is believed that the emissions associated with the cold cleaning activities under the proposed adjusted standard would be minimal, on the order of no more than approximately one ton per year.

In most individual applications, the amount of solvent not meeting the current vapor pressure limit that would be used under the circumstances set forth in Section f. of this petition would be a small amount. Most often the amount of solvent that would be employed by Argonne's technically qualified research personnel, to be utilized to prepare samples or apparatus for research and development purposes, would be a bench scale research quantity, ranging from a few milliliters up to a liter. As a measure of comparison, under 35 IAC 201.210(b)(11), such an amount of solvent used in conjunction with bench scale laboratory equipment, in a connection other than cold cleaning, would be considered to be an insignificant activity or emission level.

With respect to the cumulative impact of the expected individual applications, determining a total annual usage of solvents for Argonne research and development cold cleaning applications within the scope of the proposed adjusted standard is difficult due to the changing nature of research activities,

the number of researchers involved, and the small amounts of solvent ordinarily used in cleaning applications. Based on the best available information from last year, it is estimated that no more than 200 gallons (approximately 1500 pounds) was employed for that purpose. Usage would vary depending upon the type of research conducted during the year, the nature of the equipment employed, and whether solvents meeting the current vapor pressure limit could be used without adverse application effects. Nevertheless, a table indicating estimated annual usage for various organic solvents used in cold cleaning applications at Argonne for the period 1999-2001, which is attached as Exhibit 3, shows that the level of usage has remained fairly constant at this indicated level.

In any event, the amount of solvents used annually that would not comply with the current regulation would be expected to be in the same order of magnitude as the amount used annually for laboratory activity categorized as insignificant pursuant to 35 Ill. Adm. Code 201.210(b)(11).

Accordingly the impact of these emissions on the VOM inventory in the Chicago metropolitan ozone non-attainment area would be negligible.

h. Justification For Adjusted Standard.

The applicable regulation does not specify any level of justification for obtaining an adjusted standard. In such a circumstance, 35 Ill. Adm. Code 104.406, the regulation that sets forth the requirements for the contents of a petition for adjusted standard, in Paragraph (c) directs one to 35 Ill. Adm. Code 104.426 for the applicable justification requirements. Specifically, Section 104.426(a) addresses the showing required by a petitioner to meet the burden of proof to justify an adjusted standard consistent with Section 28.1 of the Illinois Environmental Protection Act. Accordingly, the four factors set forth in that regulation are discussed in this Section h. of the petition. The first two of the four factors are discussed together.

1. Factors Relating To The Petitioner Are Substantially And Significantly Different From The Factors Relied On By The Board In Adopting the Regulation.
2. The Existence Of These Factors Justifies An Adjusted Standard.

The transcript of the Board's March 4, 1997 rulemaking hearing in consideration of the regulation at issue (Docket R97-24 (Rulemaking)) makes clear that Petitioner Argonne's concerns, regarding restrictions on the use of certain types of solvents for cold cleaning in research and development applications, were not among the issues before the Board.

Christina Archer, in making the IEPA presentation of its rulemaking proposal to the Board, stated that the proposal was being introduced to satisfy Illinois' commitment under the Clean Air Act to reduce emissions of volatile organic material by three percent each

year from 1990 baseline levels until attainment is reached. (Transcript at Page 7) She indicated that the cold cleaning proposal was patterned after a similar rule in Maryland (Transcript at Page 9) and "is intended to cover the manufacturers, suppliers, and recyclers of solvent used in cold cleaning degreasing as well as the users of such solvent such [as] auto repair and refinishing and metal finishing shops." (Transcript at Page 10, emphasis added)

That this was the intended universe of solvent users being considered, to the exclusion of an entity such as Argonne, also was emphasized by other IEPA statements and actions. Mike Rogers, an Environmental Protection Specialist in the Air Quality Planning Section of IEPA's Bureau of Air, who was by his own account involved in the development of the proposed regulation and the person responsible for preparing the technical support document (see Transcript at Page 15), also addressed the Board at the March 4, 1997 rulemaking hearing. Mr. Rogers stated that "[c]old cleaning degreasing takes place at auto repair shops, car dealerships, marine shops - -excuse me - - machine shops, and other metal fabrication and manufacturing businesses." (Transcript at Pages 16-17, emphasis added) In addition, he said that IEPA "sought and incorporated the input of numerous parties involved in solvent cleaning. The Illinois EPA sent out copies of the rule proposed to over 20 persons representing individual businesses, solvent suppliers, degreasing equipment manufacturers, and industrial trade associations." (Transcript at Page 23)

In other words, as regards the users of solvents, the focus of the proposed rule was on retail businesses engaging in repetitive, high-volume, cold cleaning operations. There is no mention in the transcript of cold cleaning applications for research and development purposes, such as those conducted by Petitioner Argonne, as set forth in greater detail in Sections d. and e. of this petition, and IEPA did not seek out the views of entities engaged in such activities.

It is important to note, however, that the IEPA and the Board were sufficiently flexible to recognize the need for an exception from the general rule in a circumstance where lower vapor pressure solvents would not perform with the necessary measure of quality in a particular type of application. Specifically, the proposal (and indeed, the final rule as adopted) exempted from the cold cleaning vapor pressure requirement the cleaning of electronic components. (See 35 Ill. Adm. Code 218.182(f)) Mr. Rogers listed the exemption for cleaning electronic components as an example of an issue raised during the rule development process that resulted in a modification to the rule as it eventually was proposed. (Transcript at Page 23) Providing the rationale for the IEPA determination to

exempt electronic component cleaning from the proposal, Ms. Archer stated that “[t]he exclusion for electronic components is being included in the proposal due to concerns raised by several parties that solvents with low vapor pressures would not adequately clean such components.” (Transcript at Pages 9-10, emphasis added) In this respect the proposal also mirrored the Maryland rule. (Transcript at Page 10)

It is also important to note that in establishing the exemption for cleaning electronic components, the regulation places no volumetric or other quantitative limitations on how the cleaning will be conducted. Neither does the regulation place any qualitative limitation on how the cleaning should be conducted.

Although the issue of cold cleaning in research and development applications was not considered by IEPA or the Board in the context of the rulemaking proceeding, Petitioner Argonne submits that the quality control issues associated with such applications are highly similar to those associated with the cleaning of electronic components. For that reason, Argonne submits that these two types of cleaning activities should be regulated similarly. Granting this petition will achieve a result similar to the exemption already recognized by the applicable regulation for the cleaning of electronic components.

3. The Requested Standard Will Not Result In Environmental Or Health Effects Substantially And Significantly More Adverse Than The Effects Under The Regulation.

As discussed in Section g. of this petition, the environmental impact of the requested standard is expected to be minimal. Any health effects would be expected to be comparable to those for the same solvents used for other routine research and development laboratory activities.

In addition, when compared with the environmental and health effects that would correspond to employing solvents for wipe cleaning, which is authorized by the regulation (but would not be suitable for many Argonne research and development purposes, as discussed in Sections d. and e. of this petition), the impacts of the requested adjusted standard are certainly not more adverse than those already allowable under the regulation.

4. The Adjusted Standard Is Consistent With Any Applicable Federal Law.

As indicated in the discussion in Section b. of this petition, and in Items 1. and 2. in this Section h. of this petition, the applicable regulation was modeled on a similar State of Maryland regulation,

rather than a federal authority, and was not required by the U.S. Environmental Protection Agency. While the federal regulations at 40 CFR Part 63, Subpart T, do prescribe national emission standards for halogenated solvent cleaning, those regulations apply to batch and in-line cleaning, which are not the forms of cleaning at issue in this petition, and to the use of specific halogenated solvents, which are not solvents used by Petitioner Argonne. Accordingly, granting this petition would not be inconsistent with any federal law addressing cold cleaning.

i. Statement That The Board May Grant The Proposed Adjusted Standard Consistent With Federal Law.

For the reasons indicated in the discussion of Item 4. of Section h. of this petition, Petitioner Argonne submits that the Board may grant the proposed adjusted standard consistent with federal law.

j. Statement Requesting Or Waiving A Hearing.

Petitioner Argonne understands that a hearing on the petition is required because an adjusted standard would become part of the state implementation plan for ozone for the Chicago non-attainment area.

k. Supporting Documents Or Legal Authorities.

Citations to appropriate sections of the Illinois Environmental Protection Act and the regulations of the Illinois Administrative Code have been referenced in the various sections of this petition. The relevant cited portions of the transcript of Docket 97-24 (Rulemaking), the Board's consideration of the proposal that became the regulation at issue in this petition, are attached as Exhibit 1. No other authorities, which would require appending to this petition by 35 Ill. Adm. Code 104.406(k), are cited for consideration.

l. Any Additional Information.

Petitioner Argonne submits no additional information beyond that presented or referenced in the prior sections of this petition.

Attachments:

Exhibit 1: Excerpts from Transcript of Docket 97-24 (Rulemaking)

Exhibit 2: Summary of Current Research-Related Cold Cleaning Activities

Exhibit 3: Average Annual Usage of Certain Organic Solvents, 1999-2001

For U.S. DEPARTMENT OF ENERGY:

Gloria Walach

Gloria Walach

Counsel

U.S. Department of Energy

9800 S. Cass Avenue

Argonne, Illinois 60439

(630) 252-2036

April 17, 2003

Date

For THE UNIVERSITY OF CHICAGO:

William D. Luck

William D. Luck

Assistant General Counsel

Argonne National Laboratory

Operated by The University of Chicago

For the U.S. Department of Energy

9700 S. Cass Avenue

Argonne, Illinois 60439

(630) 252-7300

17 April 2003 -

Date

1 A P P E A R A N C E S:

2 HEARING TAKEN BEFORE:

3 ILLINOIS POLLUTION CONTROL BOARD,
4 100 West Randolph Street
5 Suite 11-500
6 Chicago, Illinois 60601
7 (312) 814-4925
8 BY: MS. K.C. POULOS
9 HEARING OFFICER.

10 ILLINOIS POLLUTION CONTROL BOARD MEMBERS PRESENT:

11 Mr. J. Theodore Meyer
12 Mr. Hiten Soni

13

14

15

16 ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMBERS
17 PRESENT:

18 Ms. Christina L. Archer
19 Mr. Richard A. Forbes
20 Mr. Michael D. Rogers
21 Ms. Karen L. Barancik

22

23 OTHER AUDIENCE MEMBERS WERE PRESENT AT THE HEARING,
24 BUT NOT LISTED ON THIS APPEARANCE PAGE.

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E X H I B I T S

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20		Identification
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1 (Hearing Exhibit No. 1 marked
2 prior to the commencement of
3 the proceedings.)

4 MS. POULOS: My name is K.C. Poulos, and I'm
5 the hearing officer in this matter. It's entitled,
6 In The Matter of Nine Percent ROP Plan Control
7 Measures for VOM Emissions Tightening Cold Cleaning
8 Requirements Amendments to 35 Illinois
9 Administrative Code Parts 211, 218, and 219 Subpart
10 E. This is Docket Number R97-24.

11 Present today on behalf of the Illinois
12 Pollution Control Board and seated to my right is
13 Board Member J. Theodore Meyer. Also present from
14 the board is a technical staff is Hiten Soni, and
15 this hearing will be governed by the board's
16 Procedural Rules for Regulatory Proceedings.

17 All information which is relevant and not
18 repetitious or privileged will be admitted. All
19 witnesses will be sworn and subject to
20 cross-questioning.

21 This proceeding is a fast-track rulemaking,
22 which was filed on December 13th, 1996, by the
23 Illinois Environmental Protection Agency pursuant to
24 Section 28.5 of the Act.

1 Pursuant to the provisions of that section,
2 the board is required to proceed with this
3 rulemaking under set time frames. Section 28.5 also
4 establishes specific purposes for each hearing and
5 other procedure requirements.

6 Pursuant to Section 28.5, this first
7 hearing is reserved for the agency's presentation of
8 its proposal and questions directed to the agency's
9 witnesses.

10 The agency witnesses have prefiled
11 testimony, which will be entered into the record as
12 if read.

13 Today the agency witnesses will provide
14 summaries of their prefiled testimony. Questioning
15 of the witnesses will then take place. Anyone may
16 ask a question of any witness. During the
17 questioning period, I would like persons with
18 questions to raise theirs hands and wait for me to
19 acknowledge them.

20 What we're going to do today is start out
21 with the prefiled questions, and then we'll go into
22 other questions from members of the audience, if
23 they have any.

24 Please note that any questions asked by

1 board members and staff are not intended to express
2 any preconceived notions or bias, but only to build
3 a complete record for review by the other board
4 members who are not present today.

5 Pursuant to my February 21st, 1997, hearing
6 officer order, a second and third hearing have been
7 scheduled in this matter. The second and third
8 hearings may be canceled without further notice if
9 the effected entities are in agreement on the rule
10 and the U.S. EPA has not informed the board of any
11 unresolved objection to the rule.

12 However, within seven days after the first
13 hearing, any person may request that the second
14 hearing be held. Such a request must be made either
15 on the record at this hearing or in writing filed
16 with the board and served upon those on the service
17 list.

18 The second hearing, if necessary, shall be
19 devoted to presentation testimony, documents, and
20 comments by effected entities and all other
21 interested parties.

22 The third hearing, if necessary, shall be
23 devoted to interagency response to material
24 presented at the second hearing and to any response

1 by other parties.

2 Mr. Meyer, do you have any comments at this
3 time?

4 MR. MEYER: No, thanks.

5 MS. POULOS: Okay. We will then turn to the
6 agency's presentation of its proposal.

7 Ms. Archer, do you have any opening
8 statement?

9 MS. ARCHER: Yes, I do.

10 MS. POULOS: Proceed, please.

11 MS. ARCHER: Thank you. Good morning. My name
12 is Christina Archer, and I represent the Illinois
13 Environmental Protection Agency in this rulemaking
14 proposal, R97-24 regarding cold cleaning degreasing
15 operations.

16 The rulemaking is being submitted to the
17 Illinois Pollution Control Board to satisfy
18 Illinois' commitment under the Clean Air Act to
19 reduce emissions of volatile organic material by
20 three percent each year from 1990 baseline levels
21 until attainment is reached.

22 This rulemaking will cover both the Chicago
23 severe ozone nonattainment area and the Metro-East
24 St. Louis moderate ozone nonattainment area.

1 While the Metro-East area is not
2 immediately subject to the rate of progress
3 requirements under the Clean Air Act, additional
4 control measures will assist the area in reaching
5 attainment, and further Metro-East is at risk of
6 being bumped up to the next higher classification or
7 serious, which would implicate the rate of progress
8 requirements.

9 Since the rate of progress provisions are
10 mandated by the Clean Air Act and sanctions can
11 apply for a state's failure to adopt such rules,
12 this proposal is being submitted to the Illinois
13 Pollution Control Board pursuant to the fast-track
14 provision set forth in Section 28.5 of the
15 Environmental Protection Act.

16 This proposal will amend 35 Illinois
17 Administrative Codes Sections 218 and 219 182 to add
18 more stringent requirements for solvents sold or
19 used in cold cleaning degreasers along with
20 associated recordkeeping provisions.

21 The proposal will also add a definition at
22 35 Illinois Administrative Code 211.1085 for
23 electronic components. The cleaning of electronic
24 components will be exempt from the proposal.

1 The proposal will be implemented in two
2 phases. Initially, the vapor pressure of solvents
3 sold for or used in cold cleaning degreasing will be
4 limited to two millimeters of mercury measured at 20
5 degrees Celsius in the year 1999 and then it will be
6 limited to one millimeter of mercury measured at 20
7 degrees Celsius in the year 2001.

8 The Illinois EPA believes that this is a
9 reasonable approach. Solvents at a 2.0 millimeters
10 per mercury vapor pressure are readily available and
11 the phase-in approach will allow additional time for
12 manufacturers and suppliers to switch to the lower
13 vapor pressure solvents.

14 The proposal is patterned after a similar
15 rule in the state of Maryland, which also adopted a
16 phase-in approach, and sources in Maryland are
17 currently meeting a 1.0 vapor pressure limit.

18 The Illinois EPA further believes that the
19 recordkeeping provision of the rule are reasonable.
20 The type of information we are seeking is a type of
21 information currently being retained. Usually, this
22 would be on material safety data sheets or other
23 type of technical information.

24 The exclusion for electronic components is

1 being included in the proposal due to concerns
2 raised by several parties that solvents with low
3 vapor pressure would not adequately clean such
4 components.

5 Maryland also recognized that the cleaning
6 of electronic components was a general concern and
7 limited its rule to the cleaning of metal parts
8 only.

9 This proposal is intended to cover the
10 manufacturers, suppliers, and recyclers of solvent
11 used in cold cleaning degreasing as well as the
12 users of such solvent such auto repair and
13 refinishing shops and metal finishing shops.

14 Since the number of sources potentially
15 subject to the proposal is quite large, the Illinois
16 EPA is proposing a five-gallon de minimus cut off.
17 This means that suppliers only need to keep records
18 of sales of solvent in quantities over five gallons.

19 The Illinois EPA believes this would exempt
20 most over-the-counter retail sales of such
21 solvents. The Illinois EPA has conducted extensive
22 outreach in this proposal and understands that
23 solvents meeting the pro^escribed vapor pressure
24 limits are readily available and are also cost

1 effective.

2 The cost of controlling a ton of VOM range
3 from \$238 to \$779. In addition, the Illinois EPA
4 has sent a copy of this proposal to U.S. EPA Region
5 Five for parallel processing. The Illinois EPA
6 believes that Region Five is in substantial
7 agreement with the proposal.

8 With me today to my immediate left is Dick
9 Forbes. He's the manager of the Ozone Regulatory
10 Unit, and Mr. Mike Rogers, next to him, who is an
11 Environmental Protection Specialist. Both are in
12 the Illinois EPA's Air Quality Planning Section.

13 Both Mr. Forbes and
14 Mr. Rogers have prepared brief oral testimony in
15 this matter. Mr. Forbes will be giving a brief
16 general overview of the Clean Air Act provisions
17 required in this proposal, and Mr. Rogers will be
18 addressing the specifics of the proposal.

19 At this time, I would make a motion to the
20 board to accept Illinois EPA's prefiled testimony
21 into the record as if read, and ask that both Mr.
22 Forbes and Mr. Rogers be sworn in and give their
23 oral testimony.

24 The Illinois EPA would then be happy to

1 answer any questions. Thank you.

2 MS. POULOS: Any objections? Okay. We'll enter
3 your testimony as Exhibit 1 of this proceeding.

4 Would you please swear the witnesses?

5 (Witnesses sworn.)

6 WHEREUPON:

7 R I C H A R D F O R B E S,

8 M I C H A E L R O G E R S,

9 called as witnesses herein, having been first duly
10 sworn, depose and saith as follows:

11 MR. FORBES: My name is Dick Forbes. I am
12 employed by the Illinois Environmental Protection
13 Agency as the manager of the Ozone Regulatory Unit
14 in the Air Quality Planning Section, Bureau of Air.

15 I've been employed by the Illinois EPA in
16 this capacity for eleven years. Prior to that, I
17 served as analysis unit manager and new source
18 review unit manager both in permit section -- both
19 in the permit section of the Illinois EPA's Bureau
20 of Air.

21 Prior to that, I served as an environmental
22 protection engineer in the permit section of
23 Illinois EPA's Bureau of Water. In all, I have been
24 employed by the Illinois EPA for 24 years.

1 My educational background includes a
2 bachelor of science degree in general engineering
3 from the University of Illinois at Urbana-Champaign
4 and a master of science degree in environmental
5 engineering from Southern Illinois University at
6 Carbondale.

7 I hold a professional engineering license
8 and I'm registered as a professional engineer in the
9 state of Illinois.

10 My prefiled testimony addresses the need
11 for improved ozone air quality in Illinois, and the
12 Federal Clean Air Act requirements which served as
13 the driving force for Illinois EPA developing and
14 proposing regulations for controlling emissions of
15 volatile organic material or VOM from certain
16 categories of emission sources.

17 The proposal being presented today, control
18 of VOM emissions from cold cleaning degreasing
19 operations, is one such category. Illinois has made
20 steady progress in achieving the various
21 requirements of the 1990 Clean Air Acts.

22 Substantial reductions have been achieved
23 to date with the implementation of the various board
24 adopted 15 percent rate of progress control measures

1 and the various federal measures. However, ozone
2 modeling results show that substantial reductions in
3 VOM emissions will still be required to reach
4 attainment of the ozone air quality standard.

5 Based on the preliminary results of the
6 ozone transport assessment group, widespread
7 transport of ozone and ozone precursors is
8 occurring, and with a reasonable reduction in
9 background ozone levels across the OTAG domain, a
10 more realistic reduction target is predicted.

11 In the meantime, the Clean Air Act requires
12 and the U.S. EPA has called for a demonstration that
13 Illinois is making reasonable further progress in
14 Chicago in reducing emissions of VOM to satisfy the
15 three percent per year rate of progress provisions
16 of the Clean Air Act.

17 This demonstration must be made within 18
18 months of the effective date of the federal
19 registered notice containing the SIB call in order
20 to avoid federal sanctions.

21 Illinois EPA has evaluated available
22 controls and assessed the needed reductions and
23 concluded that this proposal and an emissions
24 trading program for VOM emission sources in the

1 Chicago ozone nonattainment area is a reasonable
2 approach to solving part of this requirement and
3 that the reductions from implementing this rule in
4 the Metro-East nonattainment area will further
5 assist it in meeting the ozone national ambient air
6 quality standards.

7 Mike Rogers of the Illinois EPA Bureau of
8 Air will provide details of the specific
9 requirements of the proposed cold cleaning
10 degreasing rule in his testimony, and that concludes
11 my overview.

12 MS. POULOS: Okay. Thank you.

13 MR. ROGERS: Good morning. My name is Mike
14 Rogers, and I am an Environmental Protection
15 Specialist in the Air Quality Planning Section of
16 the Illinois Environmental Protection Agency
17 ("Illinois EPA") Bureau of Air. Technical regarding
18 the proposed regulation R97-24 before you today, I
19 was involved in the development of the regulation
20 and was responsible for preparing the technical
21 support document.

22 The Illinois EPA is proposing a
23 modification in Sections 218.182 and 219.182 to
24 limit the vapor pressures of solvents sold or used

1 in cold cleaning. These reductions and solvent
2 vapor pressure will substantially decrease volatile
3 organic material, VOM, emissions from cold cleaning
4 operations. Emissions of VOM from cold cleaning
5 solvent degreasing result from the evaporation of
6 VOM from solvents both during periods when parts are
7 being cleaned and when the degreasing unit sits
8 idle.

9 Solvent cleaning or degreasing as it is
10 commonly called is a process using aqueous liquids
11 or non-aqueous organic solvents to clean and remove
12 soils from surfaces. Solvent cleaning is divided
13 into the following three major types: Cold
14 cleaning, open-top vapor degreasing, and
15 conveyORIZED degreasing.

16 Cold cleaning is defined in 35 Illinois
17 Administrative Code 211.1310 as the process of
18 cleaning and removing soils from surfaces by
19 spraying, brushing, flushing, or immersion while
20 maintaining the organic solvent below its boiling
21 point. Wipe cleaning is not included in this
22 definition.

23 Cold cleaning degreasing takes place at
24 auto repair shops, car dealerships, marine shops --

1 excuse me -- machine shops, and other metal
2 fabrication and manufacturing businesses. Cold
3 cleaning equipment suppliers estimate that there are
4 between 50,000 and 60,000 cold cleaning units in
5 operation in the Chicago area. Using this estimate,
6 approximately 5,000 to 6,000 units could be use in
7 the Metro-East area. Solvent degreasing equipment
8 and degreasing materials are typically supplied by
9 the same companies.

10 The Illinois EPA estimates that 1990 VOM
11 emissions from cold cleaning were approximately 32
12 tons per day in the Chicago ozone nonattainment area
13 and two and a half tons per day in the Metro-East
14 area.

15 The Illinois EPA is proposing a
16 modification to the current cold cleaning solvent
17 degreasing regulations 35 Illinois Administrative
18 Code, Part 218 and 219, Subpart E, Solvent Cleaning,
19 to limit the vapor pressure of solvents sold or used
20 in cold cleaning to 2.0 millimeters of mercury
21 measured at 20 degrees centigrade, 68 degrees
22 Fahrenheit beginning on March 15th, 1999, and to 1.0
23 millimeters of mercury measured -- beginning March
24 15th, 2001.

1 The proposed vapor pressure limits are
2 identical to those adopted in the state of Maryland
3 as a part of its 15 percent rate of progress plan.
4 Discussions with the major suppliers have indicated
5 that solvents meeting this vapor pressure limit are
6 available and in use in Illinois.

7 The phased-in compliance dates will allow
8 solvent users and suppliers time to acquire and
9 adjust to the use of the lower vapor pressure
10 solvents.

11 Also proposed are recordkeeping provisions,
12 which require that solvent suppliers and users of
13 solvents in cold cleaning degreasers maintain
14 documents which indicate the solvent's vapor
15 pressure at the prescribed temperature.

16 The marketers of cold cleaning solvents
17 must keep records indicating the name and address of
18 the solvent purchaser, the date of purchase, the
19 type of solvent purchased, the solvent unit
20 quantity, the total volume purchased, and the vapor
21 pressure of the solvent purchased measured in
22 millimeters of mercury at 20 degrees centigrade, 68
23 degrees Fahrenheit.

24 Solvent users must maintain records for

1 each solvent purchased indicating the name and
2 address of the solvent supplier, the date of the
3 purchase, the type of solvent purchased, and
4 the vapor pressure of the solvent measured in
5 millimeters of mercury at 20 degrees centigrade, 68
6 degrees Fahrenheit.

7 These records must be kept for three
8 years. It is the Illinois EPA's understanding that
9 these types of the records are generally already
10 being maintained as solvent users are given material
11 safety data sheets or other product technical
12 information by the marketer which includes much of
13 the information requested.

14 The supplier sales and recordkeeping
15 requirements only apply to the sale of solvents in
16 units greater than five gallons. Although cleaning
17 solvents are sold at various stores specializing in
18 auto products, including department stores with auto
19 supply sections, such consumer products are not
20 intended to be included in the scope of this
21 regulation.

22 The Illinois EPA believes that the
23 five-gallon cut off will exclude the over the
24 counter auto supply store solvent sales and limit

1 the applicability to the bulk suppliers for which
2 the regulation is intended.

3 The state of Maryland estimated that
4 reducing the vapor pressure of solvents used in cold
5 cleaning to one millimeter of mercury would result
6 in a 67 percent reduction in such VOM emissions.
7 Emission reductions occur since lower vapor pressure
8 solvents evaporate more slowly than solvents with a
9 higher vapor pressure.

10 Applying the same percentage reduction
11 estimates developed in Maryland, the Illinois EPA
12 estimates that VOM emissions will be reduced by 23
13 tons per day in the Chicago nonattainment area and
14 1.6 tons per day in the Metro-East nonattainment
15 area in the year 2001.

16 There are two primary cost elements
17 associated with lowering the solvent vapor pressure;
18 the cost of the solvent itself and costs associated
19 with changes in the solvent distillation process for
20 recycling. The cost estimates contained in the
21 technical support document are based on information
22 collected from the state of Maryland and from
23 solvent suppliers during the rule development
24 outreach process.

1 The total annual cost estimated for the 1.0
2 millimeter mercury solvent in both nonattainment
3 areas range between \$1.8 million and \$6 million.
4 Dividing the total estimated cost by the annual VOM
5 emission reduction of 7,675 tons yields a cost
6 effectiveness range of between \$238 and \$779 per
7 ton.

8 The Illinois EPA believes these costs to be
9 conservative because they do not take into
10 consideration the fact that solvent meeting the 1.0
11 millimeter mercury limit is already being used. In
12 addition, the figures do not include an anticipated
13 cost reduction due to an expected extended life of
14 the solvent.

15 Since the vapor pressure of the solvent is
16 lower, it evaporates more slowly, thereby extending
17 the average service interval and reducing disposal
18 costs.

19 In fact, the state of Maryland estimated
20 that the use of a 1.0 millimeter mercury solvent
21 would result in an overall savings.

22 As stated previously, other areas have
23 tightened or proposed to tighten their cold cleaning
24 regulations in order to comply with Clean Air Act

1 rate of progress requirements. Most notable are the
2 state of Maryland and the South Coast Air Quality
3 Management District, which is responsible for air
4 quality planning for Los Angeles, California area.

5 As previously mentioned, the state of
6 Maryland included the same cold cleaning vapor
7 pressure limits in its 15 percent rate of progress
8 plan. This 1.0 millimeter mercury limit is
9 currently in effect and such solvent is being
10 provided and effectively used.

11 The South Coast Air Quality Management
12 District is currently proposing a solvent cleaning
13 regulation which would require that beginning in
14 1999 the volatile organic compound, VOC, limit of
15 solvents used in general repair and maintenance
16 cleaning be reduced from 900 grams per liter or
17 seven and a half pounds per gallon to 50 grams per
18 liter or 0.42 pounds per gallon.

19 This proposal essentially requires the use
20 of aqueous cleaners for such cleaning which do work
21 well for certain applications, but not for all
22 cleaning operations.

23 As previously mentioned, the Illinois EPA
24 sought and incorporated the input of numerous

1 parties involved in solvent cleaning. The Illinois
2 EPA sent out copies of the rule proposal to over 20
3 persons representing individual businesses, solvent
4 suppliers, degreasing equipment manufacturers, and
5 industrial trade associations.

6 Several issues were raised during this
7 rule development process, which resulted in rule
8 modifications as it is being proposed. Examples
9 include the phased-in vapor pressure limits and the
10 exemption for the cleaning of electronic
11 components. Both of these situations were
12 encountered by the state of Maryland during its rule
13 development and were incorporated into its
14 regulation.

15 In summary, the Illinois EPA believes that
16 the proposed cold cleaning solvent vapor pressure
17 limits are both a practical and cost-effective means
18 of obtaining necessary VOM emission reductions in
19 the Chicago and Metro-East ozone nonattainment
20 areas. Solvents meeting the proposed limits are
21 currently in use and the state of Maryland has
22 adopted a similar regulation requiring the same
23 vapor pressure limits.

24 Use of the 2.0 and 1.0 millimeter mercury

1 vapor pressure solvent is expected to reduce 1990
2 cold cleaning emissions by 33 percent and 67 percent
3 respectively.

4 The 1999 and 2001 compliance dates also
5 allow solvent users and suppliers time to make the
6 transition to the 1.0 millimeter mercury vapor
7 pressure solvent. The Illinois EPA estimates that
8 the worst case cost effectiveness of the 1.0
9 millimeter mercury vapor pressure requirement limit
10 is between \$238 and \$779 per ton.

11 Therefore, the Illinois EPA believes that
12 the proposed solvent vapor pressure limits are a
13 reasonable means for reducing VOM emissions in the
14 Chicago and Metro-East nonattainment areas.

15 This concludes my prepared testimony.

16 MS. POULOS: Ms. Archer, is there anything
17 else?

18 MS. ARCHER: No. We're ready to answer any
19 questions.

20 MS. POULOS: Okay. Ms. Faur, why don't we start
21 with your prefiled questions if that's all right?

22 MS. FAUR: That's fine with me.

23 Good morning. I'm Cindy Faur. I'm here on
24 behalf of Cerro Copper Products Company.

**Argonne National Laboratory-East
Summary of Current Research-Related Cold Cleaning Activities**

On a building-by-building basis, the following listing sets forth information regarding current research-related use by Argonne National Laboratory-East research divisions of organic solvents (ethanol, hexane, isopropanol, or methanol) for cold cleaning activities involving the preparation of sample materials and associated apparatus for testing and analysis. Such activities include washing and rinsing slides, sample preparation, specimen cleaning, gel stain/de-staining, membrane rinsing, and the cleaning of small parts and equipment associated with the preparation of sample materials for testing and analysis.

Building 200 – Materials Science (Rooms 114, 174)

Solvents are used for drying glassware.

Building 202 – Biosciences (Rooms 111, 210, 218, 226, 254, 301, 362, 366)

Alcohols (ethanol, isopropanol, methanol) are used in gel stain/de-staining and washing/rinsing slides. Ethanol also is used in sterilization.

Building 203 – Environmental Research (Room 134)

Solvents are used for sample preparation.

Building 212 – Energy Technology/Materials Science (Rooms 106A, 110, 124, 130, 133, 216, 219, 235, 237)

Solvents are used for sample preparation.

Building 223 – Materials Science (Rooms A126, B134, C137, B218, C226)

Alcohols and xylene are used for specimen cleaning.

Building 360 – Intense Pulsed Neutron Source (Room 248)

Solvents are used for sample preparation.

Building 362 – Advanced Photon Source Experimental Facilities/Energy Systems (Rooms 002, 208, 232)

These divisions use solvents for sample preparation, glassware cleaning (immersion), and membrane rinsing (isopropanol).

Building 369 – Energy Systems

Solvents are used in glassware cleaning (immersion).

Building 400 – Advanced Photon Source Operations (Rooms MLC-1, 1-CR-A)

Solvents may be employed in sample preparation and small parts cleaning.

Building 401 – Advanced Photon Source Experimental Facilities (Rooms L0104, L1103, L1104, L2104, L3104)

Solvents may be employed in sample preparation and small parts cleaning.

Buildings 431-435 – Advanced Photon Source Users (Rooms 030, A030, B030, C030, D030, E030)

Solvents may be used on accelerator systems and for sample preparation.

Argonne National Laboratory-East
Average Annual Usage of Certain Organic Solvents
1999-2001

Ethanol, hexane, isopropanol, methanol, and toluene are solvents identified as being used for cold cleaning in research activities at Argonne National Laboratory-East. Although Argonne can track total usage of these solvents, it is infeasible to track only the precise usage for cold cleaning. It is estimated that about one third of the total usage would be for cold cleaning. The usage information below is based on average overall annual usage of each solvent during the period 1999 – 2001.

<u>Solvent</u>	<u>Total Usage(lb/year)</u>	<u>Estimated Usage for Cold Cleaning in Research Applications (lb/year)</u>
Ethanol	3,297	1,099
Hexane	169	56
Isopropanol	971	324
Methanol	729	243
Toluene	266	89

