

## FMC Corp. v. Train

539 F.2d 973 (4th Cir. 1976)  
Decided Mar 10, 1976

Nos. 74-1386, 74-1400, 74-1502 to 74-1505, 74-1729 and 74-1761 to 74-1765.

Argued September 25, 1975.

974 Decided March 10, 1976. \*974

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Edward L. Strohhahn, Jr., Washington, D.C., and Angus Macbeth, New York City, on brief for amicus curiae Natural Resources Defense Council, Inc., in No. 74-1386.

Appeal from the Environmental Protection Agency.

Before RIVES<sup>-</sup> and BREITENSTEIN<sup>-</sup>, Senior Circuit Judges, and WIDENER, Circuit Judge.

— Senior Circuit Judge, U.S. Court of Appeals for the Fifth Circuit.

— Senior Circuit Judge, U.S. Court of Appeals for the Tenth Circuit.

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RIVES, Circuit Judge:

These petitions seek to have this Court set aside regulations issued on April 5, 1974, by the Administrator of the Environmental Protection Agency [hereinafter "the Administrator"] establishing "effluent limitations guidelines" for existing sources and "standards of performance" for new sources for the Plastics and Synthetics Point Source Category adopted pursuant to § 301, § 304(b) and (c), § 306(b) and (c), and § 307(c) of the Federal Water Pollution Control Act, as amended [hereinafter "the Act"].<sup>1</sup>

<sup>1</sup> 86 Stat. 816, 33 U.S.C. § 1251 *et seq.* (Supp. 1975).

The Act sets out "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and establishes as a national goal the elimination of the discharge of pollutants into the navigable waters by the year 1985. § 101(a). Section 306(b)(1)(B) of the Act directs the Administrator to propose and publish within one year federal standards of performance for new sources, defined as a source of pollution discharge, "the construction of which is commenced after the publication of proposed regulations prescribing a standard of performance under this section which will be applicable to such source." § 306(a)(2). "Effluent limitations guidelines" prescribe the amount of pollution discharge permitted by existing plants and are divided into two phases — a 1977 stage and a 1983 stage. Under § 509(b)(1), review of these regulations lies in the United States Court of Appeals. See *duPont v. Train*, 528 F.2d 1136 (4th Cir. 1976).

Support for these regulations under review included a "Development Document for Proposed Effluent Limitations Guidelines and New Source Performance Standards for the Synthetic Resins Segment of the Plastics and Synthetic Materials Manufacturing Point Source Category"

<sup>977</sup> [hereinafter <sup>\*977</sup> "Development Document"] and another study entitled "Economic Analysis of Proposed Effluent Guidelines, Plastics and Synthetics Industry" (September 1973). 39 Fed.Reg. 12502 (April 5, 1974). In promulgating these regulations, EPA divided the plastics and synthetics point source category into 31 product process subcategories and, under these "Phase I" regulations,<sup>2</sup> established single-number effluent standards for various pollution parameters<sup>3</sup> in 13 of the subcategories.<sup>4</sup> Each effluent limitation guideline and standard of performance is a value expressed in pounds of a pollutant that may be discharged by a plant for each thousand pounds of product manufactured.<sup>5</sup> EPA's methodology for setting these standards was to select for each subcategory a uniform hydraulic flow (expressed in terms of gallons of water per thousand pounds of product or the metric equivalent) and to multiply that figure by an effluent concentration (expressed in milligrams per liter of water or the English equivalent) determined to be attainable by application of the designated technologies.<sup>6</sup> Daily and monthly variability factors were then applied to reflect the varying results achieved even by properly designed and operated treatment facilities. As a result, the standards provide a maximum discharge for any one day and a slightly lower figure which represents the average daily value not to be exceeded over a 30-day period.

<sup>2</sup> See Resp. Brief at 43. Regulations covering the remaining subcategories will be published in the near future. Subcategorization of the industry was determined by analyzing the raw materials, products, manufacturing processes, raw waste characteristics and treatability and

attainable effluent concentrations of its different segments. Dev. Doc. 12 (App. 6077).

<sup>3</sup> BOD<sub>5</sub>, COD, and TSS are the critical pollution parameters. BOD, biological oxygen demand, indicates the oxygen consuming capacity of organic matter in the wastewater. BOD<sub>5</sub> measures this demand over a 5-day period. COD, chemical oxygen demand, provides a measure of the oxygen needed to oxidize the materials present in the wastewater effluent. Unlike BOD, COD does not differentiate between biodegradable and non-biodegradable matter. TSS, total suspended solids, measures both the organic and the inorganic materials suspended in the water. Other constituents, such as zinc and chromium, are specific to individual subcategories. See Dev. Doc. 3.

<sup>4</sup> These 13 subcategories are as follows: Subpart A — Polyvinyl Chloride; Subpart B — Polyvinyl Acetate; Subpart C — Polystyrene; Subpart D — Polypropylene; Subpart E — Polyethylene; Subpart F — Cellophane; Subpart G — Rayon; Subpart H — Acrylonitrile — Butadiene — Styrene (ABS) and Styrene Acrylonitrile (SAN) Resin Copolymers; Subpart I — Polyester; Subpart J — Nylon 66; Subpart K — Nylon 6; Subpart L — Cellulose Acetate; and Subpart M — Acrylics.

<sup>5</sup> These standards are also expressed in metric units.

<sup>6</sup> For existing sources — 1977 stage, the designated technology is "best practicable control technology currently available" (BPCTCA). § 301(b)(1)(A). For existing sources — 1983 stage, it is "best available technology economically achievable (BATEA). § 301(b)(2)(A). For new sources, it is "best available demonstrated control technology" (BADCT). § 306(a)(1).

Petitioners in these cases are manufacturers of plastic and synthetic materials subject to the regulations. In addition to raising technical challenges to the regulations (discussed, *infra*), petitioners present questions of jurisdiction and Agency authority to issue these "effluent limitations guidelines" under § 301 of the Act. Both issues were raised in related cases decided by this panel. See *duPont v. Train*, 528 F.2d 1136 (4th Cir. 1976); *duPont v. Train*, 541 F.2d 1018 (4th Cir. 1976) [No. 74-1261]. In *duPont v. Train*, No. 74-2237, we held that judicial review of "effluent limitations guidelines" is properly before a United States Court of Appeals, in the first instance; while in *duPont v. Train*, No. 74-1261, we held that the Commissioner, under a combination of powers granted to him by §§ 301 and 304 of the Act, does have authority to issue "effluent limitations guidelines." No further treatment of the two issues is now necessary.

In Nos. 74-1400, 74-1502, 74-1503, and 74-1765, petitioners raise the questions of the proper technological standards to be applied to the 1977 and 1983 effluent limitations guidelines and the new source standards of performance. Additionally, the manufacturers contend that  
 978 EPA's inadequate \*978 assessment of cost, energy use, and non-water environmental detriments failed to fulfill the requirements of the Act. Petitions Nos. 74-1504, 74-1763, and 74-1764 raise the arguments that EPA made serious methodological and technological errors in computing the values set as the effluent limitations guidelines and standards of performance and that EPA failed to substantiate in the record the major engineering and other technical assumptions on which were based its effluent limitations guidelines and standards of performance.

In petitions Nos. 74-1505, 74-1729, 74-1761, and 74-1762, the manufacturers present a detailed analysis of EPA's alleged methodological errors with regard to a single subcategory — acrylics. EPA has conceded that petitioners' arguments in regard to acrylics have merit and has agreed to re-

examine the data base which supports the effluent limitations guidelines and new source performance standards for the acrylics subcategory and to suspend these regulations during the reconsideration period. (Resp. Brief at 134-136.) In view of this concession, we find it unnecessary to decide the issues raised in petitions Nos. 74-1505, 74-1729, 74-1761, and 74-1762, and remand these regulations to the Administrator.

## I. General Validity of the Regulations [8] A. Ranges

Petitioners assert that § 304(b) of the Act requires the Administrator to promulgate ranges of values rather than single-number limitations. In *duPont v. Train* [No. 74-1261], *supra* at 1029-1030, this Court rejected that same argument, holding that the Act does not contain such an inflexible requirement. Rather, the Administrator is free to exercise reasonable discretion in establishing these pollution standards and may set single-number limitations unless such action is arbitrary in a particular case.

## B. Data Base

Petitioners allege that these regulations are defective because they are based on data obtained only from a small number of plants which were not shown to be representative of the various affected subcategories. This argument is meritless in view of the extensive research conducted by EPA in the development of these regulations. The contractor responsible for compiling the Development Document reviewed both a survey submitted by the Manufacturing Chemists Association (App. 4835-5635) and a study undertaken by the Celanese Research Company under the sponsorship of EPA (App. 6474-6696), as well as applications for discharge permits under the Refuse Act. (Resp. Brief at 35-56.) On the basis of this information, EPA's contractor, A. D. Little, Inc., selected 19 exemplary plants for testing and study. See Dev. Doc. 98. Given the time pressures of a court-imposed deadline for issuing these regulations, see *Natural Resources*

*Defense Council, Inc. v. Train*, 166 U.S.App.D.C. 312, 510 F.2d 692, 710-714 (1974), it would have been impossible for EPA to have conducted a comprehensive survey of all plants affected by these regulations. See *American Iron and Steel Institute v. Environmental Protection Agency*, 526 F.2d 1027, 1057 (3d Cir. 1975).

### C. Cost

Sections 304(b)(2)(A) and 306 of the Act require the Administrator to consider cost in establishing the 1983 effluent limitations guidelines and new source standards of performance. Additionally, § 304(b)(1)(A) mandates a consideration of the total cost of the application of technology in relation to the degree of effluent reduction to be achieved by the 1977 standards. Petitioners contend that EPA's assessment of the cost is inadequate for the following reasons:

(1) The Administrator's refusal to make a cost-benefit analysis. Petitioners assert that the statute is not satisfied unless the Administrator quantifies in monetary terms the benefits to be obtained by reducing pollution and compares this sum to the achievement cost. This Court in *duPont v. Train* [No. 74-1261], *supra*, has, however, rejected that argument. The Act's overriding objective of eliminating by 1985 the discharge of pollution into the waters of our <sup>979</sup> Nation indicates that Congress, in its legislative wisdom, has determined that the many intangible benefits of clean water justify vesting the Administrator with broad discretion, just short of being arbitrary or capricious, in his consideration of the cost of pollution abatement.

(2) Errors in EPA's Economic Analysis.<sup>7</sup> Petitioners contend that, while EPA's economic analysis finds that the "major overriding factor" of cost is the ability of the manufacturer to pass on cost, the Analysis states that it is impossible to determine the economic ability of this industry to pass on costs in 1977 or 1983. Next, petitioners feel that EPA has been callous to small producers who will be forced to shut down in the face of the

sizeable capital outlays needed for pollution equipment.<sup>8</sup> Further, they contend EPA's study includes only the cost of the pollution technology and overlooks the cost of other aspects of pollution control such as monitoring equipment, installation time, etc. Finally, the petitioners contend that EPA's cost estimates are out of date due to the increased energy costs and include only the cost of implementing the present regulations and not the total cost to industry for water use.

<sup>7</sup> Section VIII of the Development Document speaks to the cost associated with the requirements of the regulations App. 6197-6262. This discussion is augmented by two documents — the "Initial Economic Impact Analysis of Water Pollution Control Costs upon the Synthetic Polymer Industry" (App. 6310-6473) and the "Economic Analysis of Proposed Effluent Guidelines" (App. 4710-4780). Petitioners in their reply brief, Nos. 74-1400, *et al.* at 55, complain that EPA introduced the "Initial Economic Impact Analysis" into the record 29 days after the opening briefs were filed. EPA contends that this economic impact study is a proper part of the record of this proceeding since it was considered by the Agency during rule-making. (Resp. Brief at 66.) This document was mentioned in neither the Development Document nor the preambles to the proposed and final regulations. Consequently, the plastics and synthetics industry had no opportunity to comment on the document's findings. For these reasons, the "Initial Economic Impact Analysis" cannot be considered a part of the record to sustain these regulations. See generally, 5 U.S.C. § 553(c) (1967). However, because these regulations are being set aside for technical errors discussed *infra*, EPA on remand will have the opportunity to make this study a part of the record.

<sup>8</sup> The Development Document states that further subcategorization of the industry along the lines of plant size was considered

but determined to be unwarranted. Dev. Doc. 80 (App. 6144).

Reviewing these contentions, we find no error made by EPA in its economic analysis which rises to the level of arbitrary or capricious action.<sup>9</sup> While EPA must take seriously its statutory duty to consider cost, courts of review should be mindful of the many problems inherent in an undertaking of this nature and uphold a reasonable effort made by the Agency. This requirement should not serve as a dilatory device, obstructing the Agency from proceeding with its primary mission of cleaning up the lakes, rivers, and streams of this Nation.

<sup>9</sup> The Third Circuit was of a similar view in the *American Iron and Steel Institute case*, *supra*, at 1053:

"Given our standard of review of agency action and the relative weights we believe Congress intended the Administrator to assign as between the need for pollution abatement and costs, we conclude that this assessment . . . was neither arbitrary nor capricious."

#### D. Non-water Environmental Impact and Energy Requirements

Sections 304 and 306 tell the Administrator that non-water quality environmental impact and energy requirements must be considered in establishing effluent limitations guidelines and standards of performance. Petitioners argue that EPA failed to fulfill this statutory obligation due to inadequate consideration of cost and landfill problems associated with solid waste disposal. We note in the Development Document that EPA has assessed the problems associated with sludge disposal and has even computed a range of disposal costs per pound of product manufactured. Dev. Doc. 146 (App. 6210.) In view of this

assessment, it cannot be said that the Administrator failed to perform his statutory duty to consider these factors. \*980

## II. Validity of Specific Regulations

### [20] A. Hydraulic Flows [21] 1. 1977 Limitations

The hydraulic flows used as the basis for computing BPCTCA<sup>10</sup> were based on "demonstrated wastewater flows" found within the industry for each product and process subcategory. See table 38 of the Development Document (App. 6268). These were established as follows:

<sup>10</sup> See n. 6, *supra*. EPA's methodology in establishing these regulations has been discussed *supra*. To arrive at a limitation expressed in terms of pounds of pollutant per 1,000 pounds of product produced, EPA had to select for each subcategory a uniform hydraulic flow representing the amount of water used by a "typical" plant to manufacture 1,000 pounds of product. Had these regulations been expressed in terms of an effluent concentration (milligrams of pollutant per liter of water), EPA feels that the manufacturers could have evaded the regulatory intent by simply diluting the wastewater.

Wastewater flows observed at exemplary plants were used as the basis when they fell at the approximately [sic] middle of the wastewater flow ranges reported by previous industry and EPA surveys. When the observed flows fell outside of the middle range, a wastewater flow within this range was used as the basis. Dev. Doc. 202 (App. 6266.)

EPA asserts that this procedure results in figures that are reasonably typical of each industrial subcategory. Petitioners disagree, citing the following conclusions of EPA's contractor, A.D. Little, Inc., made in the draft Development Document:

In attempting to establish the probable range of wastewater flows for the synthetics and plastics industries, we examined the result of a survey by the Manufacturing Chemists Association to determine if there were any trends with respect to plant size for the same product from different plants. . . . Selected statistical analyses of industry subgroups indicated that the standard deviations were so large compared with the average unit water flow that it was impossible to make any conclusions other than the wide variability of flow rates per unit of production was probably dependent upon the practices inherent at each plant. . . . *[I]t is impossible to give a typical process water usage for a given plant production; and the range of flows found within similar product categories is usually greater than a factor of 10, which even prohibits giving a range for narrowly defined segments of the industry.* (Emphasis added.) (App. 91.)

Given these observations, petitioners contend that EPA was arbitrary in selecting a single hydraulic flow from a wide range of flows and then applying this level of water usage uniformly throughout a subcategory.

The ranges in hydraulic flows found among plants in the subcategories bear witness to the contractor's conclusion that there is no uniform water usage per unit of product manufactured. The following are a few examples. In the polyvinyl chloride subcategory: demonstrated wastewater flow is 1,800 gallons per 1,000 pounds of product, range is 300-5,000 gallons. For cellulose acetate (resin): demonstrated wastewater flow is 5,000 gallons per 1,000 pounds of product, range is 2,000 to 20,000 gallons. For rayon: demonstrated wastewater flow is 16,000 gallons per 1,000 pounds of product, range is 4,000 to 23,000 gallons.<sup>11</sup>

<sup>11</sup> These figures were taken from Exhibit A of Respondent's Brief.

EPA in its brief admits that substantial questions have been raised concerning the hydraulic flow chosen for 1977 in the acrylics subcategory. (Resp. Brief at 135.) We think there are substantial questions in the other categories as well and direct EPA to re-examine its use of uniform hydraulic flows for purposes of calculating the regulations in this industry.

The legislative history and the statute make clear Congress' intent that BPCTCA standards are to rely principally upon end-of-manufacturing treatment of \*981 wastewater.<sup>12</sup> Expensive internal alterations in production should not be mandated for existing plants by these initial pollution controls. In-process control measures may be required, however, if they are considered normal practice within the industry.<sup>13</sup> Plastics and synthetics plants that consume process water in excess of the uniform "demonstrated wastewater flow" will be unable to meet these 1977 standards unless they obtain an effluent concentration level even lower than that expected by EPA or reduce their water consumption. In many cases, a reduction in water consumption would have to be drastic given the degree of variance between the "demonstrated wastewater flow" selected by EPA and the upper level of the flow ranges found in each subcategory. While EPA suggests that plants follow ordinary water conservation practices,<sup>14</sup> the record gives no basis for finding that EPA is reasonable, to the extent of not being arbitrary, in determining that plants can achieve these flow levels by application of the suggested practices.

<sup>12</sup> See the Senate Consideration of the Report of the Conference Committee where it was observed that, "'[b]est practicable' can be interpreted as the equivalent of secondary treatment for industry. . . ." Leg.Hist. 170. Compare the 1977 standard in § 304(b)(1)(B) ("control measures and practices") with the 1983 standard in § 304(b)(2)(B) ("best control measures and practices achievable

including treatment techniques, process and procedure innovations, operating methods and other alternatives") and the new source standards of performance in § 306(a)(1) ("control technology, processes, operating methods, or other alternatives").

<sup>13</sup> See § 304(b)(1) ("control measures and practices") (emphasis added). With new sources, Congress realized that industry could build in environmental controls and therefore required the Administrator "to establish standards of performance which reflect the levels of control achievable through improved production processes, and of process technique, etc. . . ." Conference Report, Leg.Hist. 311.

<sup>14</sup> These include segregation of contact process waters from noncontact wastewater, elimination of once-through barometric condensers, control of leaks, and good housekeeping practices. Dev. Doc. 199 (App. 6263).

## 2. 1983 Limitations

The Development Document does not disclose what flow figures were used for calculating the BATEA<sup>15</sup> (1983) limitations. We are told only that it is a level somewhere between the 1977 standards and the new source standards. Dev. Doc. 212 (App. 6275). We, however, cannot sustain these regulations without being able to reasonably discern the path taken by the Agency. See *Bowman Transportation, Inc. v. Arkansas-Best Freight Systems, Inc.*, 419 U.S. 281, 286, 95 S.Ct. 438, 42 L.Ed.2d 447 (1974). It is impossible for this Court to determine the reasonableness of these 1983 limitations when a major element in the calculation — the "demonstrated wastewater flows" — is not made known by the Agency. Furthermore, plants are to achieve this undisclosed flow level by "segregation of contact process waters from noncontact wastewater, maximum wastewater recycle and reuse, elimination of once-through barometric condensers, control of leaks, [and] good housekeeping practices." Dev. Doc.

209 (App. 6272). These are exactly the practices recommended for 1977 with only the addition of "maximum wastewater recycle and reuse." Compare n. 14, *supra*. There is no evidence in the record that makes it possible for this Court to conclude that EPA exercised reasonable judgment in determining that application of these measures will achieve the hydraulic flow levels necessitated by the 1983 limitations. EPA cites us to no new developments in recycling wastewater or other production procedures that lead us to believe that water conservation measures sufficient to meet the BATEA hydraulic Flow levels will be available by 1983. In fact, the Development Document says that "[i]n general . . . , the plastics and synthetics industry considered in this survey is a mature industry, and there appears little potential for dramatic breakthroughs in the production technology." Dev. Doc. 130 (App. 6194). For these reasons, the 1983 limitations<sup>\*982</sup> are remanded to the Administrator for reconsideration in light of this opinion.<sup>16</sup>

<sup>15</sup> See n. 6, *supra*.

<sup>16</sup> In *Tanners' Council of America, Inc. v. Train*, 540 F.2d 1188 (4th Cir. 1976), Nos. 74-1740, *et al.*, this panel upheld the 1983 limitations in the Leather Tanning and Finishing Industry Point Source Category. There, the 1983 limitations were based in part on technology still in the developmental stage. See *id.* at 1195. The figures issued by EPA as the achievable pollution limits were therefore highly conjectural. Nonetheless, this Court upheld those regulations because of the need for lead time in implementing the designated technology and the statutory requirement of continuing Agency review and revision of the regulations prior to 1983. *Id.* at 1195. Here, the problem is not one involving results that can be expected from new and untried technology, but basic errors in methodology and administrative procedure. See *id.* at 1195-1196.

## 3. New Source Standards

Flow levels used to establish new source standards of performance are explained as follows:

"The wastewater flow basis for NSPS-BADT [New Source Performance Standards — Best Available Demonstrated Technology] is based on the lowest identified as to primary source flows associated with each product. The wastewater basis ranges from 0 to 50 percent of the BPCTCA basis and is product specific." Dev. Doc. 215 (App. 6277).

EPA contends that since the new source flows are achieved by at least one plant in each subcategory, no technological breakthrough in production methods or engineering techniques is necessitated and the technology is therefore "demonstrated" as required by § 306(a)(1). The record, however, does not identify the particular plants used, nor does it disclose their operating or technological characteristics. Without these important guides, manufacturers seeking to build new plants could be at a loss to find ways to design and construct facilities that conform to the flows used to establish the standards of performance. Petitioners claim that this violates Congress' command in § 304(c) of the Act that:

The Administrator . . . shall issue . . . information on the processes, procedures, or operating methods which result in the elimination or reduction of the discharge of pollutants to implement standards of performance under section 306 of this Act. Such information shall include technical and other data, including costs, as are available on alternative methods of elimination or reduction of the discharge of pollutants.

In its brief, EPA contends: "It is not unreasonable to require petitioners to utilize their resources and abilities to achieve reduced hydraulic flows. The Agency must provide guidance, and this it has done. But it is not required to prepare a

cookbook." (Resp. Brief at 102.) Much of the guidance provided by the Agency, however, has been only vague references to better maintenance and avoidance of leaks and spills. See App. 6193-6195. The Development Document, in perhaps its most informative statement, recommends "judicious control of process steps using water for washing, scrubbing, and so on, by employing countercurrent flow operations and by strict attention to housekeeping operations." Dev. Doc. 109 (App. 6173). In our opinion, this information is not sufficiently detailed to provide the type of technological guidance EPA is required to give under § 304(c). A remand of these regulations is necessary to assure compliance with this statutory obligation.

## B. COD as a Pollutant

Petitioners contend that EPA's designation of chemical oxygen demand (COD) as a control parameter is arbitrary and capricious. Both BOD5 and COD measure the capacity of wastewater to remove oxygen from the receiving body of water.<sup>17</sup> COD measures the amount of oxygen removed by the chemical oxidation of biodegradable and non-biodegradable materials,<sup>18</sup>

983 while \*983 BOD measures only the amount of oxygen removed by the biological degradation of organic matter. Thus, biodegradable wastes are measured by both tests. Nonbiodegradable materials, however, show up only in the COD test. Petitioners argue that these non-biodegradable materials are not harmful in any way to receiving streams and since the BOD5 test measures the biodegradable component of COD, there is no need for EPA to establish a COD parameter.

<sup>17</sup> See n. 4, *supra*.

<sup>18</sup> "The COD test consists of forced oxidation, requiring the presence of a strong chemical oxidant and a catalyst and boiling temperatures." Pet. Brief, Nos. 74-1504, *et al.*, at 41-42, citing EPA Manual 16020-07/71.

While EPA admits that "the specific harm caused by the chemical components of COD is not yet known for this industry" (Resp. Brief at 105), it nonetheless feels that its action is justified in view of the statutory definition of "pollution." This term is defined in § 502(19) of the Act, not in terms of *harm* to the environment, but as "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." This definition satisfies us that EPA, in designating COD as a pollution parameter, acted in accordance with the law.

### C. 1977 and New Source COD Limits

In all subcategories, COD limits are established for the 1977 effluent limitations guidelines and the new source standards of performance despite the fact that EPA does not require the application of any COD control technology. The COD limits established by EPA are set on the basis of a ratio of COD to the BOD<sub>5</sub> limits.<sup>19</sup> See Dev. Doc. 200, 215 (App. 6264, 6277). Because the properties measured by the COD and BOD parameters overlap, COD will be reduced by the technology designed to treat BOD. Although no separate COD removal treatment is mandated, EPA feels that COD limits are nevertheless needed for several reasons. First, violations will be more quickly detected since the COD test takes only 3 hours as compared to 5 days for the BOD<sub>5</sub> test. Second, the use of COD as a pollution parameter will mean the collection of extensive data on COD levels, thereby furthering the Agency's scientific research of pollution. Petitioners point out that EPA could have fulfilled these objectives by a requirement that plants simply monitor the COD levels in their wastewater. This Court agrees and, accordingly, sets aside the 1977 and New Source COD limits. It is unreasonable for EPA to establish an effluent limitation for a pollution parameter when the Agency's technological model does not include treatment procedures for that pollutant.

<sup>19</sup> The BOD/COD ratios used by EPA are constants. See table 36, Dev. Doc. 201 (App. 6265). Petitioners contend that once wastewater is treated for BOD, the ratio of BOD/COD does not remain the same. This was noted by EPA's contractor in the Development Document: "biochemically treated wastewater will have proportionally much higher ratios of COD to BOD than entered the waste treatment plant." Dev. Doc. 210 (App. 6273). This means that a plant achieving the required BOD removal could be in violation of its COD level if the BOD/COD ratio of its wastewater goes above the figure used by the Agency.

### D. 1983 COD Limits

The 1983 COD limits are based on the application of activated carbon absorption. For eight subcategories an effluent concentration of 130 mg/l was set as the attainable level of reduction for BATEA. Demonstrated COD concentrations are used in the subcategories already achieving a level lower than 130 mg/l. Dev. Doc. 211 (App. 6274). Petitioners contend that EPA failed to substantiate its determination that this 130 mg/l. concentration is attainable across the board for all eight subcategories. EPA justifies this level of concentration on the basis of performance data from a pilot plant using activated carbon and the results presently obtained by a few exemplary plants. *Id.* Petitioners argue that carbon absorption does not meet the statutory criteria of "availability" throughout the industry as the pilot plant involved a single process for the making of only one product. In *Tanners' Council, Inc. v. Train*, 540 F.2d 1188 (4th Cir. 1976) [No. 74-1740], this panel rejected a similar argument by the tannery industry and held that "in establishing these 1983 standards, the Agency may look to the best performer in the industry and even assess technologies that have not been applied as long as the record demonstrates \*984 that there is a reasonable basis to believe that the technology will be available by 1983." *Id.* at 1195.

The Development Document describes the results of carbon absorption treatment as follows:

Although the effectiveness of activated carbon absorption has been well demonstrated for removing BOD and COD from the effluents of conventional municipal sewage treatment plants, its effectiveness for the removal of the complex chemical species found in the wastewater of this industry can be expected to be highly specific. Dev. Doc. 211 (App. 6274).

This report goes on to say that:

Evidence of the low absorption efficiency of activated carbon for a number of different chemical species is beginning to appear in the technical literature. However, the only way to determine if activated carbon absorption is an effective method for removing COD is to make direct determinations in the laboratory and in pilot plants. *Id.*

It is apparent to this Court that the reasonableness of the COD limits set by EPA for 1983 cannot be reviewed at this time. The figure of 130 mg/l is only a projection, and its accuracy cannot be determined until data from EPA's ongoing research and testing of carbon absorption treatment has been obtained. But waiting until the scientific results are conclusive may be too late. As petitioners point out, "[i]t may take one or more years merely to design and test a treatment facility and even longer to actually build such a facility and put it in operation." (Pet. Reply Brief, Nos. 74-1400, *et al.*, at 37.) The technology designated by EPA should be implemented. Then, if the results are not up to EPA's earlier projections, sections 304(b) and 301(d) place a duty upon the Administrator to review and revise these regulations.<sup>20</sup> Any present inaccuracy in the limits can be corrected by the Agency prior to the implementation of these regulations in 1983. For these reasons, the 1983 COD limits are left in

force for the present. We note, however, the availability of future judicial review should EPA not establish the achievability of these 1983 limits within a reasonable time prior to the time set for their implementation. See *Tanners' Council, Inc. v. Train*, *supra* 1196.

<sup>20</sup> See *Tanners' Council, Inc. v. Train*, *supra*, n. 17, and accompanying text.

## D. 1977 TSS Limits

Total Suspended Solids (TSS) measures the amount of inorganic and organic materials suspended in the wastewater. If allowed to settle in the receiving water, these solids form a sludge deposit on the lake or river bed which destroys aquatic life. See Dev. Doc. 88-89 (App. 6152-6153). For 1977, the Agency uses a uniform effluent concentration of 30 mg/l of TSS for all subcategories. Petitioners contend that this standard TSS level fails to take into account the differences in the treatability of wastewater for the different subcategories. The Administrator maintains that, while BOD treatments experience wide variations in removal efficiency, TSS removal is relatively uniform. This is borne out by the data from the exemplary plants observed by EPA. Dev. Doc. 81 (App. 6145). Finding that the Administrator's position is supported by the record, this Court upholds EPA's use of a 30 mg/l effluent concentration level for calculating the 1977 TSS limits.

## E. 1983 and New Source TSS Limits

For existing sources — 1983 stage and new sources, EPA uses an effluent concentration of 10 mg/l. This concentration is set on the basis of the application of mixed media filtration.<sup>21</sup> Petitioners contend that EPA has failed to show that application of mixed media filtration will achieve 10 mg/l in the plastics and synthetics industry.

<sup>985</sup> Although <sup>\*985</sup> filtration has not been demonstrated in the plastics and synthetics industry, EPA justifies this 10 mg/l figure by reference to the results achieved by this technology in municipal treatment systems and

waste facilities used in the petroleum industry. EPA's conclusion is that the results attained in these waste treatment operations are transferable to the plastics and synthetics industry since the raw waste loads, especially of the petroleum industry, are similar.<sup>22</sup> The record, however, is devoid of any consideration by EPA of transferability and we are unable to judge the reasonableness of its conclusion. The Agency asks us to rely on its expertise. This Court, however, cannot decide such questions on blind faith. See *duPont v. Train* [No. 74-1261], *supra*, at 1036. Because the Administrator has failed to establish that the technology necessitated by the new source TSS limits is presently "available," the new source standards of performance are remanded to the Agency for further documentation on the transferability of the designated technology. A different standard of "availability" applies however to the 1983 limitations. They will not be put into effect for another seven years. EPA should, therefore, be given more latitude to make predictions and assumptions as to transferability. *Cf. Portland Cement Association v. Ruckelshaus*, 158 U.S.App.D.C. 308, 486 F.2d 375, 391-392 (1973), *cert. denied* 417 U.S. 921, 94 S.Ct. 2628, 41 L.Ed.2d 226 (1974). Accordingly, the 1983 limitations are not disturbed by this Court; but, once again, EPA is reminded of its statutory duty to review them and make any appropriate changes.

<sup>21</sup> Mixed media filtration involves passing wastewater over a filter composed of a layer of coarse material and one or more layers of finer material. Pet. Brief, Nos. 74-1400, *et al.*, at 63 n. 1.

<sup>22</sup> Petitioners point to possible problems suggesting that mixed media filtration cannot be so adequately adapted to the plastics and synthetics industry. See Pet. Brief, Nos. 74-1400, *et al.*, at 65.

## F. Variability Factors

In establishing these effluent limitations guidelines and standards of performance, EPA took notice of the fact that even in the best

treatment systems changes continually occur in the treatability of wastes. To account for this variability, the Administrator made a statistical analysis to determine day-to-day and month-to-month standard deviations. From this, daily and monthly variability factors were defined which, when multiplied by the long-term yearly average, determine the effluent limitations guidelines for each subcategory. The monthly variability factor results in an effluent limit that is exceeded 2 to 3 percent of the time for a plant attaining the long-term average, while the daily variability factor results in only a 0.0-0.5 percent violation. Dev. Doc. 203-207, 212-213, 215-217 (App. 6267-6271, 6275-6276, 6277-6279).

Petitioners contest the reasonableness of this procedure. EPA, they contend, committed three serious errors. First, the calculation of the variability factors was based on effluent concentrations. The limitations and standards of performance are expressed, however, in pounds of pollutant per 1,000 pounds of product (derived by multiplying hydraulic flow by effluent concentration). In effect, the element of hydraulic flow has been removed from the variability calculations. Petitioners insist that this results in a lower variability factor than would have resulted had these computations been based on pounds of pollutant per 1,000 pounds of product.<sup>23</sup> The Agency says that it chose to use effluent concentrations because more abundant data was available in these terms, and the difference in results between calculations based on effluent concentrations and those based on pounds of pollutant was "exceedingly small." (Resp. Brief at 128.) While this Court finds that EPA has not been consistent in calculating the variability factors and the over-all limitations and standards, we do not feel that this inconsistency amounts to arbitrary and capricious behavior, especially taking into view the practical consideration of data availability.<sup>\*986</sup>

<sup>986</sup> availability. \*986

<sup>23</sup> Petitioners give two examples in their brief. A monthly variability factor for Polyvinyl Chloride computed on the basis of pounds of pollutant would be 1.77. The EPA variability factor is 1.6. For Nylon 66, the variability factor would be 2.35 instead of 2.2. Pet. Brief, Nos. 74-1504, *et al.*, at 67.

Second, petitioners argue that EPA's use of a straight-line standard deviation method to determine the variability factors is incorrect since the data points are not normally distributed.<sup>24</sup> EPA defends its use of the straight-line method by asserting that the underlying data deviated only slightly from a normal distribution pattern. This Court feels that the choice of statistical methods is a matter best left to the sound discretion of the Administrator. Petitioners would have this Court require the Agency to base the variability factors on "actual point data." Included within this data would be points that EPA terms as "aberrations" — reporting errors or results achieved by an upset in the treatment facility caused by improper operation. (Resp. Brief at 131.) The purpose of these variability factors is to account for the routine fluctuations that occur in plant operation, not to allow for poor performance. For these reasons, we believe that the Administrator has not been arbitrary or unreasonable in establishing these variability factors on the basis of a standard deviation assumption.

<sup>24</sup> Data is said to be normally distributed if the observed values, when plotted on ordinary graph paper, form a bell-shaped curve. The data points form a straight line, however, on probability graph paper. Pet. Reply Brief, Nos. 74-1400, *et al.*, at 41.

Third, petitioners contend that it is arbitrary for EPA to fail to make provision for "excursions" when it realizes to a certainty that even a proper treatment facility will be in violation on a few occasions. EPA denies that excursions are necessary, contending that there is always a theoretical chance that a plant achieving the limitations on a long-term basis will exceed the monthly and daily limits. Nonetheless, this Court is of the opinion that EPA should provide an excursion provision that will offset the expected 2 to 3 percent and .5 percent violations. Plant owners should not be subject to sanctions when they are operating a proper treatment facility. Such excursions are provided for by the ambient air standards established under the Clean Air Act, 40 C.F.R. §§ 50.4-50.10, and this Court sees no reason why appropriate excursion provisions should not be incorporated in these water pollution regulations.

## CONCLUSION

The effluent limitations guidelines and standards of performance for the Plastics and Synthetics Industry Point Source Category are remanded to the Administrator for reconsideration in light of the reasons stated in this opinion.