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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 261

[FRL-6867-7]
RIN 2090-AA11

Project XL Site-Specific Rulemaking for the IBM Semiconductor Manufacturing Facility in Essex Junction, VT

AGENCY: Environmental Protection Agency (EPA).

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ACTION: Final rule.

SUMMARY: This rule will allow the implementation of a pilot project under the Project XL program that will provide site-specific regulatory flexibility under the Resource Conservation and Recovery Act (RCRA), as amended, for the International Business Machines Corporation (IBM) semiconductor manufacturing facility in Essex Junction, Vermont. The principal objective of this IBM Vermont XL project is to determine whether the wastewater treatment sludge resulting from an innovative copper metallization process (i.e., an electroplating operation) should be designated a RCRA hazardous waste (F006), and thus be subject to RCRA regulatory controls. If, as a result of this XL project, the Agency determines that the wastewater treatment sludge (which does not otherwise exhibit a hazardous characteristic) need not be subject to RCRA hazardous waste regulations to be protective of human health and the environment and removes such sludges from the hazardous waste program, this would not only enhance the cost-effectiveness of the

innovative process by removing the costs of such regulatory controls, but could also encourage the development and installation of this innovative process (or similar ones) by other semiconductor manufacturers. To achieve this, this rule provides an exemption for the copper metallization process from the narrative listing description of electroplating operations that result in an F006 wastewater treatment sludge.

DATES: This final rule is effective September 12, 2000.

ADDRESSES: A docket containing the rule, Final Project Agreement, supporting materials, and public comments is available for public inspection and copying at the RCRA Information Center (RIC), located at Crystal Gateway, 1235 Jefferson Davis Highway, First Floor, Arlington, Virginia. The RIC is open from 9 am to 4 pm Monday through Friday, excluding Federal holidays. The public is encouraged to phone in advance to review docket materials. Appointments can be scheduled by phoning the Docket Office at (703) 603-9230. Refer to RCRA docket number F-2000-IBMP-FFFFF. The public may copy a maximum of 100 pages from any regulatory docket at no charge. Additional copies cost 15 cents per page.

Project materials are also available for review for today's action on the world wide web at http://www.epa.gov/projectxl/.

A duplicate copy of the docket is available for inspection and copying at U.S. EPA New England, One Congress Street, Suite 1100 (LIB), Boston MA, 02114-2023 during normal business hours. Persons wishing to view the duplicate docket at the Boston location are encouraged to contact Mr. John Moskal or Mr. George Frantz in advance, by telephoning (617) 918-1826 or (617) 918-1883, respectively. Information is also available on the world wide web at http://www.epa.gov/projectxl/.

FOR FURTHER INFORMATION CONTACT: Mr. John Moskal or Mr. George Frantz, U.S. Environmental Protection Agency, New England (SPP), Assistance and Pollution Prevention Division, One Congress Street, Suite 1100, Boston, MA, 02114-2023. Mr. Moskal can be reached at (617) 918-1826 (or moskal.john@epa.gov) and Mr. Frantz can be reached at (617) 918-1883 (or frantz.george@epa.gov). Further information on today's action may also be obtained on the world wide web at http://www.epa.gov/projectxl/.

SUPPLEMENTARY INFORMATION:

Outline of Today's Rule

The information presented in this preamble is organized as follows:

I. Authority

EPA is publishing this regulation under the authority of sections

2002, 3001, 3002, 3003, 3006, 3010, and 7004 of the Solid Waste Disposal Act of 1970, as amended by the Resource Conservation and Recovery Act, as amended (42 U.S.C. 6912, 6921, 6922, 6923, 6926, 6930, 6937, 6938, and 6974).

II. Overview of Project XL

The Final Project Agreement (FPA) sets forth the intentions of EPA, VTDEC, and the IBM Essex Junction, VT facility with regard to a project developed under Project XL, an EPA initiative to allow regulated entities to achieve better environmental results with limited regulatory flexibility. The regulation, along with the FPA, will facilitate implementation of the project. Project XL--``eXcellence and Leadership''-- was announced on March 16, 1995, as a central part of the National Performance Review and the Agency's effort to reinvent environmental protection. See 60 FR 27282 (May 23, 1995). Project XL provides a limited number of private and public regulated entities an opportunity to develop their own pilot projects to request regulatory flexibility that will result in environmental protection that is superior to what would be achieved through compliance with current and reasonably-anticipated future regulations. These efforts are crucial to EPA's ability to test new strategies that reduce regulatory burden and promote economic growth while achieving better environmental and public health protection. EPA intends to evaluate the results of this and other Project XL projects to determine which specific elements of the project(s), if any, should be more broadly applied to other

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regulated entities for the benefit of both the economy and the environment.

Under Project XL, participants in four categories--facilities, industry sectors, governmental agencies and communities--are offered the flexibility to develop common sense, cost-effective strategies that will replace or modify specific regulatory requirements, on the condition that they produce and demonstrate superior environmental performance.

The XL program is intended to encourage EPA to experiment with potentially promising regulatory approaches, both to assess whether they provide benefits at the specific facility affected, and whether they should be considered for wider application. Such pilot projects allow EPA to proceed more quickly than would be possible when undertaking changes on a nationwide basis. As part of this experimentation, EPA may try out approaches or legal interpretations that depart from, or are even inconsistent with, longstanding Agency

practice, so long as those interpretations are within the broad range of discretion enjoyed by the Agency in interpreting the statutes that it implements. EPA may also modify rules, on a site-specific basis, that represent one of several possible policy approaches within a more general statutory directive, so long as the alternative being used is permissible under the statute.

Adoption of such alternative approaches or interpretations in the context of a given XL project does not, however, signal EPA's willingness to adopt that interpretation as a general matter, or even in the context of other XL projects. It would be inconsistent with the forward-looking nature of these pilot projects to adopt such innovative approaches prematurely on a widespread basis without first determining whether they are viable in practice and successful in the particular projects that embody them. Furthermore, as EPA indicated in announcing the XL program, EPA expects to adopt only a limited number of carefully selected projects. These pilot projects are not intended to be a means for piecemeal revision of entire programs. Depending on the results in these projects, EPA may or may not be willing to consider adopting the alternative interpretation again, either generally or for other specific facilities.

EPA believes that adopting alternative policy approaches and interpretations, on a limited, site-specific basis and in connection with a carefully selected pilot project, is consistent with the expectations of Congress about EPA's role in implementing the environmental statutes (provided that the Agency acts within the discretion allowed by the statute). Congress' recognition that there is a need for experimentation and research, as well as ongoing re-evaluation of environmental programs, is reflected in a variety of statutory provisions, such as section 8001 of RCRA.

XL Criteria

To participate in Project XL, applicants must develop alternative environmental performance objectives pursuant to eight criteria: Superior environmental performance; cost savings and paperwork reduction; local stakeholder involvement and support; test of an innovative strategy; transferability; feasibility; identification of monitoring, reporting and evaluation methods; and avoidance of shifting risk burden. The XL projects must have the full support of the affected Federal, State, local and tribal agencies to be selected.

For more information about the XL criteria, readers should refer to the two descriptive documents published in the Federal Register (60 FR 27282, May 23, 1995 and 62 FR 19872, April 23, 1997), and the December 1, 1995 ``Principles for Development of Project XL Final Project Agreements" document. For further discussion as to how the IBM Vermont

XL project addresses the XL criteria, readers should refer to the Final Project Agreement available from the EPA RCRA docket, the U.S. EPA New England library, or the Project XL web page (see ADDRESSES section of today's preamble).

XL Program Phases

The Project XL program is compartmentalized into four basic developmental phases: The initial pre-proposal phase where the project sponsor comes up with an innovative concept that they would like EPA to consider as an XL pilot project; the second phase where the project sponsor works with EPA and interested stakeholders in developing an XL proposal; the third phase where EPA, local regulatory agencies, and other interested stakeholders review the XL proposal; and the fourth phase where the project sponsor works with EPA, local regulatory agencies, and interested stakeholders in developing a Final Project Agreement and legal mechanism. After promulgation of the final rule (or other legal mechanism) for the XL pilot, and after the Final Project Agreement has been signed by all designated parties, the XL pilot project proceeds onto implementation and evaluation.

Final Project Agreement

The Final Project Agreement (FPA) is a written voluntary agreement between the project sponsor and regulatory agencies. The FPA contains a detailed description of the pilot project. It addresses the eight Project XL criteria, and the expectation of the Agency that the XL project will meet those criteria. The FPA identifies performance goals and indicators that the project is yielding the expected environmental benefits, and specifically addresses the manner in which the project is expected to produce superior environmental benefits. The FPA also discusses the administration of the FPA, including dispute resolution and termination. The FPA for this XL project is available for review in the docket for today's action, and also is available on the world wide web at http://www.epa.gov/projectxl/.

III. Overview of the IBM Vermont XL Project

Today's rule will facilitate implementation of the FPA (the document that embodies EPA's intent to implement this project) that has been developed by EPA, the Vermont Department of Environmental Conservation (VTDEC), the IBM Essex Junction, VT facility, and other stakeholders. Today's rule, will not be effective in Vermont until the State has made conforming changes to its hazardous waste program.

A. To Which Facilities Will the Rule Apply?

This rule will apply only to the IBM Essex Junction, VT facility. Further, the regulatory modification only affects the copper metallization plating process (and the wastes generated by that process) that is the focus of this XL project; wastes resulting from any other operations at the facility are not affected by this rule.

B. What Problems Will the IBM Vermont XL Project Attempt To Address?

IBM does not believe the innovative copper metallization process it uses should be included among those electroplating operations that result in a wastewater treatment sludge that is specifically listed as a hazardous waste (F006), and that the regulatory controls (with associated increases in costs) provide no benefit to the environment.

1. Background on Hazardous Waste Identification

Under the current RCRA regulatory framework, the generator of a waste is responsible for determining whether the waste is hazardous (see 40 CFR 262.11). There are two ways that a waste is

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determined to be hazardous; either the waste exhibits a characteristic of a hazardous waste as defined in 40 CFR 261.21, 261.22, 261.23, and 261.24, or the Agency has identified and specifically listed it as a hazardous waste in 40 CFR 261.31, 261.32, and 261.33. The wastewater treatment sludge that is the focus of this XL project typically does not exhibit a characteristic of hazardous waste; however, it does meet the narrative listing description for F006, generally described as wastewater treatment sludge from electroplating operations. In promulgating the hazardous waste listings, EPA presented the basis for the listings in 40 CFR part 261, appendix VII (e.g., the basis for the F006 listing is the presence of cadmium, hexavalent chromium, nickel, and cyanide (complexed) in high enough concentrations to present a risk to human health and the environment if the waste is mismanaged). However, the hazardous waste listings are implemented based on their narrative descriptions, not by a waste-specific assessment of the hazardous constituents the wastes contain (such an assessment is how the ``toxicity characteristic'' is implemented pursuant to 40 CFR 261.24). To address those wastes that meet the narrative description of a listed hazardous waste but which the generator believes are nonhazardous, RCRA regulations provide a mechanism for the generator to petition the Agency for a determination that the wastes generated at their facility should not be regulated as hazardous (i.e., a ``delisting'' pursuant to 40 CFR 260.22).

2. Background on the F006 Hazardous Waste Listing

On May 19, 1980, EPA promulgated the F006 hazardous waste listing, thereby designating wastewater treatment sludges from electroplating operations to be a RCRA hazardous waste (see 45 FR 33084). This wastestream is typically generated through the chemical treatment (e.g., lime precipitation) of wastewaters generated by plating operations to precipitate out certain toxic metals. These wastewaters are typically made up of spent plating/coating solutions and rinsewaters (from the rinsing of parts after being plated). As discussed in more detail in the background document supporting the listing of electroplating wastewater treatment sludge (F006), Electroplating and Metal Finishing Operations (pages 105-143) (available in the docket for this project), the Agency noted that while there are many various plating processes covered by the listing, they all generally involve hazardous constituents of concern at concentration levels requiring regulatory oversight to ensure that the management and disposal of such sludges will not result in damages to the environment or otherwise present a risk to human health and the environment. The metal constituents found to be commonly used in electroplating operations include cadmium, lead, chromium (in hexavalent form), copper, nickel, zinc, gold and silver. Cyanides, strong acids and strong bases are also used extensively in the general types of plating operations intended to be included in the listing description. As stated earlier, the specific constituents of concern cited as the basis for listing such wastewater treatment sludges as hazardous wastes were cadmium, hexavalent chromium, nickel, and cyanide (complexed) (see 40 CFR part 261, appendix VII).

While the actual composition of the electroplating-generated wastewater treatment sludges may vary due to the specific sequence of processing operations (commonly, more than one processing step is involved in a plating operation), in general, the sludges would be expected to contain significant concentrations of toxic metals, and possibly complexed cyanides in high concentrations if the cyanides are not properly isolated in the wastewater treatment process. Thus, the approach to this hazardous waste listing was one where the constituents typically used in the ``up-stream'' production process were, in part, the basis of the hazardous waste listing applicable to the residuals from wastewater treatment (typically alkaline precipitation of the heavy metals).

The Agency noted in the May 19, 1980 rulemaking that several plating operations were found to not contain significant concentrations of toxic metals or cyanides, such that the sludges resulting from the treatment of the wastewaters resulting from such operations would not be expected to pose a risk to human health and the environment. These operations were accordingly identified and specifically excluded from

the F006 listing description: (1) sulfuric acid anodizing of aluminum, (2) tin plating on carbon steel, (3) zinc plating (segregated basis) on carbon steel, (4) aluminum or zinc-aluminum plating on carbon steel, (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel, and (6) chemical etching and milling of aluminum. (see 40 CFR 261.31).

Accordingly, the chemical make-up of the materials used in the plating operation was a major consideration in whether the wastewater treatment sludge would be designated a hazardous waste. Other factors that may impact the concentration levels of hazardous constituents in the wastewater treatment sludge are the type and shape of the article being plated, how much of the plating solution is carried over into the rinsewater, and the actual plating process being used.

3. Site-Specific Considerations at the IBM Vermont Facility

Since the IBM facility has many complicated manufacturing processes, a review of the basic steps in semiconductor manufacturing relevant to the metallization process which is the subject of this XL project may be useful. In general, the surface of a silicon wafer is cleaned and passivated (i.e., coated to provide an insulating layer) with a very thin silicon oxide layer. An organic photoresist is applied to the wafer and a circuit pattern is exposed onto the resist by shining light onto the wafer through a mask. The exposed photoresist is washed away, while the remainder is hardened to protect the insulating layer. After this is completed, the wafer is treated with inorganic liquids and gases to create the doped circuits which provide the semiconductor function. The hardened resist is then removed with organic solvents. At certain points in the process, metallization techniques are used to electronically connect the stacked layers of the semiconductor device. (The copper metallization process which is the basis for this XL project serves this purpose.) Wafer cleaning and rinsing steps, using mixtures of inorganic acids, oxidizers, and deionized water, occur after many of the process steps. This process cycle is repeated until a fully functional memory or logic device has been produced. After the circuits are built on the wafer, minute amounts of metal are deposited onto the wafer to produce the connections which marry the semiconductor to a module or circuit board for use in a computer. Finally, the wafer is sliced into individual chips for testing and placement onto substrates or modules for use in computer systems.

The new copper metallization process IBM has introduced, which is the subject of this XL project, serves to provide the interconnection of the device circuits, electronically connecting the stacked layers of the semiconductor device. In designing the process, IBM worked with the manufacturers of the plating solutions and the manufacturer of the plating tool (which holds the wafer) to minimize

waste and increase efficiency. The metallization process uses this specialized tool to bring only one side of the wafer into contact with the copper plating solution and applies an electrical current to plate the copper onto the wafer surface. Once the metallization process is complete, the wafer is rinsed with sulfuric acid over the plating bath to keep as much plating solution as possible in the bath (thus minimizing the amount of plating solution that is carried over into the rinsewaters). After the sulfuric acid rinse, the wafer is then rinsed with deionized water, and deionized water and sulfuric acid, in a pre-defined sequence, with the resulting rinsewaters being sent through the facility's wastewater treatment system.

For each wafer produced, approximately 3.5 grams of plating solution (containing approximately 0.065 grams of copper) is carried over to the rinsewaters. The volume of water used in the rinsing ranges from 0.5 to 0.7 gallons per wafer. Present projections show that copper mass and rinsewater volume will increase from approximately 110 grams/day and 1000-2000 gallons/day, respectively in the second quarter of 1999 to 180 grams/day and 2000-3000 gallons/day when the process is fully deployed in 2002.\1\

\1\ Prior to the copper electroplating operation, a thin layer of copper is applied to each wafer by vapor deposition. This very thin layer serves as a ``seed'' site for the deposition of the electroplated copper. A scheduled change (not related to this XL project) in the process for depositing the seed layer will result in additional copper being inadvertently deposited to the outermost edge of the wafer as a result of a change in the way the wafer is held in the tool.

Due to this change in the seed layer process, it will be necessary for future copper plating tools to remove the copper from the outer three millimeters of the wafer edge following the plating step to prepare the wafer for future processing. the copper on the edge is removed using an acid spray, in a process step termed ``edge bead removal.'' This will add 0.77 grams/day of copper to the wastewater stream, representing 5-10% of the load generated by the plating wastewaters and 0.5-1% of the load generated by the total copper process.

Also, the plating unit includes a 40-gallon reservoir for the plating solution that constantly filters and regenerates the solution. The goal in designing and operating this reservoir is to achieve an

infinite bath life for the solution. However, it is currently necessary to replace a portion of the used plating solution in the reservoir with new solution. Currently, IBM drums the spent plating solution from the reservoir and sends the material for appropriate off-site management. IBM does not currently, nor plan to in the future, send the spent plating solution from the reservoir through the wastewater treatment system. Thus, the only plating solution that is or will be sent through the facility's wastewater treatment system is the relatively small amount that is carried over to the rinsewaters.

According to tests conducted by IBM, the plating solution currently being used by the facility does not contain any of the hazardous metal constituents and cyanides which were the focus of the original hazardous waste listing for wastewater treatment sludges from electroplating operations (and thus, these constituents would not be expected to be in the wastewater treatment sludge unless they are introduced from some other production process).

IBM reported other significant environmental benefits of converting to the copper metallization process that should be considered. The copper metallization process replaced an aluminum chemical vapor deposition process that required the vaporization of aluminum for deposit on the wafer. The use of the vapor deposition process entailed cleaning steps that used perfluorinated compounds (PFCs), which are global warming gases. By replacing a majority of the aluminum connections with copper, a significant reduction in global warming gases will be realized simply by minimizing the number of cleaning steps that use PFCs. It should also be noted that while such vapor deposition processes (and subsequent cleaning steps) are still required in other aspects of the semiconductor manufacturing process, IBM has developed an alternative cleaning method that uses dilute nitrogen trifluoride (NF3) instead of PFCs, wherever appropriate. NF3 has significantly less impact on global warming than PFCs.\2\ The Agency recognizes this significant environmental benefit although it is not closely associated with the regulatory flexibility being sought by IBM.

\2\ There are a few cleaning processes at the facility where dilute NF3 is an ineffective substitute for the PFC. However, for those operations, IBM has substituted a much more dilute PFC than was originally used, still achieving reductions in the global warming gas emissions.

IBM also reported that the new copper metallization process is much more energy efficient (30 to 40% less energy) than the aluminum

chemical vapor deposition process it replaces. Similarly, the semiconductor chip produced by the copper metallization process is approximately 25% more energy-efficient than the chip it replaces. IBM expects this type of metallization process (or processes very similar) to become more common in the semiconductor manufacturing industry.

The aluminum chemical vapor deposition process which the copper metallization process replaces was dry and generated no wastewater or sludge that was subject to RCRA. From the time the copper metallization process was first introduced in 1996 until April of 1998, the copper metallization rinsewaters were collected and drummed for off-site disposal, keeping these wastewaters separate from the on-site wastewater treatment system. However, beginning in May 1998, the volume of rinsewater generated (approximately 250 gallons/day) became large enough to make it necessary to introduce the plating rinsewaters into the wastewater treatment system by commingling them with other wastewater streams generated on-site.

Even though the contribution of wastewaters from the copper metallization process to the total volume of wastewater being treated to generate the sludge is minimal (the volume of rinsewaters from the plating operation expected to be generated when the plating process is at full production is 1600 gallons/day, compared with an estimated 5,000,000 gallons/day volume of other on-site wastewaters), the sludge generated by the treatment of the commingled wastewaters is regulated as F006 because it meets the narrative listing description (i.e., wastewater treatment sludges from an electroplating operation).

Consequently, IBM's reported annual hazardous waste generation increased from 2.14 million pounds to 5.78 million pounds (1999 totals) and their waste management costs increased by $3,500 per year. Regarding IBM's waste management costs, the State of Vermont has deferred the hazardous waste tax that would normally apply to the generation of an F006 waste (approximately $225,000/year).\3\

\3\ VTDEC accepted IBM's position that the F006 listing was inappropriately bringing the copper metallization waste stream into the hazardous waste system since the process did not contain the constituents for which F006 was listed. VTDEC has the discretion to waive the hazardous waste tax ``for cause shown." 32 VSA 10102(2). VTDEC took the position that the constituents for which F006 was listed took primacy over the narrative listing description that was intended to further describe wastes within the boundaries of the basis for listing, i.e. the constituents of concern. The constituents described the potential for harm to human health and the environment while the narrative listing description described the processes, known at the time, that were likely to contain the

constituents.

While the increased waste management costs (as well as the associated recordkeeping and paperwork burdens) are relatively insignificant to the facility, they

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nevertheless represent increased costs for no net environmental benefit.

C. What Solutions Are Being Tested by the IBM Vermont XL Project?

IBM's position is that they have adopted a more energy-and resource-efficient metallization process that employs a plating solution that is significantly different from the plating solutions used when the Agency promulgated the F006 listing, and therefore should not be subject to the F006 listing. This process has been specifically designed to minimize the use of the plating solution while maximizing the use of the copper metal in the solution, and minimizing the amount of solution that is carried over into the rinsewater. Because this metallization process does not contribute hazardous constituents to the wastewater treatment sludge, IBM sought to have its copper metallization process exempted from the F006 hazardous waste listing. Therefore, rather than pursue a delisting of the wastewater treatment sludge under 40 CFR 260.22, IBM has opted to work with the Agency, VTDEC, and interested stakeholders to develop and implement a pilot project under Project XL that will evaluate whether the copper metallization process should be included in the plating operations that result in F006 listed hazardous wastes. The Agency agrees with IBM that this XL project has a somewhat different aspect to it (i.e., the focus on the innovative production process that generates the wastewaters that, in turn, are treated to generate the listed sludge), such that the delisting approach is not the most suitable. A delisting approach would look strictly at the waste being delisted (as well as how it is managed), which in this situation is the result of treating large volumes of wastewaters from a variety of production processes (including wastewaters contributed by the innovative copper metallization process) and would not adequately reflect the specific environmental impacts associated with the innovative production process. It is the innovative production process that causes the wastewater treatment sludge to be designated a hazardous waste.

D. What Regulatory Changes Are Being Promulgated to Implement this

Project?

To implement this XL project, the Agency is promulgating in today's notice a site-specific exemption in 40 CFR 261.4(b) (i.e., ``Solid wastes which are not hazardous wastes'') for the copper metallization process at the IBM Vermont facility from the F006 hazardous waste listing description. The Agency considered a modification to the F006 listing description in the table in 40 CFR 261.31(a), adding the copper metallization process at the IBM Vermont facility to the list of plating operations that are not intended to be subject to the listing. However, because the exemption will have a number of conditions that the IBM facility must follow to ensure that this XL project is protective of human health and the environment throughout the term of the project and to provide the information and data the Agency will use to consider whether the regulatory exemption should be incorporated into the national program, the Agency prefered placing the exemption language in 40 CFR 261.4(b). Regardless of where EPA chose to place the exemption language in the regulations (Sec. 261.31(a) or Sec. 261.4(b)), the legal effect of the exemption is the same. EPA expects that should the exemption of the copper metallization process from the F006 listing be incorporated into the national program, EPA would then modify the listing description in 40 CFR 261.31(a).

E. Why Is EPA Supporting This Approach to Removing a Waste From a Hazardous Waste Listing?

The Agency agrees with IBM that this XL project has merit and has the potential to yield significant environmental benefits should this exemption be adopted on a national basis. Project XL offers the opportunity for the Agency to test its belief that this innovative process should be encouraged as one that is environmentally superior to existing technologies and to consider the appropriate regulatory status of the wastes from this technology before it is adopted by similar manufacturing facilities.

Further, this XL project offered EPA the opportunity to test a different approach to re-evaluating whether a specific wastestream is appropriately subject to regulatory controls as a listed waste. The existing mechanism for removing a waste from a listing on a site-specific basis is through a ``delisting'' petition under 40 CFR 260.22. However, the delisting approach is not the most suitable for the situation at the IBM Vermont facility because the scope of the listing itself is at issue. If IBM submitted a delisting petition, EPA would evaluate the hazardous nature of the entire wastewater treatment sludge (which is the wastestream that actually carries the F006 listing) rather than only that portion which is contributed by the copper

metallization process. EPA generally prefers a delisting approach in most circumstances (it is, generally, a better approach for determining the hazardous nature of the actual waste material and whether the waste should be removed from the hazardous waste management program). In this instance, however, because the Agency wants to test whether IBM's copper metallization process should be included within the scope of the F006 listing, the Agency believed an evaluation of the ``production side'' of the sequence of operations that resulted in the wastewater treatment sludge is more useful. Specifically, because the wastewater treatment sludge is considered hazardous due to an ``upstream'' production unit meeting the narrative description of an electroplating operation, the Agency believed it was more appropriate to evaluate the upstream production unit to determine whether the hazardous waste listing on the ``downstream'' wastewater treatment sludge is warranted. Therefore, the Agency focused on the key parameters on the production side (in this case, the innovative design and operation of the copper metallization process) to make a determination of the regulatory status of the materials generated on the waste management side (in this case, the wastewater treatment sludge). This XL project therefore represents an opportunity for EPA to explore a different approach to determining whether a waste (in this case, one resulting from an innovative process) should continue to be subject to a hazardous waste listing. In other words, this approach may be considered another ``tool'' for the Agency to use in ``fine tuning'' the hazardous waste listings so that the narrative description of a listed waste appropriately delineates between those wastes that pose a risk to human health and the environment from those wastes (which arguably are generated by very similar processes) that do not pose such a risk. If, in fact, the absence of hazardous constituents of concern in the plating solution is determinative of whether the wastewater treatment sludge is hazardous (or whether any ``hazard'' in the sludge stems from the plating operation), this may become the key determining factor in similar requests for regulatory exemptions. Alternatively, if the Agency determines that the amount of plating solution that is carried over into the rinsewater (with focus on the shape of the parts being plated as well as the actual plating process) is the determining factor, this variable may be accounted for in future

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rulemakings that address the F006 hazardous waste listing.

Because this is an innovative and highly efficient plating technology that also does not use the hazardous constituents common in most electroplating operations, EPA agrees with IBM's expectation that more semiconductor manufacturing facilities will seek to adopt this

process (or ones very similar). The Agency agrees that if there is no adverse effect on the wastewater treatment sludge from the use of this metallization process, then regulating the sludge as a hazardous waste based solely on the fact that the metallization process continues to meet the narrative listing description of an electroplating operation may be imposing regulatory controls unnecessarily.

Further, the Agency believes that this innovative metallization process is environmentally superior to the old process it replaces, i.e., the aluminum chemical vapor deposition process. Not only is the metallization process 30 to 40% more energy efficient than the old process and the chips produced approximately 25% more energy efficient, there are also environmental benefits realized by discontinuing the use of the old process. While the metallization process generates a wastewater stream (and subsequent sludge from the treatment of that wastewater) that was not inherent to the aluminum chemical vapor deposition process, the old vapor deposition process entailed a cleaning step that used perfluorinated compounds (PFCs), which are global warming gases. The aluminum chemical vapor deposition process basically uses vaporized metal (in this case, aluminum) that is then deposited on the wafer, all of which occurs in ``chambers.'' The vaporized metal also gets deposited on the insides of these chambers, which must periodically be cleaned of this metal coating. Thus, by replacing the old process with the metallization process,10,000 metric tons of carbon equivalent (MTCE) of global warming gases will not be emitted to the air. However, it should be noted that, due to the nature of the materials and components involved in the semiconductor manufacturing process, the vapor deposition process cannot be completely eliminated from the production line, nor can the subsequent cleaning steps. (However, the number of cleaning steps requiring the use of PFCs has been significantly reduced and will continue to be reduced by the conversion to the innovative copper metallization process. The vapor deposition chambers, therefore, are a major focus in measuring the reduction in global warming gases.) Nevertheless, the Agency believes that the use of the innovative copper metallization process should be encouraged where possible. (Also, as stated earlier, IBM has developed an alternative cleaning process that uses dilute nitrogen trifluoride (NF3) as a replacement for the PFCs. The dilute NF3 is reported to have a much lower impact on global warming than the PFCs that would otherwise be used.)

From a public policy standpoint, it would not serve to encourage manufacturers to employ less-hazardous or more environmentally friendly and innovative production processes and ingredients in manufacturing operations if the Agency is unwilling to revisit existing hazardous waste listings to determine if the wastes resulting from such innovative process changes still warrant a hazardous waste listing.

This XL project offers the Agency the opportunity to consider proactively the appropriate regulatory status of the wastewater treatment sludges generated from an innovative production process before it is widely used and commonplace and may serve as a precedent for other listed wastestreams.

Additionally, the Agency believes that to the extent the implementation of the hazardous waste regulations, including the actual requirements as well as the costs and administrative burdens, are directly related to the hazards being posed by the waste being regulated, this will improve the overall implementation of the program and compliance with the regulations. Just as it is important to ensure that those wastes that can pose significant risk to human health and the environment are properly controlled and managed, it is also important to not needlessly subject wastes that do not pose such risks to the same type of regulatory oversight.

F. How Have Various Stakeholders Been Involved in This Project?

IBM has established an appropriate stakeholder group to develop the Final Project Agreement for this XL pilot project and to evaluate IBM's plan and progress in implementing the project. IBM has solicited input on this project from a wide range of stakeholders including local and national environmental groups, neighborhood associations, and industry trade associations. Stakeholders have been notified of this project by direct mail, telephone, and notification in the local press.

In addition, IBM has conducted a series of meetings with select stakeholders who had agreed to serve as commenters for this project. They had been briefed on the proposal, and were supportive of the project as described. The State of Vermont also supports the project and is a Project Signatory to the Agreement. Stakeholder meetings were held at the IBM facility on February 17 and March 24, 2000.

IBM has kept an open dialogue with interested stakeholders since the project's inception and will continue to involve any interested stakeholders in the project's development. In addition, EPA and IBM will make all project-related documents and events publically accessible through announcements, EPA's web site and public dockets.

G. How Will This Project Result in Cost Savings and Paperwork Reduction?

As stated earlier, introducing the rinsewaters from the metallization process into the wastewater treatment system has caused the entire volume of wastewater treatment sludge to be defined as a hazardous waste, increasing the facility's waste management costs by approximately $3,500/year. Removing the hazardous waste designation

will eliminate this expenditure. Also, as discussed earlier, the State of Vermont has waived the waste tax that would otherwise apply to IBM's generation of F006 waste (approximately $225,000/year). (Note that the State of Vermont is not authorized to do hazardous waste delistings which could change the regulatory status of the sludge from a listed hazardous waste to a nonhazardous waste; however, the State has more flexibility in assessing hazardous waste generation taxes. Had the State not granted this tax waiver, the cost savings associated with this specific XL project would be considered significant.) Finally, IBM expects to see cost savings of $100,000 to $200,000 per year when the conversion to the copper metallization process has been fully implemented. The sources of these cost savings include reduced material costs (e.g., reduction in the use and resultant purchase of PFCs) and reduced energy expenditures.

Because the IBM Vermont facility will continue to be regulated as a Large Quantity Generator due to the volume of hazardous wastes generated at other parts of the facility, and because there is no State hazardous waste tax being applied, the actual reduction in paperwork and cost savings related to waste management are not significant. The wastewater treatment sludge will no longer be considered a hazardous waste (unless the sludge otherwise exhibits a characteristic of hazardous waste) and so will not have to be counted in the facility's annual report.

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While this reduction in reported hazardous waste generated will certainly improve the facility's public image, it will save only a little time and money in preparing the annual report for the hazardous wastes generated by other facility operations.

There are also cost savings realized by not having to use a hazardous waste transporter or hazardous waste manifest to ship the sludge off-site for further management. Also, because the sludges are currently shipped to Canada for treatment and disposal, IBM must currently file an annual ``Request for Export of Hazardous Waste'' with Canada, requiring 2 hours of engineering time, as well as several hours of phone calls and follow-up to ensure the application is expeditiously processed. Such an application and expenditure of resources is not needed if the sludges being shipped to Canada are not hazardous wastes.

EPA, as well as VTDEC, will also benefit from some paperwork reduction and cost savings by not having to process and track the manifests and export documents that will otherwise have to be processed without this XL project.

In considering the cost savings and paperwork reduction associated with this XL project, it is important to consider the potential impacts

if this pilot project proves successful and the regulatory flexibility (i.e., the exemption of the copper metallization unit from the listing description of F006 wastes) is promulgated on a national basis. The conversion to the copper metallization process represents significant operational cost savings for IBM. As a result, on a national level the overall cost (and paperwork) reduction that would be realized may be quite significant, assuming this innovative technology (or a similar one) is adopted by more semiconductor manufacturers. While there is little question that a national exemption patterned after this site-specific exemption would result in cost and paperwork reductions, because of the variability in how States implement their waste taxes, or other mechanisms for raising revenues based on the hazardous wastes generated in the State, it is difficult to estimate a projected savings on such taxes on a national level.

H. What Are the Terms of the IBM Vermont XL Project and How Will They Be Enforced?

As stated earlier, to allow for the implementation of the XL pilot project, EPA is today modifying the current regulatory framework in 40 CFR 261.4(b) to provide a site-specific exemption for IBM's copper metallization process from the narrative description for F006 listed hazardous waste (see 40 CFR 261.31(a)), thus removing the F006 listing designation from the sludges generated by the treatment of the wastewaters generated by the copper metallization process. VTDEC likewise intends to modify its State hazardous waste program to allow for the same removal of the F006 listing designation from the wastewater treatment sludge. It should be noted that the Agency intends that the exemption will apply to all the wastewater treatment sludge resulting from the treatment of the copper metallization rinsewaters at the site, including those sludges that are in the process of being generated, sludges that result from rinsewaters already in the wastewater treatment system, and sludges that have been removed from the wastewater treatment system and are being stored pending off-site transportation.

Through the development of the Final Project Agreement (FPA), IBM has agreed to comply with several key criteria as conditions for this exemption, which are included in the regulatory text of the exemption. These conditions are focused on proving the environmental benefits of removing the F006 listing from the wastewater treatment sludges (or the inappropriateness of designating these wastewater treatment sludges F006 hazardous waste) and to gather the data and other information that would allow the Agency to make a determination regarding the possible

future adoption of this site-specific exemption as a nationwide generic

exemption. IBM has also agreed to commit to a good faith effort to achieve several goals related to superior environmental performance. (Note that while achieving these goals is not being proposed as a condition of the exemption due to their uncertain nature, an evaluation of the success of this XL pilot project will certainly be influenced by IBM's success in achieving their stated goals, as well as the effort expended to achieve the goals.)

As conditions of the site-specific exemption, IBM must report on the following:

(1) IBM must analyze the plating bath and rinsewaters generated from the copper metallization process. The analysis must be conducted on samples that are representative of rinsewaters and plating baths associated with all the tools that are converted to the copper metallization process and will measure for the presence of volatiles, semi-volatiles, and metals (using the methods specified in 40 CFR part 264, appendix IX) in both the plating bath and rinsewaters. IBM must collect, analyze and submit this data twice a year (by January 15 and July 15 of each year).

(2) In addition, IBM must report on the status of the greenhouse gas emission reduction project at the facility. This will include greenhouse gas reductions achieved from the conversion to the copper metallization process and IBM's additional voluntary initiative to reduce greenhouse gas emissions from its other chamber cleaning processes. IBM will track usage of C2F6, the primary PFC used in the chamber cleaning operation, and estimate the reduction in PFC emissions based on the reduction in chemical usage. Likewise, IBM will provide similar data for the chemicals that replace the C2F6, specifically, dilute nitrogen trifluoride (NF3), and dilute C2F6, including the quantity of NF3 used in the cleaning process, and the carbon equivalent potential of the NF3 to calculate the global warming impact of the converted processes. IBM will report on the number of chambers converted during the reporting period and remaining to be converted to achieve the site global warming gas emission reduction goal along with an update of the calculated greenhouse gas emission reductions for the facility, both in terms of total mass emitted and mass emitted normalized to production.\4\ Submissions of these data are likewise due twice a year, by January 15 and July 15 in conjunction with the plating bath and rinsewater analyses.

\4\ The Agency notes that in the proposed rule language, the condition for reporting on estimated greenhouse gas emissions and reductions from a 1995 base year would cease after 2004 or once IBM

had achieved their facility-wide goal of 50% reduction, whichever comes first. The draft FPA identified the goal as a 40% reduction. No comments were received noting this discrepancy. The correct goal is 40% and the regulatory language being promulgated today has been amended to reflect the correct 40% goal.

In addition, IBM commits to monitor copper concentrations in its wastewater effluent for conformance with their current NPDES (National Pollutant Discharge Elimination System) permit. IBM's stated goal is to maintain copper concentrations in the effluent discharge of less than 40% of the discharge limit.

I. How Long Will This Project Last and When Will It Be Completed?

This project will be in effect for five years from the date that the final rulemaking becomes effective (the latter of the EPA final rule or the VTDEC final rule) unless it is terminated earlier or extended by all Project Signatories (if the FPA is extended, the comments and input of stakeholders will be sought and a Federal Register document will be

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published). Any Project Signatory may terminate its participation in this project at any time in accordance with the procedures set forth in the FPA. The project will be completed at the conclusion of the five-year anniversary of the final rulemaking or at a time earlier or later determined by the amount of information gathered to date and the interest of the parties involved.

Upon completion of the project term, EPA and VTDEC commit to evaluating the project. If the project results indicate that it was a success, EPA will consider transferring the regulatory flexibility (or some similar flexibility) to the national RCRA program (through rulemaking procedures). Should the project results indicate that the project was not successful, EPA will promulgate a rule to remove the site-specific exemption. Absent any regulatory action on the part of the Agency, the implementing rule (i.e., the site-specific exemption) will remain in effect as long as IBM continues to meet its conditions (i.e., EPA and VTDEC intend to allow IBM to continue operating under the site-specific rule). However, as for any conditional exemption, if at any time, should IBM fail to meet the conditions of the site-specific exemption, the exemption is not applicable. Also, the Agency may promulgate a rule to withdraw the exemption at any time, subject to the procedures agreed to in the Final Project Agreement (FPA),

including, but not limited to, a substantial failure on the part of any Project Signatory to comply with the terms and conditions of the FPA or if the exemption becomes inconsistent with future statutory or regulatory requirements.

IV. Additional Information

A. How Does This Rule Comply With Executive Order 12866?

Under Executive Order 12866 (58 FR 51735, October 4, 1993) the Agency must determine whether the regulatory action is ``significant'' and therefore subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Order defines ``significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety in State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs of the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Because the annualized cost of this final rule will be significantly less than $100 million and will not meet any of the other criteria specified in the Executive Order, it has been determined that this rule is not a ``significant regulatory action'' under the terms of Executive Order 12866, and is therefore not subject to OMB review.

B. Is a Regulatory Flexibility Analysis Required?

The Regulatory Flexibility Act (RFA), 5 U.S.C. 601 et seq., generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions. This rule will not have a significant impact on a substantial number of small entities because it only affects the IBM facility in Essex Junction, VT and it is not a small entity. Therefore, EPA certifies that this action will

not have a significant economic impact on a substantial number of small entities.

C. Is EPA Required To Submit a Rule Report Under the Congressional Review Act?

The Congressional Review Act, 5 U.S.C. 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and the Comptroller General of the United States. Section 804, however, exempts from Section 801 the following types of rules: rules of particular applicability, rules relating to agency management and personnel, and rules of agency organization, procedure, or practice that do not substantially affect the rights or obligations of non-agency parties. 5 U.S.C. 804 (3). EPA is not required to submit a rule report regarding today's action under section 801 because this is a rule of particular applicability.

D. Is an Information Collection Request Required for This Project Under the Paperwork Reduction Act?

This action applies only to one facility, and therefore requires no information collection activities subject to the Paperwork Reduction Act, and therefore no information collection request (ICR) will be submitted to OMB for review in compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, et seq.

E. Does This Project Trigger the Requirements of the Unfunded Mandates Reform Act?

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ``Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover,

section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation of why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

As noted above, this rule is applicable only to one facility in Vermont. EPA has determined that this rule contains no regulatory requirements that might

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significantly or uniquely affect small governments. EPA has also determined that this rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. Thus, today's rule is not subject to the requirements of sections 202 and 205 of the UMRA.

F. RCRA & Hazardous and Solid Waste Amendments of 1984

1. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program for hazardous waste within the State. (See 40 CFR part 271 for the standards and requirements for authorization.) States with final authorization administer their own hazardous waste programs in lieu of the Federal program. Following authorization, EPA retains enforcement authority under sections 3008, 7003 and 3013 of RCRA.

After authorization, Federal rules written under RCRA (non-HSWA), no longer apply in the authorized state except for those issued pursuant to the Hazardous and Solid Waste Act Amendments of 1984 (HSWA). New Federal requirements imposed by those rules do not take effect in an authorized State until the State adopts the requirements as State law.

In contrast, under section 3006(g) of RCRA, new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time they take effect in nonauthorized States. EPA is directed to

carry out HSWA requirements and prohibitions in authorized States until the State is granted authorization to do so.

2. Effect on Vermont Authorization

Today's rule, will be promulgated pursuant to non-HSWA authority, rather than HSWA. Vermont has received authority to administer most of the RCRA program; thus, authorized provisions of the State's hazardous waste program are administered in lieu of the Federal program. Vermont has received authority to administer the regulations that specifically identify hazardous wastes by listing them. As a result, the rule to modify the listing for F006 hazardous waste would not be effective in Vermont until the State adopts the modification. It is EPA's understanding that subsequent to the promulgation of this rule, Vermont intends to propose rules or other legal mechanisms to provide the exemption for the copper metallization process from the F006 listing description. EPA may not enforce these requirements until it approves the State requirements as a revision to the authorized State program.

G. How Does This Rule Comply with Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks?

The Executive Order 13045, ``Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ``economically significant,'' as defined under Executive Order 12866; and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This rule is not subject to Executive Order 13045 because it is not an economically significant rule, as defined by Executive Order 12866, and because it does not involve decisions based on environmental health or safety risks.

H. Does This Rule Comply With Executive Order 13132: Federalism?

Executive Order 13132, entitled: ``Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ``meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ``Policies that have federalism implications'' is defined in the Executive order to include regulations that have ``substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power

and responsibilities among the various levels of government."

Under section 6 of Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the regulation. EPA may also not issue a regulation that has federalism implications and that preempts State law, unless the Agency consults with the State and local officials early in the process of developing the regulation.

This rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States. Or on the distribution of power and responsibilities among the various level of government, as specified in Executive Order 13132. The exemption outlined in today's rule will not take effect unless Vermont chooses to adopt the rule or other legal implementing mechanism. Thus, the requirements of section 6 of the Executive Order do not apply to this rule. Although section 6 of Executive Order 13132 does not apply to this rule, EPA did fully coordinate and consult with the state and local officials in developing this rule.

I. How Does This Rule Comply With Executive Order 13084: Consultation and Coordination with Indian Tribal Governments ?

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments. If the mandate is unfunded, EPA must provide to the Office of Management and Budget, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected and other representatives of Indian tribal governments to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities. Today's rule does not significantly or uniquely affect the communities of Indian tribal governments. There are no communities of Indian tribal governments located in the vicinity of the facility. Accordingly, the requirements of section 3(b) of

Executive Order 13084 do not apply to this rule.

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J. Does This Rule Comply With the National Technology Transfer and Advancement Act ?

As noted in the proposed rule, section 12(d) of the National Technology Transfer and Advancement Act of 1995 (``NTTAA''), Public Law 104-113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standard. This rulemaking does not involve technical standards. Therefore, EPA did not consider the use of any voluntary consensus standards.

List of Subjects in 40 CFR Part 261

Environmental protection, Hazardous materials, Waste treatment and disposal, Recycling.

Dated: September 1, 2000.
Carol M. Browner,
Administrator.

For the reasons set forth in the preamble, part 261 of Chapter I of Title 40 of the Code of Federal Regulations is to be amended as follows:

PART 261--IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, 6924(y), and 6938.

2. Section 261.4 is amended by adding paragraph (b)(16) to read as follows:

Sec. 261.4 Exclusions.

* * * * *

(b) * * *

(16) Sludges resulting from the treatment of wastewaters (not including spent plating solutions) generated by the copper metallization process at the International Business Machines Corporation (IBM) semiconductor manufacturing facility in Essex Junction, VT, are exempt from the F006 listing, provided that:

(i) IBM provides the Agency with semi-annual reports (by January 15 and July 15 of each year) detailing constituent analyses measuring the concentrations of volatiles, semi-volatiles, and metals using methods presented in part 264, appendix IX of this chapter of both the plating solution utilized by, and the rinsewaters generated by, the copper metallization process;

(ii) IBM provides the agency with semi-annual reports (by January 15 and July 15 of each year), through the year 2004, or when IBM has achieved its facility-wide goal of a 40% reduction in greenhouse gas emissions from a 1995 base year (when normalized to production), whichever is first, that contain the following:

(A) Estimated greenhouse gas emissions, and estimated greenhouse gas emission reductions. Greenhouse gas emissions will be reported in terms of total mass emitted and mass emitted normalized to production; and

(B) The number of chemical vapor deposition chambers used in the semiconductor manufacturing production line that have been converted to either low flow C2F6 or NF3 during the reporting period and the number of such chambers remaining to be converted to achieve the facility goal for global warming gas emission reductions.

(iii) No significant changes are made to the copper metallization process such that any of the constituents listed in 40 CFR part 261, appendix VII as the basis for the F006 listing are introduced into the process.

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