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MACDERMID, INC. v. DEPARTMENT OF ENVIRONMENTAL PROTECTION (SC 16441)

Borden, Norcott, Palmer, Vertefeuille and Zarella, Js. Argued February 16—officially released July 31, 2001

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Opinion

ZARELLA, J. The plaintiff, MacDermid, Inc., sought a declaratory ruling from the commissioner of environmental protection (commissioner) that one of the plaintiff’s chemical products is exempt from regulation under Connecticut’s hazardous waste laws and regulations. The commissioner issued a ruling pursuant to General Statutes § 4-176 (e),¹ in which he concluded that the chemical was not exempt from regulation as a hazardous waste. Thereafter, the plaintiff appealed to the Superior Court pursuant to General Statutes § 4-

183.² The trial court dismissed that appeal, and the plaintiff appealed to the Appellate Court from the trial court's judgment. This court transferred the appeal to itself pursuant to General Statutes § 51-199 (c) and Practice Book § 65-1. We affirm the judgment of the trial court.

The following facts are undisputed. The plaintiff sells a chemical under the trade name Ultra Etch, which is used to dissolve excess copper from printed circuit boards. During use, the etchant is contaminated with copper salts that eventually render the etchant unusable, or spent. The circuit board manufacturers that purchase Ultra Etch are contractually required to return the spent etchant to the plaintiff, which stores and processes it. Additional facts will be set forth as needed.

On appeal, the plaintiff claims that the trial court improperly: (1) applied the standard of review; (2) upheld the commissioner's ruling that the spent etchant is a hazardous waste; and (3) upheld the commissioner's ruling that the spent etchant is subject to regulation under General Statutes § 22a-454.³ We disagree and affirm the judgment of the trial court.

We begin with a brief overview of the regulatory framework governing hazardous waste. Under federal law, the Resource Conservation and Recovery Act of 1976 (act), 42 U.S.C. § 6901 et seq., establishes a regulatory program to manage the treatment, transport and storage of hazardous waste from its generation to final disposal. *Environmental Defense Fund v. Environmental Protection Agency*, 210 F.3d 396, 397 (D.C. Cir. 2000); see 42 U.S.C. § 6902 (a) (8) (1994). The primary purpose of the act "is to reduce the generation of hazardous waste and to ensure the proper treatment, storage, and disposal of that waste . . . so as to minimize the present and future threat to human health and the environment." (Internal quotation marks omitted.) *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 483, 116 S. Ct. 1251, 134 L. Ed. 2d 121 (1996), quoting 42 U.S.C. § 6902 (b) (1994).

The act requires the federal Environmental Protection Agency (agency) to promulgate regulations that identify the characteristics of hazardous waste and identify solid wastes that are hazardous. See 42 U.S.C. § 6921 (b) (1994). While the agency regulations establish minimum requirements for the management of hazardous waste; *United States v. Marine Shale Processors*, 81 F.3d 1361, 1367 (5th Cir. 1996); Congress has authorized the states to establish their own regulations, which may be more stringent than those established by the agency. 42 U.S.C. § 6929 (b) (1994).⁴ The agency generally does not enforce the federal standards in states that have authorized regulatory programs that are no less stringent than the agency regulations. See 42 U.S.C. § 6926 (d) (1994).

Connecticut has a hazardous waste program that is authorized by the agency. See generally Connecticut; Final Authorization of State Hazardous Waste Management Program, 55 Fed. Reg. 51,707, 51,707–13 (December 17, 1990). Section 22a-449 (c) of the General Statutes authorizes the commissioner to establish and enforce regulations to carry out the intent of subtitle C of the act; 42 U.S.C. § 6921 et seq.; and, in 1990, the commissioner established such regulations. See Regs., Conn. State Agencies §§ 22a-449 (c)-100 through 22a-449 (c)-110. Those regulations incorporate by reference portions of the agency regulations without substantial change.⁵ See generally *id.*, § 22a-449 (c)-101 (a).

Hazardous waste also is regulated in this state pursuant to General Statutes § 22a-454, which exists apart from the state regulations promulgated pursuant to subtitle C of the act. Section 22a-454 requires persons who “engage in the business of collecting, storing or treating . . . chemical liquids or hazardous wastes . . . [or who] dispose of . . . chemical liquids or waste solid, liquid or gaseous products or hazardous wastes” to obtain a permit from the commissioner. General Statutes § 22a-454 (a). The department of environmental protection refers to materials regulated under § 22a-454 as “Connecticut Regulated Wastes.”

The plaintiff obtained two permits in 1994: (1) a hazardous waste permit issued pursuant to § 22a-449 (c) authorizing the plaintiff to store spent etchant before it is recycled; and (2) a permit issued pursuant to § 22a-454 regulating the recycling process. In 1997, the plaintiff petitioned the commissioner to issue a declaratory ruling that the plaintiff’s spent etchant is not a solid waste that is subject to regulation under Connecticut’s hazardous waste management regulations. The plaintiff also sought a declaratory ruling that its spent etchant is exempt from regulation under § 22a-454.⁶

Hazardous waste is defined as solid waste that is not otherwise excluded from regulation as a hazardous waste and that exhibits any one of the following characteristics: ignitability, corrosivity, reactivity or toxicity. See 40 C.F.R. §§ 261.3, 261.20 through 261.24 (2000).⁷ The plaintiff does not dispute that its spent etchant exhibits a characteristic of hazardous waste; rather, the plaintiff argues that its spent etchant is not a solid waste.

A solid waste is defined as any “discarded material”; *id.*, § 261.2 (a) (1); and discarded material, in turn, is defined as any material that is “abandoned,” “recycled” or “inherently waste-like.” *Id.*, § 261.2 (a) (2) (i) through (iii).

A material is recycled if it is “used, reused, or reclaimed.” *Id.*, § 261.1 (c) (7). Whether a material is a solid waste when it is recycled requires an examination of: (1) the substance or material; and (2) the manner in which that material is recycled. *American Mining*

Congress v. United States Environmental Protection Agency, 824 F.2d 1177, 1180 (D.C. Cir. 1987); Hazardous Waste Management System; Definition of Solid Waste, 50 Fed. Reg. 614, 618 (January 4, 1985). The parties agree that spent etchant is a spent material, which is defined as “any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing” 40 C.F.R. § 261.1 (c) (1) (2000).

The plaintiff describes its recycling process of spent etchant as follows: “The spent etchant [that the plaintiff] obtains from its customers is stored in either [fifty-five] gallon drums or in one of three [8000] gallon storage tanks depending upon whether it was returned in drums or transported in one of [the plaintiff’s] tanker trucks. When [the plaintiff] desires to use the spent etchant to produce new end-products, it transfers a portion of the etchant from a storage tank to one of two vessels which are known as ‘reactor tanks.’ Caustic soda and heat are added. The ensuing chemical reaction is allowed to proceed for approximately [twelve] to [fifteen] hours. During the reaction, copper oxide precipitates out of the spent etchant/caustic soda mixture and ammonia gas is generated.

“At the end of the reaction, the copper oxide is allowed to settle and the liquid remaining in the reactor tank is pumped into another vessel for treatment and disposal as a process wastewater. The copper oxide remaining in the reactor tank is washed and discharged to a filter press for final processing. The copper oxide is the first end-product of the [plaintiff’s] process which uses spent etchant as an ingredient.

“The ammonia gas generated in the reactor tanks is transferred to another type of tank known as a ‘scrub tank’ as that gas is being generated. The ammonia gas is reacted with hydrochloric acid in the scrub tanks to produce ammonium chloride. That reaction occurs throughout the twelve plus hour process as the ammonia gas is being introduced into the scrub tanks. The ammonium chloride produced in the scrub tanks is the second end-product of the above described process which uses spent etchant as an ingredient.”

Spent materials “are not solid wastes when they can be shown to be recycled by being . . . [u]sed or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed” 40 C.F.R. § 261.2 (e) (1) (i) (2000). “A material is ‘used or reused’ if it is . . . [e]mployed as an ingredient (including the use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as feedstock in another process). However, *a material will not satisfy this condition if distinct components of the material are recovered as separate end products* (as when metals are recovered from metal-containing secondary materials)

. . . .” (Emphasis added.) Id., § 261.1 (c) (5) (i).

“A material is ‘reclaimed’ if it is processed to recover a usable product . . . [for example] recovery of lead values from spent batteries” Id., § 261.1 (c) (4). Even if a material is used or reused, that material will be deemed solid waste if it is “used in a manner constituting disposal, or used to produce products that are applied to the land” Id., § 261.2 (e) (2) (i).

I

The plaintiff first claims that the trial court improperly applied the standard of review in upholding the commissioner’s ruling. The plaintiff does not challenge the trial court’s statement of the standard of review in administrative appeals generally. Rather, the plaintiff argues that the trial court misapplied that standard.

“Judicial review of [an administrative agency’s] action is governed by the Uniform Administrative Procedure Act [General Statutes § 4-166 et seq. (UAPA)] . . . and the scope of that review is very restricted.” (Citation omitted.) *New Haven v. Freedom of Information Commission*, 205 Conn. 767, 773, 535 A.2d 1297 (1988). “With regard to questions of fact, it is neither the function of the trial court nor of this court to retry the case or to substitute its judgment for that of the administrative agency.” (Internal quotation marks omitted.) *Griffin Hospital v. Commission on Hospitals & Health Care*, 200 Conn. 489, 496, 512 A.2d 199, appeal dismissed, 479 U.S. 1023, 107 S. Ct. 781, 93 L. Ed. 2d 819 (1986).

The substantial evidence rule governs judicial review of administrative fact-finding under UAPA. General Statutes § 4-183 (j) (5) and (6). “Substantial evidence exists if the administrative record affords a substantial basis of fact from which the fact in issue can be reasonably inferred. . . . This substantial evidence standard is highly deferential and permits less judicial scrutiny than a clearly erroneous or weight of the evidence standard of review. . . . The burden is on the [plaintiff] to demonstrate that the [agency’s] factual conclusions were not supported by the weight of substantial evidence on the whole record.” (Citations omitted; internal quotation marks omitted.) *New England Cable Television Assn., Inc. v. Dept. of Public Utility Control*, 247 Conn. 95, 118, 717 A.2d 1276 (1998).

“Even as to questions of law, [t]he court’s ultimate duty is only to decide whether, in light of the evidence, the [agency] has acted unreasonably, arbitrarily, illegally, or in abuse of its discretion. . . . Conclusions of law reached by the administrative agency must stand if the court determines that they resulted from a correct application of the law to the facts found and could reasonably and logically follow from such facts.” (Internal quotation marks omitted.) *Cannata v. Dept. of Environmental Protection*, 239 Conn. 124, 139–40, 680 A.2d

1329 (1996). “Ordinarily, this court affords deference to the construction of a statute applied by the administrative agency empowered by law to carry out the statute’s purposes. . . . Cases that present pure questions of law, however, invoke a broader standard of review than is ordinarily involved in deciding whether, in light of the evidence, the agency has acted unreasonably, arbitrarily, illegally or in abuse of its discretion. . . . Furthermore, when a state agency’s determination of a question of law has not previously been subject to judicial scrutiny . . . the agency is not entitled to special deference.” (Internal quotation marks omitted.) *Connecticut Light & Power Co. v. Texas-Ohio Power, Inc.*, 243 Conn. 635, 642, 708 A.2d 202 (1998).

The plaintiff argues that, because “there was no dispute as to any . . . evidence in the record, [its petition for a declaratory ruling raised] ‘pure questions of law.’” The plaintiff claims that these legal questions with which the commissioner was presented previously have not been examined by a court,⁸ and that the trial court, instead of reviewing these legal issues de novo, improperly deferred to the commissioner’s conclusions of law. We do not agree.

In reviewing the commissioner’s factual findings that the plaintiff was extracting ammonia and copper values from its spent etchant,⁹ the trial court employed the substantial evidence rule. We conclude that the trial court properly deferred to the commissioner’s findings of fact.

Moreover, an agency’s interpretation of its own regulations is entitled to deference. “[I]t is the well established practice of this court to accord great deference to the construction given [a] statute by the agency charged with its enforcement.” (Internal quotation marks omitted.) *Griffin Hospital v. Commission on Hospitals & Health Care*, 200 Conn. 489, 496, 512 A.2d 199, appeal dismissed, 479 U.S. 1023, 107 S. Ct. 781, 93 L. Ed. 2d 819 (1986); accord *Starr v. Commissioner of Environmental Protection*, 226 Conn. 358, 372, 627 A.2d 1296 (1993). “This principle applies with even greater force to an agency’s interpretation of its own duly adopted regulations.” *Griffin Hospital v. Commission on Hospitals & Health Care*, supra, 497. When an agency has expertise in a given area and a history of determining factual and legal questions similar to those at issue, its interpretation is granted deference by the courts. See, e.g., *Anderson v. Ludgin*, 175 Conn. 545, 555–56, 400 A.2d 712 (1978); *New Haven v. United Illuminating Co.*, 168 Conn. 478, 493, 362 A.2d 785 (1975).

We are not persuaded by the plaintiff’s argument that the commissioner’s application of the regulations at issue in the present case presents pure questions of law. Rather, the application of those regulations requires a technical, case-by-case review; see, e.g., Hazardous Waste Management System; Definition of Solid Waste,

supra, 50 Fed. Reg. 619 (“the same material can be a waste if it is recycled in certain ways, but would not be a waste if it is recycled in other ways”); that “is precisely the type of situation that calls for agency expertise.” *Cannata v. Dept. of Environmental Protection*, 215 Conn. 616, 627, 577 A.2d 1017 (1990) (“[w]hether the plaintiffs’ proposed activity within the stream channel encroachment lines is a placement of an ‘obstruction or encroachment’ requiring them to obtain a permit pursuant to [General Statutes] § 22a-342 and whether the plaintiffs’ proposed use of their land is an ‘agricultural or farming’ use within [General Statutes] § 22a-349 are factual determinations best left to the commissioner”).

In its memorandum of decision, the trial court correctly noted that, “[b]ecause [it is] reviewing the decision of an administrative agency, [its] review is highly deferential. . . . Ordinarily, [the trial] court affords deference to the construction of a statute applied by the administrative agency empowered by law to carry out the statute’s purposes. . . . [A]n agency’s factual and discretionary determinations are to be accorded considerable weight by the [reviewing court].” The trial court, faced with two equally plausible interpretations of the regulatory language, reasonably could have deferred to the commissioner’s construction of the regulations of the agency over which he presides. See *Starr v. Commissioner of Environmental Protection*, supra, 226 Conn. 376. Accordingly, we conclude that the trial court applied the appropriate standard in reviewing the commissioner’s ruling.

II

The plaintiff next claims that the trial court improperly upheld the commissioner’s ruling that the spent etchant is a solid waste because it is reclaimed and because it is used to produce products that are applied to land. We disagree.

A

In its petition for a declaratory ruling and before the trial court, the plaintiff argued that its recycling process constitutes a reuse of spent etchant; therefore, the plaintiff argued, the spent etchant is not a solid waste and, as such, is exempt from regulation as a hazardous waste. The plaintiff argued that, because the two end products of its recycling process, namely, copper oxide and ammonium chloride, are not present in the spent etchant, those products are not “distinct components . . . [that] are recovered as separate end products” during that process; 40 C.F.R. § 261.1 (c) (5) (i) (2000); and, therefore, its process is manufacturing, not waste management.¹⁰ The plaintiff renews this argument on appeal.

In order to better understand the plaintiff’s argument, it is necessary to explain its recycling process in greater

detail. The chemical formula for spent Ultra Etch is $\text{Cu}(\text{NH}_3)_4\text{Cl}_2$. The spent etchant is put into a reactor tank and sodium hydroxide, or NaOH , and heat, are added. The resulting reaction produces four substances: anhydrous ammonia gas, or NH_3 ; sodium chloride, or NaCl ; copper oxide, or CuO ; and water, or H_2O . The water and sodium chloride are pumped out of the tank at the end of the reaction cycle, processed and ultimately disposed of through a wastewater treatment system. Although some copper oxide precipitates out of the reactor tank during the reaction cycle, the copper oxide remaining at the end of the reaction cycle is allowed to settle. Thereafter, that copper oxide is washed, pressed and then either sold or used in the plaintiff's products, including copper sulfate, copper chloride and electroless and electrolytic copper plating materials. During the reaction cycle, the anhydrous ammonia gas that is produced in the reactor tank is transferred to a scrub tank, where it is combined with water and hydrochloric acid, or HCl , to produce ammonium chloride, or NH_4Cl .

In its petition, the plaintiff noted that, although copper, or Cu , is present in the spent etchant, copper oxide, or CuO , is not. Similarly, the plaintiff argued that, although ammonium chloride ions are present in the spent etchant, or $\text{Cu}(\text{NH}_3)_4\text{Cl}_2$, the anhydrous ammonia gas, or NH_3 , that is transferred to the scrub tank is different than the ammonium chloride, or $(\text{NH}_3)_4\text{Cl}_2$, that is present in the spent etchant, which, in turn, is different from the ammonium chloride, or NH_4Cl , produced in the scrub tank.¹¹ Thus, the plaintiff argued that neither copper oxide, nor anhydrous ammonia gas or ammonium chloride is recovered from spent etchant; rather, those substances are manufactured using spent etchant as an ingredient.

The commissioner determined that the plaintiff is not reusing spent etchant because "distinct components of [spent etchant, namely, copper and ammonia values] are recovered as separate end products" 40 C.F.R. § 261.1 (c) (5) (i) (2000) (material is not reused "if distinct components of the material are recovered as separate end products"). The commissioner reasoned that "regardless of the chemical changes that may take place or the varying chemical forms in which a material may appear, the definition of 'used or reused' requires an examination of whether material values are being extracted or recovered from the material in question. If such extraction or recovery is taking place, and products are being produced from the material values being extracted, the materials do not meet the definition of used or reused. Since [the plaintiff] is extracting copper and ammonia values from spent etchant to recover copper and ammonia based products, it is not using or reusing spent etchant; rather, it is reclaiming spent etchant."

The commissioner also determined that, because the plaintiff processes spent etchant to extract usable products, namely, copper and ammonia values, the recycling process constitutes reclamation of spent etchant, not the manufacture of new products using spent etchant as an ingredient; see 40 C.F.R. § 261.1 (c) (4) (2000) (“[a] material is ‘reclaimed’ if it is processed to recover a usable product”); and, therefore, the spent etchant does not qualify under the use/reuse exception. See 40 C.F.R. § 261.2 (e) (1) (i) (2000) (material is not solid waste if “[u]sed or reused as ingredients in an industrial process to make a product, *provided the materials are not being reclaimed*’ [emphasis added]).

The trial court agreed with the commissioner’s determination that the plaintiff was reclaiming copper and ammonia values during its recycling process. The court concluded that the commissioner’s ruling was “supported by an analysis of the entire process which supports the determination that what [the plaintiff] is primarily doing is waste management not . . . manufactur[ing]”

We conclude that the trial court properly upheld the commissioner’s determination that, because the plaintiff recovers material values from its spent etchant as separate end products, the plaintiff is engaged in waste management. The plaintiff acknowledges that both ammonia ions¹² and copper ions are present in its spent etchant. Thus, we agree with the trial court’s determination that substantial evidence supports the commissioner’s finding that the plaintiff’s process extracts those copper and ammonia values as end products.¹³

Furthermore, the commissioner’s determination that the plaintiff is reclaiming its spent etchant is supported by the purpose of the distinction between use or reuse and reclamation, which is to distinguish processes in which the material is being recycled as a form of waste management from those in which recycled materials function as substitute raw materials or feedstocks for industrial processes. See, e.g., Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 637–38 (“When secondary materials are directly used . . . they function as raw materials . . . in normal commercial applications. . . . The [a]gency accordingly has interpreted its jurisdiction so as to avoid regulating secondary materials recycled in ways that most closely resemble normal production processes.”); Hazardous Waste Management System: General; Identification and Listing of Hazardous Waste; Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities; and Standards for the Management of Specific Wastes and Management Standards for Specific Types of Facilities (Hazardous Waste Management Sys-

tem), 48 Fed. Reg. 14,472, 14,488 (April 4, 1983) (“[t]he [a]gency is reluctant to read the statute as regulating actual manufacturing processes”); *id.*, 14,477 (“Not all recycling activities potentially involve waste management. The definition [of solid waste] excludes from the concept of reclamation three activities involving direct use or reuse of secondary materials. These activities ordinarily will not be considered to involve waste management.”). We conclude that the trial court properly concluded that, because the plaintiff’s process does not reuse spent etchant, the plaintiff is managing waste, not manufacturing products.

The plaintiff’s argument rests upon the assumption that, in order for a distinct component or material value of a spent material to be reclaimed as a separate end product, the distinct component or material value must be in the same chemical form as the end product. The plaintiff does not cite to anything in the regulations or their history that compels such an interpretation.¹⁴ Indeed, the history of the regulations reveals that a claimed use or reuse of spent materials carefully must be examined to determine whether the process through which the spent materials are claimed to be used or reused is more akin to waste management than to manufacturing.¹⁵ In its proposed rules, the agency stated that it was “somewhat concerned that [with respect to the use of materials as ingredients to manufacture products] the propos[ed] [rule] leaves unregulated certain processes that could constitute waste management. Processes where secondary materials are the predominant (or even the sole) ingredient are conceivable examples, particularly where the process operator is paid to take the materials. In addition, processes using spent materials may be more logical candidates for regulation because spent materials (having already fulfilled their original use) are more inherently waste-like than by-products and sludges.” Hazardous Waste Management System, *supra*, 48 Fed. Reg. 14,488.

The plaintiff argues that the commissioner already has determined that a comparable process used by Old Bridge Chemicals, Inc., of New Jersey (Old Bridge) constitutes a reuse of spent etchant. Although we agree that an agency’s decision must not be “arbitrary or capricious”; General Statutes § 4-183 (j) (6); the plaintiff has not claimed in this appeal that the commissioner’s ruling was arbitrary. We note that the Old Bridge process, although similar to the plaintiff’s recycling process, is not precisely the same and, therefore, may be distinguishable under the regulations. Moreover, in his declaratory ruling, the commissioner stated that the exemption granted to Old Bridge was being reconsidered.

The plaintiff also argues that the commissioner’s analysis incorrectly relied on the definition of the term “reclaimed” in 40 C.F.R. § 261.1 (c) (4) (2000), which

provides in relevant part that “[a] material is ‘reclaimed’ if it is processed to recover a usable product, or if it is regenerated. . . .”¹⁶ The plaintiff maintains that the commissioner’s analysis should instead focus on the use/reuse exception found in 40 C.F.R. § 261.1 (c) (5) (2000), which provides in relevant part: “A material is ‘used or reused’ if it is . . . (i) [e]mployed as an ingredient . . . in an industrial process to make a product However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products” The plaintiff claims that, once it is established that a spent material is being employed as an ingredient in an industrial process to make a product, it is eligible under the use/reuse exception unless material values or distinct components of that spent material are recovered as separate end products.¹⁷

Although this argument finds some support in the history of the regulations, it is unavailing to the plaintiff. The use/reuse exception originally was proposed as an exception to the definition of reclamation. See Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 633, 638; Hazardous Waste Management System, *supra*, 48 Fed. Reg. 14,487. The final rule was redrafted so that “[40 C.F.R.] § 261.2 (e) (1) indicates explicitly which secondary materials used/reused in particular ways are not solid wastes.” Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 638; see also *id.*, 633 (“As a matter of drafting, we have reorganized this provision so that the definition of reclamation is found in [40 C.F.R.] § 261.1. The exceptions for direct use recycling are contained in a separate provision ([40 C.F.R.] § 261.2 [e]) indicating when secondary materials that are to be recycled are not solid wastes.”).

In addition, the proposed and final rules consistently provide that the distinction between a use or reuse and reclamation hinges on whether distinct components of the recycled material are recovered as separate end products. 40 C.F.R. § 261.1 (c) (5) (i) (2000); Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 638 (“when a *component* of the material is recovered as an *end product*, the material is being reclaimed, not used” [emphasis added]); Hazardous Waste Management System, *supra*, 48 Fed. Reg. 14,487 (“[Certain] types of activity involving the use or reuse of spent materials . . . do not constitute reclamation . . . [one being the use or reuse of] materials as ingredients to make new products, without *distinct components* of the materials being recovered as *end-products*. . . . This exception does not apply when the spent material . . . is itself recovered or when its contained *material values* are recovered as an *end-product*.” [Emphasis added.]). The commentary to the final rule provides that, in determining whether a material qualifies for the use/reuse exemption, the distinction is

between “situations where *material values* in a spent material . . . are recovered as an end-product of a process (as in metal recovery from secondary materials) as opposed to situations where these secondary materials are used as ingredients to make new products without distinct components of the materials being recovered as end-products. The former situation is reclamation; the latter is a type of direct use that usually is not considered to constitute waste management.” (Emphasis added.) Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 633; see also *id.*, 637 (“secondary materials that are used as ingredients to make new products [are] not solid wastes provided that *distinct components* [are] not recovered (i.e., reclaimed) as *end products*” [emphasis added]).

Even if we assume that the plaintiff is correct, however, the plaintiff cannot prevail on its claim inasmuch as we have concluded that the trial court properly upheld the commissioner’s determination that the plaintiff is recovering distinct components of spent etchant as separate end products. Accordingly, we conclude that the trial court properly upheld the commissioner’s determination that, because the plaintiff’s recycling process is not a reuse of spent etchant, that process constitutes waste management and, therefore, that the spent etchant must be managed as a hazardous waste.

B

The plaintiff also argues that the trial court improperly upheld the commissioner’s determination that the spent etchant is a solid waste because it is “used to produce products that are applied to the land” 40 C.F.R. § 261.2 (e) (2) (i) (2000). We disagree.

The commissioner had sought from the plaintiff a list of products produced from the materials recovered from the spent etchant, namely, copper oxide and ammonium chloride. The plaintiff presented evidence that it had sold copper oxide to a fungicide manufacturer and that it sells copper oxide to a firm that manufactures wood preservatives. The plaintiff, however, did not specify how those manufacturers use the copper oxide. The commissioner determined that, because the copper oxide that the plaintiff had sold potentially was being incorporated into products that are applied to the land—fungicide and wood preservative—the plaintiff was unable to establish that its spent etchant was exempt from regulation as a hazardous waste.

The trial court properly noted that “[p]ursuant to . . . 40 C.F.R. § 261.2 (e) (2) the use/reuse exemption is not applicable to materials that are applied to the land. Spent materials used to produce products that are applied to the land are solid waste even if they might otherwise have been exempted under the use/reuse rule.” The court concluded that “[t]here [was] sufficient evidence in the record to show that the copper

oxide is incorporated in products, such as fungicide or wood preservative, [that are] applied to the land.” In so concluding, the court stated that “[t]he factual basis for the [commissioner’s] decision that the spent etchant was used to produce products applied to the land was the [plaintiff’s] petition which stated that it sold copper oxide for use as an ingredient to manufacture products such as fungicide. [The plaintiff’s] further submissions¹⁸ indicate that it no longer sold copper oxide to the fungicide manufacturer, but offered it to a manufacturer of wood preservatives. . . . The declaratory ruling found that fungicides are used to destroy fungi and in the [commissioner’s] experience are often sprayed or dusted onto the land.” (Internal quotation marks omitted.)

Subsection (e) of § 261.2, title 40, of the Code of Federal Regulations provides in relevant part: “(2) The following materials are solid wastes, even if the recycling involves use, reuse, or return to the original process . . . (i) Materials . . . used to produce products that are applied to land” The plaintiff argues that the material at issue in this case, namely, spent etchant, is not used to produce products, such as fungicide and wood preservative, that are applied to the land; rather, copper oxide—a commercially available product—is the material used to produce those products.

The final rule provides an exemption from regulation for certain “hazardous waste-derived products.” Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 646. The commentary to the final rule provides that “products that contain hazardous wastes, which wastes have undergone a chemical reaction so as to become inseparable by physical means, are not presently subject to . . . regulation when they are used in a manner constituting disposal.” *Id.* The commentary explains that “[t]he waste-derived products for which we are deferring regulation are those where the hazardous wastes have undergone chemical bonding, so that they are chemically transformed.” *Id.* The plaintiff argues that, because fungicide and wood preservatives are waste derived products (i.e., they use as an ingredient copper oxide recovered from spent etchant) that are exempt from regulation, the waste from which these products are derived, namely, spent etchant, also is exempt.

Even if we assume that fungicide and wood preservatives are waste derived products that would be exempt from regulation, that does not mean that the *spent etchant* also is exempt. Indeed, the regulations provide that “[t]he final rule . . . regulates immediately all transport and storage of these wastes [such as spent etchant] before the time they are actually processed into waste-derived products to be placed on the land. . . . For purposes of transportation and storage, therefore, these wastes are regulated like all other hazardous

wastes prior to land disposal.” *Id.*, 647. Although the plaintiff’s reading of 40 C.F.R. § 261.2 (e) (2) (i) is plausible, the commissioner’s construction is equally, if not more, plausible. Therefore, the trial court properly deferred to the commissioner’s interpretation.¹⁹ See, e.g., *Starr v. Commissioner of Environmental Protection*, supra, 226 Conn. 376. Accordingly, we conclude that the trial court properly upheld the commissioner’s determination that, even if the plaintiff was reusing spent etchant, that spent etchant is a solid waste inasmuch as it is used to produce products that are applied to the land.²⁰

III

The plaintiff next claims that the trial court improperly upheld the commissioner’s determination that spent etchant is subject to regulation under § 22a-454. We disagree.

Section 22a-454 provides in relevant part: “(a) No person shall engage in the business of collecting, storing or treating . . . chemical liquids or hazardous wastes . . . nor shall any person . . . dispose of . . . chemical liquids or waste solid, liquid or gaseous products or hazardous wastes without a permit from the commissioner. . . .” The term “[c]hemical liquids’ ” is defined as “any chemical, chemical solution or chemical mixture in liquid form” General Statutes § 22a-448 (1). In 1994, the commissioner issued to the plaintiff a permit pursuant to § 22a-454 that regulates its recycling of spent etchant.

The plaintiff argued in its petition for a declaratory ruling that § 22a-454 (a) applies only to materials that are solid wastes under the applicable regulations and that, because its spent etchant is not a solid waste based on the provisions of 40 C.F.R. § 261.2 (e) (1), the plaintiff does not need a permit under § 22a-454 to dispose of spent etchant through recycling.

The commissioner rejected this argument, concluding that the spent etchant is a “chemical liquid” as that term is used in §§ 22a-454 (a) and 22a-448 (1). The trial court agreed with the commissioner’s conclusion, reasoning that “[t]here is simply no basis in law for the claim that a chemical liquid such as spent etchant even if found not to be a solid waste . . . would be exempted from regulation under § 22a-454. The history of this regulation predating the [act] by years and its expansive language are inconsistent with the construction advocated by the plaintiff The record is replete with evidence that spent etchant is a ‘chemical liquid’ and thus subject to the provisions of . . . § 22a-454, whether or not it is a solid waste.”

We agree with the trial court that the commissioner properly concluded that the plaintiff’s spent etchant is subject to regulation under § 22a-454. The plaintiff’s argument hinges on its interpretation of § 22a-454 (a)

that the legislature intended that section to apply only to “wastes,” and more particularly, only those materials that are defined as solid wastes under subtitle C of the act, 42 U.S.C. § 6921 et seq. This argument is undermined by the language of § 22a-454, which lists chemical liquids as a regulated substance, the disposal of which requires a permit. The term “[c]hemical liquids” is defined as “any chemical, chemical solution or chemical mixture in liquid form” General Statutes § 22a-448 (1). “[I]f the language of a statute is plain and unambiguous, we need look no further than the words themselves because we assume that the language expresses the legislature’s intent.” (Internal quotation marks omitted.) *Office of Consumer Counsel v. Dept. of Public Utility Control*, 246 Conn. 18, 29, 716 A.2d 78 (1998). Furthermore, because § 22a-454 is an environmental statute, it must be liberally construed to accomplish its purpose. *Starr v. Commissioner of Environmental Protection*, supra, 226 Conn. 382. The plaintiff does not dispute that its spent etchant is a chemical liquid as defined in § 22a-448 (1), and that it stores and then treats or disposes of spent etchant by recycling it.

In support of its interpretation that § 22a-454 applies only to wastes regulated under subtitle C of the act, the plaintiff relies on an informal guidance document issued by the bureau of waste management of the Connecticut department of environmental protection that defines various wastes that are regulated under § 22a-454. That document defines “Waste Chemical Liquids” as “any wastes that are liquid, free flowing and/or contains [sic] free draining liquids *and* are toxic, hazardous to handle and/or may cause contamination of ground and/or surface water if improperly managed. These wastes may include, but are not limited to latex and solvent paint wastes, grinding wastes, waste sludges, antifreeze wastes, and glycol solutions.” (Emphasis in original.) Bureau of Waste Management, Connecticut Department of Environmental Protection, Non-RCRA Hazardous Waste (Connecticut Regulated Wastes) (January 25, 1995) p. 2.

We fail to see how this definition of waste chemical liquids furthers the plaintiff’s argument. That definition is one in a list of definitions of “Connecticut Regulated Wastes” that are specifically identified as typically *not* regulated under state regulations implementing subtitle C of the act. The informal guidance document provides that Connecticut regulated wastes are “neither characteristically [i.e., ignitable, corrosive, reactive or toxic] nor listed . . . hazardous wastes [under the act] as per [part 261 of title 40 of the Code of Federal Regulations], but a facility permit is required by [§] 22a-454 . . . for a person engaged in the business of storage, treating, disposing or transporting them.” This language, instead of supporting the plaintiff’s claim, is consistent with the commissioner’s conclusion that, although a material is not defined as a solid waste under the regulations,

it still may be regulated under § 22a-454.

Furthermore, two ingredients of spent etchant are *listed* as toxic under 40 C.F.R. § 372.65, namely, ammonium chloride and ammonium hydroxide. Even if we assume that § 22a-454 only applies to wastes, and that the plaintiff's spent etchant is not a solid waste subject to regulation under part 261 of title 40 of the Code of Federal Regulations, the spent etchant would still be regulated as a "non-RCRA" hazardous waste under the definition of waste chemical liquids set forth in the informal guidance document. Accordingly, we conclude that the trial court properly upheld the commissioner's determination that the plaintiff's processing of spent etchant is subject to regulation under § 22a-454.

The judgment is affirmed.

In this opinion the other justices concurred.

¹ General Statutes § 4-176 (e) provides: "Within sixty days after receipt of a petition for a declaratory ruling, an agency in writing shall: (1) Issue a ruling declaring the validity of a regulation or the applicability of the provision of the general statutes, the regulation, or the final decision in question to the specified circumstances, (2) order the matter set for specified proceedings, (3) agree to issue a declaratory ruling by a specified date, (4) decide not to issue a declaratory ruling and initiate regulation-making proceedings, under section 4-168, on the subject, or (5) decide not to issue a declaratory ruling, stating the reasons for its action."

² General Statutes § 4-183 provides in relevant part: "(a) A person who has exhausted all administrative remedies available within the agency and who is aggrieved by a final decision may appeal to the Superior Court as provided in this section. The filing of a petition for reconsideration is not a prerequisite to the filing of such an appeal. . . ."

³ General Statutes § 22a-454 (a) provides in relevant part: "No person shall engage in the business of collecting, storing or treating waste oil or petroleum or chemical liquids or hazardous wastes . . . nor shall any person . . . dispose of waste oil or petroleum or chemical liquids or waste solid, liquid or gaseous products or hazardous wastes without a permit from the commissioner. Such permit shall be in writing, shall contain such terms and conditions as the commissioner deems necessary and shall be valid for a fixed term not to exceed five years. No permit shall be granted, renewed or transferred unless the commissioner is satisfied that the activities of the permittee will not result in pollution, contamination, emergency or a violation of any regulation adopted under sections 22a-30, 22a-39, 22a-116, 22a-347, 22a-377, 22a-430, 22a-449, 22a-451 and 22a-462. . . . For the purposes of this section, collecting, storing, or treating of waste oil, petroleum or chemical liquids or hazardous waste shall mean such activities when engaged in by a person whose principal business is the management of such wastes."

⁴ "Section 3006 of the Resource Conservation and Recovery Act . . . allows the [agency] to authorize State hazardous waste programs to operate in the state in lieu of the Federal hazardous waste program. To qualify for final authorization, a State's program must (1) be 'equivalent' to the Federal program, (2) be consistent with the Federal program and other State programs, and (3) provide for adequate enforcement . . ." (Citation omitted.) Connecticut; Final Authorization of State Hazardous Waste Management Program, 55 Fed. Reg. 51,707 (December 17, 1990); see 42 U.S.C. § 6926 (b) (1994).

⁵ Where a federal regulation is incorporated by reference into a state regulation, we cite to the federal regulation instead of the state regulation for ease of reference.

⁶ The plaintiff's petition, as characterized by the trial court in its memorandum of decision, sought the following determinations by the commissioner: "1. The spent etchant which [the plaintiff] uses as an ingredient in a manufacturing process to make new end-products at its Waterbury, Connecticut facility is not a 'solid waste' pursuant to the provisions of 40 C.F.R. § 261.2 (e) (1) (i).

"2. Where the spent etchant used by [the plaintiff] is not a 'solid waste' pursuant to the provisions of 40 C.F.R. § 261.2 (e) (1) (i), it is not necessary

to manage that material as a hazardous waste while it is being transported to, stored at and used in a manufacturing process at [the plaintiff's] Waterbury, Connecticut facility.

"3. Where the spent etchant used by [the plaintiff] is not a 'solid waste' pursuant to the provisions of 40 C.F.R. § 261.2 (e) (1) (i), it is not necessary to manage that material as a Connecticut Regulated Waste under . . . § 22a-454 while it is being transported to, stored at and used in a manufacturing process at [the plaintiff's] Waterbury, Connecticut facility.

"4. [The plaintiff's] customers are not required to manage the spent etchant which they send to [the plaintiff] as either a hazardous waste or a Connecticut Regulated Waste while it is being stored pending shipment to [the plaintiff's] Waterbury facility because the spent etchant is not a 'solid waste' pursuant to the provisions of 40 C.F.R. § 261.2 (e) (1) (i)."

⁷ We cite to the current version of the applicable federal regulation throughout this opinion unless the version of the applicable regulation existing when the commissioner issued his declaratory ruling differed in material respects from the current version.

⁸ We note that, although portions of Connecticut's hazardous waste regulations have been judicially reviewed; see *Technical Coatings Laboratory, Inc. v. Keeney*, Superior Court, judicial district of Hartford-New Britain at Hartford, Docket No. CV92 051 63 12 (January 3, 1994); the particular issues raised in the plaintiff's petition have not. See *id.* (plaintiff in *Technical Coatings Laboratory, Inc.* conceded that process involved reclamation).

⁹ In the declaratory ruling, the commissioner found that the plaintiff "extracts dissolved copper from spent etchant in the form of copper oxide which it in turn uses to produce other copper-based products," and that the plaintiff "also extracts . . . ammonia . . . from spent etchant." We agree with the trial court's determination that those findings were supported by substantial evidence in the record.

¹⁰ In addition to the exception for materials used as ingredients in a manufacturing process, a process does not involve waste management when the materials involved in the process are used or reused as an effective substitute for commercial products, or if the materials are returned to the original primary production process without first being reclaimed. Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 619-20. The plaintiff does not claim that its recycling process falls within either of these two provisions.

¹¹ In its brief, the plaintiff asserts that "[t]he formula for the ammonium chloride in the scrub tanks is NH_4Cl , while the similarly named component of spent etchant (i.e., the 'ammonium chloride' of 'cupric ammonium chloride') is $(\text{NH}_3)_4\text{Cl}_2$. As their formulas show, those materials are not the same chemical substance."

¹² The plaintiff maintains that ammonium chloride, not ammonia, is the end product of its recycling process. The plaintiff argues that the anhydrous ammonia gas that is produced in the reactor tank is not an end product because viewing that gas as an end product severs the recycling process midstream. Instead, the plaintiff claims that an end product is identified at the end of the recycling process, which, according to the plaintiff, occurs in the scrub tank. We question the propriety of ending the analysis at that point. It seems that a conceivable end product of the plaintiff's recycling process is fresh etchant, a primary ingredient of which is the ammonium chloride generated in the scrub tank. The plaintiff has provided no information regarding this final step in its recycling process. We conclude, however, that, even if we were to assume that ammonium chloride is the relevant end product, because ammonium chloride ions are present in the spent etchant, the recycling process extracts those ammonium chloride values as an end product.

Moreover, the plaintiff's analysis is inconsistent because it looks at two different stages during the recycling process. At the same time that the plaintiff claims that the anhydrous ammonia gas is not an end product because that gas is generated *before* the stage of the process involving the scrub tank, it claims that ammonium chloride is not reclaimed because it is generated *after* that stage of the process.

¹³ The regulations use the terms "distinct components" and "material values" interchangeably. See, e.g., Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 633 ("situations where *material values* in a spent material . . . are recovered as an end-product of a process [are reclamation]" [emphasis added]); Hazardous Waste Management System: General; Identification and Listing of Hazardous Waste; Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage,

and Disposal Facilities; Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities; and Standards for the Management of Specific Wastes and Management Standards for Specific Types of Facilities, 48 Fed. Reg. 14,472, 14,487 (April 4, 1983) (“using materials as ingredients to make new products, without *distinct components* of the materials being recovered as *end-products* [is not reclamation]. . . . This exception does not apply . . . when [the] contained *material values* are recovered as an *end-product*.” [Emphasis added.]).

¹⁴ The plaintiff argues that a guidance manual prepared for the agency by a private firm supports its contention that neither ammonia nor copper is a distinct component recovered from spent etchant. See generally Industrial Economics, Inc., Guidance Manual on the RCRA Regulation of Recycled Hazardous Wastes (March, 1986) pp. 2-160 through 2-161. That guidance manual provides the following hypothetical: “A spent hydrofluoric acid etching solution from metallurgical industries (a spent material exhibiting the characteristic of corrosivity) is reacted with potassium hydroxide to produce an impure potassium fluoride solution, which goes through filtration and evaporation to purify the potassium fluoride, which is sold for use as a preservative.” *Id.*, p. 2-160. The guidance manual then provides that “[t]he etching solution is directly reused without intermediate reclamation as an ingredient in making potassium fluoride. The activity is not classified as reclamation because potassium fluoride does not exist in the original substance and thus is not recovered from the substance.” *Id.*, p. 2-161. The commissioner concluded that this example was not persuasive because it lacked specific information about the material and the process, and that the guidance manual is not binding authority. Inasmuch as the guidance manual provides that the agency “retains final authority to judge the regulatory status of any recycling practice”; *id.*, p. 1-2; and in light of the unique nature of the plaintiff’s recycling process, we agree with the trial court that it was within the commissioner’s discretion to credit or discredit the guidance manual.

¹⁵ For example, certain “sham” recycling processes, under which a material ostensibly is used as an ingredient in an industrial process to make a product, nevertheless are classified as waste management. See Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 638. “[T]he sham versus legitimate recycling inquiry focuses on the purpose or function the [material] allegedly serves in the production process. If the [material] does not in fact serve its alleged function in the process, then sham recycling is occurring.” *United States v. Marine Shale Processors*, *supra*, 81 F.3d 1365. Simply stated, “[a] substance cannot be an ingredient in making something if it is merely along for the ride.” *Id.*, 1366.

¹⁶ Regeneration occurs when “[w]astes are . . . processed to remove contaminants in a way that restores them to their usable condition.” Hazardous Waste Management System; Definition of Solid Waste, *supra*, 50 Fed. Reg. 633. The commissioner did not pursue the issue of whether the plaintiff is regenerating its spent etchant and that issue was not raised on appeal.

¹⁷ In addition, the regulations provide that, even if a material is used or reused, it will be deemed a solid waste when it is used in certain ways or accumulated speculatively. 40 C.F.R. § 261.2 (e) (2) (2000).

¹⁸ On May 28, 1998, the commissioner requested that the plaintiff provide more information about the uses of the copper oxide and ammonium chloride that were produced during the plaintiff’s recycling process. The plaintiff responded in a letter dated July 7, 1998, that it no longer sold copper oxide to a fungicide manufacturer, but, instead, sold that material to a manufacturer of wood preservatives.

¹⁹ The commissioner’s interpretation is supported by the agency’s guidance manual. See generally Industrial Economics, Inc., Guidance Manual on the RCRA Regulation of Recycled Hazardous Wastes (March, 1986) pp. 2-3 through 2-4; footnote 14 of this opinion. In the section addressing the uses of spent materials constituting disposal, the guidance manual provides the following hypothetical: “An acid etching solution (a spent material exhibiting the characteristic of corrosivity) is reclaimed for its zinc content. The zinc (which does not exhibit any hazardous waste characteristics) is then used in a fertilizer that also does not exhibit any hazardous waste characteristics. The recycler uses the fertilizer on his own land but does not market it to the general public.” *Id.*, p. 2-3. The guidance manual concludes that, “[b]ecause material with value—the zinc—is recovered from the etching solution, the activity is classified as reclamation. However, the reclamation step is part of a recycling process that ends with the zinc being placed on the ground. Because the ultimate step is use constituting disposal, the etching solution

is a solid waste and is subject to . . . [s]ubtitle C regulation.” Id., p. 2-4.

²⁰ The plaintiff also argues that the commissioner improperly required it to shoulder the burden of proving that none of the buyers of its copper oxide applies it to the land alone or in other products. The plaintiff bears the burden of substantiating its claim of exemption from regulation. See 40 C.F.R. § 261.2 (f) (2000). The plaintiff argues that it met its burden because it introduced evidence of the *intended* uses of the copper oxide. We disagree. The regulation applies to materials that *are* applied, as opposed to materials that are *intended to be* applied, to land. Id., § 261.2 (e) (2) (i). Substantial evidence in the record supports the commissioner’s determination that copper oxide is used in products, such as fungicides, that are applied to land.