United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued May 17, 2001 Decided June 29, 2001

No. 00-1270

Husqvarna AB; Husqvarna Forest and Garden Company;
Frigidaire Home Products-Specialty Power,
Petitioners

v.

Environmental Protection Agency,
Respondent

John Deere Consumer Products, Inc.,
Intervenor

On Petition for Review of an Order of the
Environmental Protection Agency

Nancy S. Bryson argued the cause for the petitioners.

Pamela S. Tonglao, Attorney, United States Department of Justice, argued the cause for the respondent. John C. Cruden, Acting Assistant Attorney General, United States De-

partment of Justice, and John T. Hannon and Michael W. Thrift, Attorneys, United States Environmental Protection Agency, were on brief for the respondent.

Richard E. Ayres argued the cause for the intervenor.

Before: Henderson, Tatel and Garland, Circuit Judges.

Opinion for the court filed by Circuit Judge Henderson.

Karen LeCraft Henderson, Circuit Judge: The petitioners, Husqvarna AB et al. (Husqvarna), seek review of the Phase 2 Emission Standards for New Nonroad Spark-Ignition Handheld Engines promulgated by the respondent, the U.S. Environmental Protection Agency (EPA), under the authority of section 213 of the Clean Air Act (CAA), 42 U.S.C. s 7547. Husqvarna contends that the final rule is arbitrary and capricious because the EPA failed to select the emission standards that represent the best balance of the factors identified in CAA section 213. It also maintains that the regulatory alternative chosen by the EPA is not supported by substantial evidence in the record. Finally, Husqvarna alleges procedural error stemming from inadequate notice and opportunity to comment. Because each of these arguments lacks merit, we deny Husqvarna's petition.

I. Background

In 1990 the Congress amended the CAA and added section 213, which authorizes the EPA to set emissions standards for "nonroad engines and vehicles." Pub. L. No. 101-549, 104 Stat. 2399 (1990). Section 213 required the EPA to adopt emission standards by 1993 and to revise them as appropriate thereafter. The EPA missed the statutory deadline and a lawsuit to enforce the statute was filed, which has resulted in the district court's monitoring of the EPA's compliance. See Sierra Club v. Whitman, Civ. No. 93-0124 (D.D.C. filed Jan. 19, 1993).

In establishing emission standards, the EPA created two categories of small spark-ignition (SI) engines: nonhandheld

and handheld.1 The EPA further divided handheld engines into three classes--Classes III, IV and V--based on engine size, with Class III encompassing the smallest and Class V the largest handheld engines. The domestic handheld engine industry includes 22 manufacturers, including Husqvarna, Stihl, John Deere, Shindaiwa, Kawasaski, Echo, Ryobi and Honda, which manufacture a total of 186 engine families.2 These manufacturers primarily use two-stroke engines in handheld products because of their high power-to-weight ratios and low cost. A two-stroke engine is an internal combustion engine that accomplishes the operations of intake, compression, expansion and exhaust in two piston strokes rather than four.

The EPA has regulated emissions from handheld engines in two phases. See 58 Fed. Reg. 55, 033, 55,034 (Oct. 25, 1993). In Phase 1, the EPA proposed short-term new engine standards based in part on standards California had adopted for similar engines. In January 1998 the EPA proposed Phase 2 emission standards for handheld engines that were slightly more stringent than those in Phase 1. 63 Fed. Reg. 3950, 3953-55, 3958-59, 3964-71, 4009-4013 (Jan. 27, 1998). The proposed Phase 2 standards were expected to reduce hydrocarbons (HC) and oxides of nitrogen (NOx) emissions by 30 per cent beyond Phase 1 standards by the year 2025.3 63 Fed. Reg. 4001. The proposal called for a reduction in emissions for Class III, IV and V engines to 210, 172 and 116

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1 Nonhandheld engines tend to be large and include engines that power lawnmowers and garden tractors. Handheld engines are smaller and are used in equipment such as chainsaws, leaf blowers and weed trimmers.

2 An engine family is a grouping of engines within a manufacturer's product line. Engines within the same family must be identical in several respects, including combustion cycle, number of cylinders, engine class, catalyst type, fuel required and useful life. 40 C.F.R. s 90.116(c), (d)(1)-(10).

3 HC and NOx contribute to the formation of tropospheric ozone through a complex series of reactions. Both short-term and prolonged exposure to ozone at levels common in many cities has been linked to a number of health problems. See 65 Fed. Reg. 24,268, 24,295 (Apr. 25, 2000).

grams per kilowatt-hour (g/kWhr),4 respectively. In response to the proposal, the EPA received input from manufacturers indicating that lower emission levels were feasible. See 63 Fed. Reg. 66,081, 66,082-83 (Dec. 1, 1998).5 And in late 1998 a portion of the handheld engine industry suggested that it would support final HC+NOx standards of 72 g/kW-hr for Classes III and IV and 87 g/kW-hr for Class V (72-72-87).

On December 2, 1998 John Deere Consumer Products, Inc. (Deere), which appeared as an intervenor before this court, recommended that the EPA consider stricter Phase 2 standards in light of its recent development of "compression wave technology" (CWT), which promised to significantly reduce emissions from handheld engines. CWT uses compressed air to improve fuel injection in the combustion chamber of a two-

stroke engine, resulting in almost all of the fuel being combusted. Deere stated that CWT was adaptable to all sizes of two-stroke engines and could meet a 72 g/kW-hr HC+NOx standard in 2001.

On July 28, 1999 the EPA published a Supplemental Notice of Proposed Rulemaking (Supplemental Proposal), which proposed emission limits of 50 g/kW-hr for Classes III and IV with phase-in between 2002 and 2006 and an emission limit of 72 g/kW-hr for Class V with phase-in between 2004 and 2008. 64 Fed. Reg. 40,940 (July 28, 1999). In addition to CWT, the Supplemental Proposal identified three other technologies--stratified scavenging,6 miniature four-stroke engines7 and cat-

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4 Grams per kilowatt-hour (g/kW-hr) is used to measure the mass of pollutants (grams) emitted per quantum of work (kW-hr) the engine performs.

5 "Lower" emission levels equate to stricter standards and presumably cleaner air.

6 Stratified scavenging is a technique that lowers emissions from two-stroke engines by using pure air, instead of a mixture of fuel and air, to expel exhaust gases following combustion. The air also serves as a buffer that prevents the air/fuel mixture from escaping the exhaust port.

7 A miniature four-stroke engine performs the internal combustion process using four strokes of the piston as opposed to the two

alysts8--that could be utilized by manufacturers to meet the Phase 2 standards. The Supplemental Proposal also contained an averaging, banking and trading (ABT)9 program to give handheld engine manufacturers flexibility in meeting the more stringent Phase 2 standards. 64 Fed. Reg. 40,951. Under the proposed program, manufacturers would declare a family emission limit (FEL) for each engine family. See supra note 2. Manufacturers need only ensure that average emissions from all of their engine families meet the emission standards for the given model year. They could also generate bankable emission credits based on the differences between the FEL and the Phase 2 standards for the applicable model year.

Many manufacturers, including Husqvarna, commented on the Supplemental Proposal. The public comment period closed on September 17, 1999, although the EPA agreed to consider additional comments filed within 30 days therefrom. It also continued to meet with interested manufacturers after the close of the comment period. The final Phase 2 emission standards for handheld SI engines were published on April 25, 2000. 65 Fed. Reg. 24,268. In the final rule, the EPA adopted the 50-50-72 HC+NOx emission standards proposed in the Supplemental Proposal, but with an implementation schedule of four years instead of the five as proposed. The decision rested on the EPA's determination that "rapid tech-

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used in two-stroke engines. Due to their larger size, four-stroke

engines, which produce lower HC+NOx emissions due to their lower scavenging losses, have until recently been limited to ground-supported applications such as lawnmowers.

8 Catalysts are small devices that are added to an engine to oxidize or convert unburned hydrocarbons after they exit the engine's combustion chamber.

9 Averaging means the exchange of emission credits within a manufacturer's product line. Banking refers to the retention of emission credits for use in future model year averaging or trading. Trading involves the exchange of emission credits between engine manufacturers that can then be used for averaging, banked for future use or traded again. 63 Fed. Reg. 3972.

nological advances" in the handheld engine industry warranted a more expeditious implementation. 65 Fed. Reg. 24,274. While noting that "not all of the technologies ... have yet been demonstrated in mass-produced production engines operated under typical in-use conditions," the EPA identified the following technologies as likely to meet the newly adopted standards: Class III (CWT & low-medium efficiency catalyst; stratified scavenging with lean combustion & medium-high efficiency catalyst; four-stroke), Class IV (CWT; CWT & low efficiency catalyst; stratified scavenging with lean combustion & medium efficiency catalyst; four-stroke) and Class V (CWT; four-stroke; stratified scavenging with lean combustion). 65 Fed. Reg. 24,274-79. The EPA explained that changes in equipment design could allay safety concerns about the use of catalysts. 65 Fed. Reg. 24,278-79. It also determined that the Phase 2 standards were cost-effective. 65 Fed. Reg. 24, 296-300. Finally, the EPA revised the ABT program to avoid a delay in the shift to cleaner engines. 65 Fed. Reg. 24,282-84. Husqvarna challenges all of these parts of the final rule.

II. Analysis

"Our analysis is guided by the deference traditionally given to agency expertise, particularly when dealing with a statutory scheme as unwieldy and science-driven as the Clean Air Act." Appalachian Power Co. v. EPA, 135 F.3d 791, 801-02 (D.C. Cir. 1998); see Baltimore Gas & Elec. Co. v. NRDC, 462 U.S. 87, 103 (1983) (reviewing court must be "at its most deferential" when agency is "making predictions, within its area of special expertise, at the frontiers of science"). Under section 307(d)(9) of the CAA, we reverse agency action found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 42 U.S.C. s 7607(d)(9)(A). Questions of statutory interpretation are governed by the familiar two-step test set forth in Chevron, U.S.A., Inc. v. NRDC, 467 U.S. 837, 842-43 (1984). The court first asks "whether Congress has directly spoken to the precise question at issue," in which case it "must give effect to the unambiguously expressed intent of Congress." Id. If the

"statute is silent or ambiguous with respect to the specific issue," the court moves to the second step and defers to the agency's interpretation as long as it is "based on a permissible construction of the statute." Id. at 843. We will strike down the rulemaking for procedural error "only if the errors were so serious and related to matters of such central relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made." CAA s 307(d)(8); 42 U.S.C. s 7607(d)(8).

In challenging the EPA's handheld engine Phase 2 emission standards, Husqvarna raises three claims. First, it asserts that the EPA's choice of the 50-50-72 emission standards contravenes the best balance requirement of CAA section 213. Second, it maintains that the final rule is arbitrary and capricious because it is not supported by substantial evidence in the record. Finally, it argues that the EPA failed to comply with the procedural requirements of CAA section 307(d).

A. CAA Section 213

Section 213(a)(3) of the CAA requires the EPA to promulgate standards that "shall achieve the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the engines or vehicles to which such standards apply, giving appropriate consideration to the cost of applying such technology within the period of time available to manufacturers and to noise, energy, and safety factors associated with the application of such technology." 42 U.S.C. s 7547(a)(3). Husqvarna maintains that the 50-50-72 emission standards do not represent the "best balance" of these factors for the industry. We disagree that a "best balance" of the kind Husqvarna contemplates is required. The EPA did not deviate from its statutory mandate or frustrate congressional will by placing primary significance on the "greatest degree of emission reduction achievable" and by considering cost, noise, energy and safety factors as important but secondary factors. The overriding goal of the section is air quality and the other listed considerations, while significant, are subordinate to that

goal. Cf. American Petroleum Inst. v. EPA, 52 F.3d 1113, 1120 (D.C. Cir. 1995). The record indicates that the EPA considered each of the factors listed in section 213 and nothing suggests that "the agency abandoned its obligation to balance the statutory factors and select the best balance for a predominant segment of industry from the alternatives before it." Appellant Br. 37 (emphasis original). Contrary to Husqvarna's claim, the EPA did not single out a single engine technology and use it as a benchmark to set standards. Rather, it set the emission standards with four different engine technologies in mind. Cf. NRDC v. Thomas, 805 F.2d 410, 424 (D.C. Cir. 1986) (rejecting petitioner's claim that EPA must determine which engine can achieve greatest emission reduction and then ratchet standard up to account for cost and other factors).

Husqvarna argues that the EPA's failure to consider incremental cost-effectiveness illustrates its erroneous interpretation of section 213. Section 213, however, simply directs the EPA to consider cost. Although the EPA considered marginal cost-effectiveness in promulgating marine engine emission regulations, it has not done so in promulgating any other standards under section 213. Moreover, the EPA identified industry-specific factors in the marine engine rulemaking that suggested an incremental cost-effectiveness analysis would be particularly significant to the EPA's choice among various alternative standards. 61 Fed. Reg. 52,088, 52,098 (Oct. 4, 1996). The EPA did consider the cost-effectiveness study submitted by Husqvarna during the public comment period, JA 1885-88, but rejected it as a basis to conclude that the cost of the 50-50-72 standard was unreasonable. Because section 213 does not mandate a specific method of cost analysis, we find reasonable the EPA's choice to consider costs on the per ton of emissions removed basis. See 65 Fed. Reg. 24,300. And there is no dispute that the EPA considered cost in this manner in weighing the factors under section 213.

Husqvarna also complains that the changes in the ABT program set forth in the final rule demonstrate improper balancing under section 213. The record, however, indicates

just the opposite. It was the EPA's consideration of the factors listed in section 213, notably the mandate to consider the greatest degree of emission reduction achievable, that led to the changes in the ABT program. We find nothing unreasonable about the EPA's conclusion that the ABT program as proposed risked undermining the final rule by unnecessarily delaying the introduction of cleaner engine technologies. 65 Fed. Reg. 24, 284.

In sum, we defer to the EPA's selection of emission standards under section 213. The record shows that the EPA reasonably arrived at what it determined was the best regulatory standard by ascertaining the greatest degree of emission reduction achievable while giving appropriate consideration to cost, noise, energy and safety factors.

B. Substantial Evidence

CAA section 213 is a technology-forcing standard. See 42 U.S.C. s 7547(a)(3); 42 U.S.C. s 7547(b). In construing similar language included in CAA section 202, we explained in NRDC v. Thomas that the mere fact that the provisions "seek to promote technological advances while also accounting for cost does not detract from their categorization as technology-forcing standards." 805 F.2d at 428 n.30. The "Congress intended the agency to project future advances in pollution control capability. It was 'expected to press for development and application of improved technology rather than be limited by that which exists today.' " NRDC v. EPA, 655 F.2d 318, 328 (D.C. Cir. 1981) (quoting S. Rep. No. 91-1196, at 24 (1970)). Husqvarna acknowledges that the statute is technology-forcing but challenges whether EPA projections of future advances in pollution control capability are supported by substantial evidence. It asserts that the EPA (1) selected emission standards that are not technologically feasible and, in so doing, (2) failed to consider costs, (3) did not adequately address safety issues and (4) provided no rational explanation for the phase-in period selected. We find these claims without merit.

First, substantial evidence supports the EPA's determination that the Phase 2 standards can be achieved through the

application of the identified technologies--CWT, stratified scavenging, miniature four-stroke engines and catalysts. The record indicates that these engine technologies are already capable of meeting an emission limit of 72 g/kW-hr, with the four-stroke engine technology currently meeting the 50 g/kW-hr standard. The EPA found that the two-stroke technologies--CWT and stratified scavenging--can also currently meet the 50 g/kW-hr standard with the addition of a catalyst. Husqvarna offers no theoretical objections to the technologies' capacity to meet the emission standards within the phase-in period. " 'In the absence of theoretical objections to the technology, the agency need only identify the major steps necessary for development of the device, and give plausible reasons for its belief that the industry will be able to solve these problems in the time remaining. The EPA is not required to rebut all speculation that unspecified factors may hinder "real world" emission control.' " Thomas, 805 F.2d at 434 (quoting NRDC, 655 F.2d at 334). Husqvarna criticizes the performance of the various engine technologies but cannot show that the remaining issues related to design, implementation, mass production, performance, heat and weight cannot be solved through innovation and equipment redesign. It also questions the adequacy of the time period to solve these issues. Substantial evidence, however, supports the EPA's determination that the continued rapid development of engine technologies makes it probable that CWT, stratified scavenging, four-stroke engine and catalyst technologies will enable manufacturers to comply with the emission standards within the phase-in period. See 65 Fed. Reg. 24,274-81.

Second, substantial evidence supports the EPA's cost determinations. The EPA sought comment on and considered a significant body of cost data, including an incremental cost-effectiveness study submitted by Husqvarna. JA 1883-93. The EPA calculated the cost per engine and measured the cost-effectiveness of the final Phase 2 standards, in dollars per ton of emissions reduction, against the Phase 1 baseline. 65 Fed. Reg. 24,299-300. Its calculation of $560 per ton of HC+NOx removed, with fuel savings, falls within the range of other nonroad mobile source regulations under Title II.

See 63 Fed. Reg. 56,968, 56,990-91 (Oct. 23, 1998) (nonroad compression-ignition engines); 64 Fed. Reg. 73,300, 73,325-26 (Dec. 29, 1999) (SI recreational marine engines).

Third, contrary to Husqvarna's claim, the record illustrates that the EPA considered safety issues. It considered the problem of heat associated with the use of catalysts and it proposed engine and equipment redesign to overcome the problem. 65 Fed. Reg. 24,278-79. The EPA also investigated manufacturers' claims that replacing two-stroke engines with four-stroke engines would increase the weight of certain handheld equipment. It found their fears largely unwarranted and determined that four-stroke engine technology was feasible in Class IV and some Class V applications. 65 Fed. Reg. 24,277.

Finally, substantial evidence supports the phase-in period selected. CAA section 213(b) states that "[s]tandards under this section shall take effect at the earliest possible date considering the lead time necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period and energy and safety." 42 U.S.C. s 7547(b). For the final Phase 2 standards, the EPA determined that the schedule of declining emission standards, to be phased in from 2002 to 2005 for Class III and IV and from 2004 to 2007 for Class V, provides adequate time for manufacturers' transition to cleaner engine technologies. The final rule basically shortened the implementation schedule from the five years proposed in the Supplemental Proposal to four years. In so doing the EPA was responding to several commentators who sought the shorter time frame to avoid delay in the transition to cleaner technologies. The EPA also considered the potential hardships on manufacturers of engine families with an annual production level of fewer than 5000 units and provided them additional lead time. 65 Fed. Reg. 24,289. Additionally, the EPA implemented an ABT program to give all manufacturers flexibility in meeting the implementation schedule; the program permits manufacturers to produce some engines that do not meet the standards so long as they can generate or obtain offsetting credits from engines certified below the

standards. 65 Fed. Reg. 23,282-84. These provisions manifest that the EPA followed the congressional mandate embodied in CAA section 213(b). 42 U.S.C. s 7547(b).

Accordingly, we conclude that the final rule is supported by substantial evidence.

C. Procedural Errors

Section 307(d)(9) of the CAA provides that a court may reverse agency action if it was promulgated "without observance of procedure required by law, if (i) such failure to observe such procedure is arbitrary or capricious, (ii) the requirement of paragraph (7)(B) has been met, and (iii) the condition of the last sentence of paragraph (8) is met." 42 U.S.C. s 7607(d)(9)(D). Paragraph 7(B) limits judicial review to objections "raised with reasonable specificity during the period for public comment," or on reconsideration if "it was impracticable to raise such objection within such time ... and if such objection is of central relevance to the outcome of the rule." 42 U.S.C. s 7607(d)(7)(B). Finally, the last sentence of section 307(d)(8) provides that "[i]n reviewing alleged procedural errors, the court may invalidate the rule only if the errors were so serious and related to matters of such central relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made." 42 U.S.C. s 7607(d)(8).

Husqvarna contends that the EPA failed to comply with section 307(d)(3)(a) of the CAA, which requires that a notice of proposed rulemaking "be accompanied by a statement of its basis and purpose" and "include a summary of [ ] the factual data on which the proposed rule is based." 42 U.S.C. s 7607(d)(3). It also argues that the agency failed to comply with section 307(d)(4)(B)(i), which dictates that "all written comments and documentary information on the proposed rule received from any person for inclusion in the docket during the comment period shall be placed in the docket." 42 U.S.C. s 7607(4)(B)(i). Husqvarna alleges that these failures denied it sufficient opportunity to comment on the relevant technologies as well as on the ABT program as it appeared in the final rule. We find these claims without merit. First, the Supple-

mental Proposal specifically referred to the technologies that would serve as the basis of the 50-50-72 emission standards--CWT, miniature four-stroke engines, stratified scavenging and catalysts. Husqvarna and other manufacturers had ample opportunity to comment on the technologies. In fact, the bulk of Husqvarna's substantive claims revolves around the EPA's treatment of the comments they in fact submitted. The EPA even extended the time to accept public input until 30 days after close of the public comment period to provide manufacturers like Husqvarna with more opportunity to comment. Second, Husqvarna had opportunity to comment on the proposed ABT program. The final ABT provisions were a logical outgrowth of those proposed in the Supplemental Proposal, even though they were in part based on comments received during the 30 day extension period. See Small Refiner Lead Phase-Down Task Force v. EPA, 705 F.2d 506, 546-47 (D.C. Cir. 1983); United Steelworkers of Am. v. Marshall, 647 F.2d 1189, 1221 (D.C. Cir. 1980). The Supplemental Proposal gave Husqvarna fair notice of the subjects and issues involved in formulating the ABT program. Likewise, the four-year phase-in period was a logical outgrowth of the proposed five-year implementation schedule. Finally, even if the EPA committed procedural error, Husqvarna failed to show it was "so serious and related to matters of such relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such error[ ] had not been made." 42 U.S.C. s 7607(d)(8). Husqvarna was unable to establish a substantial likelihood that the rule would have been significantly changed if it had had an expanded opportunity to comment. Accordingly, we find Husqvarna's claims of procedural error without merit.

III. Conclusion

In sum, we reject Husqvarna's substantive and procedural challenges to the Phase 2 Emission Standards for New Nonroad Spark-Ignition Handheld Engines.10 Accordingly,

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10 In light of our disposition we have no occasion to consider, and accordingly dismiss as moot, the EPA's motion to strike

and for the reasons set forth in this opinion, the petition for review is

Denied.

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portions of Husqvarna's reply brief and Deere's motion for leave to file a supplemental exhibit.