



Water Division

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**Pacific Southwest Region**  
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Mail Code: WTR-7

June 4, 2004

Mr. James J. Dragna  
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Dear Mr. Dragna:

This is in follow-up to our meeting on January 21, 2004 and your February 5, 2004 letter regarding the industrial pretreatment water pollution requirements that apply to the Air Products Electronic Chemicals facility in Carlsbad, California. In my September 20, 2002 letter to Mr. Randy Skow of Air Products, I explained that the facility in question is performing chemical etching, which is regulated under the metal finishing categorical standards at 40 CFR Part 433. After careful consideration of Air Products' views, we affirm the September 20, 2002 decision.

In addition to reviewing the information Air Products provided to us during our meeting and in your February 5 letter, we have considered your earlier April 11, 2003 letter to Ms. Julia Jackson of our Office of Regional Counsel regarding this matter. In consideration of Air Products' views, we also reviewed this matter with the Engineering and Analysis Division at our Headquarters office. The Agency's coordinated determination is that Air Products' process wastewater discharge to the Encina Wastewater Authority is subject to the metal finishing categorical pretreatment requirements.

The provisions at 40 CFR 433.10(a) describe the facilities that are subject to the metal finishing requirements as follows:

Except as noted in paragraphs (b) and (c), of this section, the provisions of this subpart apply to plants which perform any of the following six metal finishing operations on any basis material: Electroplating, Electroless Plating, Anodizing, Coating (chromating, phosphating, and coloring), Chemical Etching and Milling, and Printed Circuit Board Manufacture. ...

In addition, the metal finishing regulations are supported by the U.S. Environmental Protection Agency's (EPA's) technical conclusions detailed in the Development Document for Effluent Limitations Guidelines and Standards for the Metal Finishing Point Source Category (EPA 440/1-83/091, June, 1983) (See 48 FR 32462 (July 15, 1983)). Page III-25 of the Development Document describes chemical etching as follows:

Etching and Chemical Milling - These processes are used to produce specific design configurations and tolerances or surface appearances on parts (or metal-clad plastic in the case of printed circuit boards) by controlled dissolution with

chemical reagents or etchants. Included in this classification are the processes of chemical milling, chemical etching and bright dipping. Chemical etching is the same process as chemical milling except the rates and depths of metal removal are usually much greater in chemical milling. Typical solutions for chemical milling and etching include ferric chloride, nitric acid, ammonium persulfate, chromic acid, cupric chloride, hydrochloric acid and combinations of these reagents. Bright dipping is a specialized form of etching and is used to remove oxide and tarnish from ferrous and nonferrous materials and is frequently performed just prior to anodizing. Bright dipping can produce a range of surface appearances from bright clean to brilliant depending on the surface smoothness desired for the finished part. Bright dipping solutions usually involve mixtures of two or more of sulfuric, chromic, phosphoric, nitric and hydrochloric acids. Also included in this unit operation is the stripping of metallic coatings.

Air Products' May 20, 2002 letter explains that the process in question involves disassembling stainless steel shipping containers and applying a 50/50 mixture of nitric acid and hydrofluoric acid to the containers and the disassembled parts, followed by a rinse. Air Products' April 11, 2003 letter explains that the Company uses an acid solution of 6 - 25% nitric acid and 0.5 - 8% hydrofluoric acid. This process removes metal oxides from the work piece surfaces by chemical dissolution. We conclude that Air Products Electronic Chemicals is performing a metal finishing operation that is included under the metal finishing description of chemical etching and, consequently, the process operation in question is covered under 40 CFR 433.10(a).

The application of the metal finishing requirements under 40 CFR Part 433 is related to the earlier electroplating regulations under Part 413. The preamble to the metal finishing final rule (48 FR 32463, July 15, 1983) explains the history and application of the metal finishing pretreatment requirements as follows:

There are 13,500 plants in the electroplating/metal finishing industry. Many discharge wastewaters from several metal finishing operations other than, and in addition to, electroplating. Part 413 (electroplating) currently applies only to flows from the six specified electroplating processes. These Part 433 (metal finishing regulations) will apply to those electroplating streams and also to wastestreams from most other metal finishing operations within the same plants. The Part 433 PSES will apply only to plants already covered by Part 413; however Part 433 will often cover additional wastewater within the same plants. Thus, the Part 433 limits on discharge of toxic metals, toxic organics, and cyanide will apply to most facilities in the electroplating/metal finishing industry.

... As discussed above, the electroplating/metal finishing industry is currently covered by Part 413 PSES for the Electroplating Category promulgated on September 7, 1979, and amended on January 28, 1981. The effect of today's amendments is to create a new category -- Metal Finishing (Part 433) -- and to shift *most* electroplaters to it, replacing their current PSES with new limits which apply uniformly to discharges from their electroplating and other metal finishing operations. This meets industry's requests for equivalent limits for process lines

often found together and greatly reduces the need to rely on the Combined Waste Stream Formula for integrated metal finishing facilities. Direct discharger and new source requirements are also being issued as part of the metal finishing regulations.

Indirect discharging job shop electroplaters and independent printed circuit board manufacturers, however, would be left under the existing Part 413 PSES for Electroplating and are exempted from Part 433. This is consistent with a 1980 Settlement Agreement in which the National Association of Metal Finishers (NAMF), and the Institute for Interconnecting and Packaging Electronic Circuits (IIPEC) agreed not to challenge the Part 413 PSES in return for the 1981 amendments and EPA's commitment that the Agency did not intend to develop significantly more stringent standards for those plants for the next several years.

... The Metal Finishing Category covers plants which perform one or more of the following six operations: electroplating, electroless plating, anodizing, coating (phosphating, chromating, and coloring), chemical etching and milling, or printed circuit board manufacture. If a plant performs any of those six operations then discharges from the 46 operations listed in Appendix C are covered by these standards.

When Part 433 became effective, the electroplating requirements under Part 413 for chemical etching and milling fully covered operations involving the dissolution of metal. The definition of the term *operation* in the Chemical Etching and Milling Subcategory of the electroplating categorical standards at 40 CFR Part 413.61(b) establishes the broad scope of the electroplating pretreatment standards as follows:

The term *operation* shall mean any step in the chemical milling or etching processes in which metal is chemically or electrochemically removed from the work piece and which is followed by a rinse; this includes related metal cleaning operations which preceded chemical milling or etching, when each operation is followed by a rinse.

Under this definition, the primary criterion for determining whether chemical etching and milling is occurring is whether metal is chemically or electrochemically removed from the work piece. The operation of this requirement is consistent with the objectives of the electroplating and metal finishing categorical standards to control toxic pollutants, including dissolved metals, that could pass through a municipal sewage treatment plant inadequately treated, or interfere with the treatment processes at such plants due to the toxicity of the pollutants.

This application and definition of chemical etching is continued under the metal finishing standards under Part 433. Air Products' view of applying an acid solution to its stainless steel containers as acid cleaning rather than chemical etching, and to then exclude it from regulation under the metal finishing requirements of Part 433, is inconsistent with the regulatory history and intent because it would result in the metal finishing standards under Part 433 being more

narrowly applied than the electroplating standards under Part 413 which were largely replaced by the metal finishing requirements.

Air Products explains that it uses an acid solution to remove metal oxides from the surface of the stainless steel containers that are the result of product decomposition. The source of the metal oxides is not relevant to coverage under the metal finishing standards. The regulatory history establishes the primary criterion for determining whether chemical etching is occurring as whether metal is chemically or electrochemically removed from the work piece. This operation is consistent with the objectives of the electroplating and metal finishing categorical standards to control toxic pollutants, including dissolved metals, that could pass through a municipal sewage treatment plant inadequately treated, or interfere with the treatment processes at such plants due to the toxicity of the pollutants.

Air Products' suggestion that coverage under the metal finishing standards be based on the source of metal oxides is unworkable. Such a scheme would require detailed, burdensome studies of process operations and surface chemistry to determine the application of the metal finishing standards. The six core metal finishing operations nearly always result in dissolved metals entering wastewater, frequently from the application of an acid on metal. EPA's implementation of the metal finishing applicability requirements under 40 CFR 433.10(a) provide industry with a clear basis for determining the coverage of the standards.

Air Products believes that its "squirt and swish" operation is too small to be covered under the metal finishing standards. EPA considers the metal finishing standards to apply to all facilities, including small facilities, that perform the regulated operations. The preamble to the metal finishing final rule (48 FR 32478, July 15, 1983) explains the application of the metal finishing pretreatment standards to small facilities as follows:

8. Comment: Some commenters suggested a small plant exemption from the Metal Finishing regulations, arguing that an exemption should be granted similar to that provided by Part 413 for plants discharging less than 10,000 gallons per day.

Response: Small indirect discharging facilities (<10,000 GPD discharge) were given less stringent requirements in the Electroplating Pretreatment Standards. Many of these facilities are job shops and for the reasons stated above will not be covered by the Part 433 requirements.

The Agency re-examined the effect of the Part 433 metal finishing regulations on small facilities, and, has determined that because job shops and IPCBMs are exempted from the metal finishing PSES there would be no significant economic impacts if the remainder were covered by the metal finishing standards. For indirect captives discharging less than 10,000 GPD, the investment cost would amount to \$36 million with annual costs of \$12 million. There are no estimated plant closure or divestitures. A small facility exemption is not warranted for the Metal Finishing regulation.

Consistent with the preamble, the metal finishing standards do not contain an exemption for small facilities and Air Products' facility is covered by these standards.

Air Products believes that its facility should not be covered by the metal finishing standards because its operations are not "metal manufacturing" which involve materials that begin as raw stock such as rods, bars, sheet, castings, or forgings. Air Products asserts that the metal finishing standards only apply to such companies rather than its use of acid solution on reusable stainless steel packaging and shipping containers.

The provisions at 40 CFR 433.10(a) describe the facilities that are subject to the metal finishing requirements in pertinent part as follows:

Except as noted in paragraphs (b) and (c), of this section, the provisions of this subpart apply to plants which perform any of the following six metal finishing operations on any basis material: Electroplating, Electroless Plating, Anodizing, Coating (chromating, phosphating, and coloring), Chemical Etching and Milling, and Printed Circuit Board Manufacture. ...

Under this provision, facilities performing one of the listed operations are subject to the metal finishing requirements. Air Products is straining to narrow the application of the metal finishing requirements to operations only on basis (or raw) materials. This is clearly inconsistent with the plain meaning of the rule.

To support its view, Air Products cites the following language in the preamble of the final metal finishing regulations (48 FR 32464 (July 15, 1983)):

These plants manufacture a variety of products that are constructed primarily of metals. The operations, which involve materials that begin as raw stock (rods, bars, sheet, castings, forgings, etc.), can include the most sophisticated surface finishing technologies.

This passage is derived from page III-19 of the metal finishing Development Document, which states in part:

These plants are engaged in the manufacturing of a variety of products that are constructed primarily by using metals. The operations performed (Table 3-1) usually (emphasis added) begin with materials in the form of raw stock (rods, bars, sheet, castings, forgings, etc.) and can progress to the most sophisticated surface finishing operations.

This preamble and Development Document language addresses one aspect of the metal finishing regulations, but they cannot be expanded to create a limitation in the applicability of the metal finishing standards, particularly when such a limitation is not contained in the final regulation. Immediately following the passage cited by Air Products, the preamble continues with:

These facilities include both captives and job shops. They vary greatly in size, age, number of employees, and number and type of operations performed. They range from very small job shops with less than 10 employees to large facilities employing thousands of production workers. Because of differences in size and processes, production facilities are custom tailored to the individual plant. Some complex products may require the use of nearly all of the 46 unit operations mentioned above; a simple product may require only one.

The purpose of this discussion in the preamble is to describe the metal finishing industry as varied and broad. The metal finishing applicability requirements at 40 CFR 433.10(a) reflect these industry characteristics and include Air Products' operations.

An example of the broad coverage of the metal finishing standards concerns the inclusion of service companies under these standards. The metal finishing requirements apply to both service companies and manufacturers. Facilities that perform metal finishing as a service are defined as "job shops" under the metal finishing requirements at 40 CFR 433.11(c) which states:

The term "job shop" shall mean a facility which owns not more than 50% (annual area basis) of the materials undergoing metal finishing.

The preamble to the metal finishing proposed rule (47 FR 38463 (August 31, 1982)) discusses the characteristics of the metal finishing industry including service companies as follows:

These facilities are either "captives" (those which own the material they process); or "job shops" (those which treat metal as service and do not own the material they process).

Page 38464 of the metal finishing proposed rule also states:

These facilities include both "captives" (which own the goods they process) and "job shops" (which process others' goods, as a service).

Finally, Table 3 titled "Applicability" in the preamble to the final metal finishing regulations (48 FR 32475 (July 15, 1983)) clearly indicates that job shops are regulated under the metal finishing requirements. The metal finishing applicability requirements at 40 CFR 433.10(a) reflect a broad and varied range of facilities including Air Products' operations.

Air Products believes that the criteria and provisions of ASTM Standard A 380-99 (Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems) should govern whether Air Products' operation is covered as etching by the metal finishing standards. In developing the metal finishing standards, EPA considered many sources of information including industry data and practices. Please see the list of references included in the metal finishing Development Document beginning on page XV-1. The final metal finishing regulations reflect EPA's consideration of industry information, along with many other factors the Agency must consider in developing pretreatment standards under the Clean Water Act. The

Agency's electroplating and metal finishing rulemaking included substantial public notice and opportunity to comment on EPA's actions. The result is the final electroplating and metal finishing regulations, including the applicability requirements at 40 CFR 433.10(a), which are appropriate for water pollution control and the varied and broad metal finishing industry.

Air Products would prefer the applicability of the metal finishing standards to its facility be based on industry technical standards. Industry changes and updates to those documents could change the applicability and stringency of the metal finishing standards in ways that are contrary to the Act and without proper public notice and comment. The applicability of the metal finishing requirements to Air Products are based on the existing metal finishing regulations and supporting information. Air Products' operation falls under one of the operations listed under 40 CFR 433.10(a); chemical etching and, consequently, Air Products is performing a metal finishing operation that is subject to the metal finishing standards.

We disagree with Air Products' analysis of the pharmaceutical manufacturing pretreatment requirements with respect to Air Products' facility. The Air Products facility is a supplier of chemical products to semiconductor manufacturers rather than a manufacturer of pharmaceuticals under 40 CFR Part 439. The requirements under 40 CFR Part 439 do not apply to the Air Products facility. The metal finishing discussion in the pharmaceutical manufacturing preamble (63 FR 50415 (September 21, 1998)) addresses the application of the metal finishing requirements to pharmaceutical production equipment that: "includes many interconnected pipes, storage vessels, and reactors." The Air Products facility in question performs metal finishing operations on work pieces in a manner that is covered under the metal finishing categorical pretreatment standards under 40 CFR Part 433.

The Air Products Electronic Chemicals facility in Carlsbad, California is performing chemical etching, which is regulated under the metal finishing categorical standards at 40 CFR Part 433.

The metal finishing standards were established in the early 1980's with substantial industry involvement and they have proven to be achievable and have greatly reduced toxic pollutants in wastewater. Air Products is a large high-technology global corporation and its commitment to innovation, sustainability, and environmental responsibility as described in its 2003 Corporate Responsibility Annual Report is consistent with compliance with these water pollution requirements.

If you have any questions regarding this matter, please contact Julia Jackson of our Office of Regional Counsel at 415.972.3948.

Sincerely,

*Original Signed By:*

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