United States General Accounting Office

GAO

Report to Ranking Democratic Member, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

April 2004

BIOBASED PRODUCTS

Improved USDA Management Would Help Agencies Comply with Farm Bill Purchasing Requirements

GAO-04-437

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GAO Highlights

Highlights of GAO-04-437, a report to the Ranking Democratic Member, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

Why GAO Did This Study

The federal government spends more than $230 billion annually for products and services to conduct its operations. Through its purchasing decisions, it has the opportunity to affirm its policies and goals, including those related to purchases of biobased products, as set out in the 2002 farm bill. A biobased product is a commercial or industrial product, other than food or feed that is composed of, in whole or part, biological products, renewable domestic agricultural materials, or forestry materials. GAO examined (1) actions the U.S. Department of Agriculture (USDA) and other agencies have taken to carry out farm bill requirements for purchasing biobased products, (2) additional actions that may be needed to implement the requirements, and (3) views of stakeholders on the need for and costs of testing biobased products. GAO interviewed officials from USDA, major procuring agencies, testing entities, interested associations, and 15 manufacturers of biobased products.

What GAO Recommends

To ensure USDA's timely implementation of the farm bill biobased purchasing requirements, USDA should (1) execute a management plan for completing the work, (2) identify and allocate the staff and financial resources needed, and (3) clearly state the priority for the work's completion. USDA disagreed with the need for a management plan, but indicated it will draw on our review results and recommendations in future work.

www.gao.gov/cgi-bin/getrpt?GAO-04-437.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Lawrence J. Dyckman at (202) 512-3841 or dyckmanl@gao.gov.

What GAO Found

USDA and other federal agencies' actions to implement the farm bill requirements for purchasing biobased products have been limited. USDA issued proposed procurement guidelines in December 2003—more than 1 year past the deadline for final guidelines; however, these guidelines do not fully address the farm bill requirements for designating items for purchase and recommending procurement practices. USDA expects to issue final guidelines by April 2004 and a blueprint for the model procurement program by September 2004; but it anticipates that designation of existing items will take years to complete, possibly until 2010. In addition, new items will enter the market requiring further designations. Meanwhile, purchasing agencies do not yet have a basis for planning their own procurement programs and, as a result, have made only limited purchases of biobased products.

USDA could accelerate its implementation of the farm bill requirements by developing a comprehensive management plan for this work and by making the work a higher priority. The lack of a management plan describing the tasks, milestones, resources, coordination, and reporting needed to complete this work has slowed USDA in issuing the procurement guidelines. For example, USDA developed a list of milestones only after GAO requested such a list; even then, this list was informal, primarily reflecting the thinking of a few officials. Without a plan, USDA will find it difficult to set priorities, use resources efficiently, measure progress, and provide agency management a means to monitor this progress. According to stakeholders, USDA should make this work a higher priority to speed its completion. Without a sense of priority, USDA's efforts to fulfill farm bill requirements have not had adequate staff and financial resources.

Stakeholders GAO spoke with generally believed that USDA's proposals for testing a biobased product's content and performance are appropriate and that manufacturers should bear at least some of the costs. However, stakeholders generally questioned the need for doing life-cycle analysis of a product's long-term costs and environmental impacts.

Biobased Products Made from Soybeans, Corn, Citrus, or Other Plant Materials

Source: GAO and USDA's Agricultural Research Service.

Sample products from left to right, starting in back: (A) packing material, (B) plastic cup, (C) laundry powder, (D) lubricant, (E) cleaner and degreaser, (F) body lotion, (G) bath gel, second row, (H) ball point pen, (I) plastic cutlery, (J) packing material, and front, (K) carpet backing.

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Abbreviations

BEES	Building for Environmental and Economic Sustainability
DLA	Defense Logistics Agency
DOD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency
GSA	General Services Administration
NASA	National Aeronautics and Space Administration
NIST	National Institute of Standards and Technology
OFPP	Office of Federal Procurement Policy
OMB	Office of Management and Budget
USDA	U.S. Department of Agriculture

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GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

April 7, 2004

The Honorable Tom Harkin
Ranking Democratic Member
Committee on Agriculture,
Nutrition, and Forestry
United States Senate

Dear Senator Harkin:

The federal government spends more than $230 billion annually for products and services to conduct its operations. Through its purchasing decisions, the government has the opportunity to affirm its agricultural and environmental policies and goals, including its goals for federal purchases of biobased products. A biobased product is a commercial or industrial product, other than food or feed, that is composed in whole or significant part of biological products, renewable domestic agricultural materials (including plant, animal, and marine materials), or forestry materials. For example, these products include corn-based plastics, soybean-based lubricants, and citrus-based cleaners.[1] Competing products are generally petroleum-based. The Congress recognized the potential of the federal government's buying power in the Farm Security and Rural Investment Act of 2002 (the farm bill) and required the U.S. Department of Agriculture (USDA) to develop guidelines for the federal procurement of biobased products to create new markets for these products and to stimulate their production.[2] In particular, the biobased procurement provision is expected to promote the purchase of biobased products made from sustainable, raw agricultural materials in order to create economic opportunities in rural communities, give farmers more value for their

[1]Biobased products—also known as bioproducts—may include adhesives, building materials, carpet backing, cleaners, degreasers, insulation, fuel additives, inks, lubricants, paints, plastics, and solvents. Corn, soybeans, vegetable (plant) oils, and wood are the commodities most often used in the manufacture of biobased products.

[2]See 7 U.S.C. § 8102.

commodities, and help the environment.[3] In addition, according to proponents of the biobased procurement provision, the purchase of these biobased products may reduce the nation's dependence on imported oil, which is currently used in many commercial and industrial products. However, others note that the initial purchase cost of biobased products is usually higher than alternatives; and consumers, businesses, and government agencies are generally unfamiliar with these products.

In developing the guidelines for the procurement of biobased products, the farm bill requires USDA to take three major actions: (1) designate those items which are or can be produced with biobased products and whose procurement by agencies will meet the objectives of the legislation;[4] (2) recommend practices for the procurement of biobased products and items containing such materials and for certification by vendors of the percentage of biobased products used; and (3) provide information on the availability, relative price, performance, and environmental and public health benefits of such materials and items, and where appropriate recommend the level of biobased material to be contained in a product. In designating items, USDA is, at a minimum, to consider the availability of such items and the economic and technological feasibility of using such items, including life-cycle costs. USDA was to issue these guidelines by November 2002, or 180 days after the farm bill was enacted. In addition, within 1 year after publication of these guidelines, each federal agency is required to develop a procurement program that will assure that items composed of biobased products will be purchased to the maximum extent practicable, consistent with federal procurement law. Furthermore, the farm bill requires federal agencies purchasing items above a certain price to give preference to items composed of the highest percentage of biobased products practicable, consistent with maintaining a satisfactory

[3]Biobased products are generally considered environmentally preferable products. Such products may have a lesser or reduced adverse effect on human health and the environment when compared with competing products. For example, biobased products are manufactured from renewable biological resources and are generally biodegradable when disposed. In contrast, products made from nonrenewable fossil resources, such as petroleum, generally create more adverse environmental impacts such as air and water pollution and global warming.

[4]According to USDA, a designated "item" will consist of similar biobased products made by one or more manufacturers. For example, a designated item could be hydraulic fluid that is described by certain characteristics, such as a minimum biobased content. The biobased products associated with this item would include branded hydraulic fluids that have similar characteristics.

level of competition, unless there is a price, performance, or availability reason not to do so.[5]

The farm bill also requires USDA to establish a voluntary program for authorizing producers of biobased products to use the label "U.S.D.A. Certified Biobased Product" and requires USDA to issue criteria for determining which products qualify for this label. The labeling criteria were to be established within 1 year of farm bill enactment. In addition, the legislation requires USDA to establish a voluntary program to recognize federal agencies and private entities that use a substantial amount of biobased products. Furthermore, the farm bill authorizes USDA to use $1 million of the Commodity Credit Corporation's funds for each fiscal year—2002 through 2007—to support testing of biobased products to gather information necessary for the designation of items.[6] The legislation does not specify what testing should be done. To leverage federal funds available for biobased product testing, USDA plans to invite manufacturers or vendors of biobased products to voluntarily provide test results on the content, performance characteristics, and life-cycle costs of their products to assist USDA in amassing sufficient baseline information to designate items.[7] Subsequent to the designation of an item, USDA will allow manufacturers to self-certify that their products meet this baseline data in order to include these products in the preferred procurement program.

You asked us to evaluate the federal government's progress in implementing the biobased purchasing provisions of the farm bill. Specifically, as agreed with your office, we examined the (1) actions that USDA and other federal agencies have taken to carry out the farm bill requirements for purchasing biobased products, (2) additional actions that may be needed to enhance implementation of these requirements, and (3)

[5]Federal agencies must comply with the biobased procurement requirements for any purchase of an item costing more than $10,000 or where the quantity of such items or similar items purchased or acquired in the preceding fiscal year was $10,000 or more. The farm bill provides that an agency may decide not to procure a biobased item if the agency determines that the item (1) is not reasonably available within a reasonable period of time, (2) fails to meet the performance standards set forth in the applicable specifications or fails to meet the reasonable performance standards of the procuring agency, or (3) is available only at an unreasonable price.

[6]The Commodity Credit Corporation is a government-owned corporation within USDA.

[7]Life-cycle analysis includes the determination of the costs of producing, using, and disposing of a product as well as its environmental impact.

views of agencies, manufacturers, and testing organizations on the need for and costs of testing biobased products.

To conduct this work, we interviewed officials and reviewed the documentation they provided at USDA's Agricultural Research Service, Cooperative State Research, Education, and Extension Service, Office of Energy Policy and New Uses (New Uses office), and Office of Procurement and Property Management (Procurement office); the four agencies that account for about 85 percent of all federal procurements—the Department of Defense (DOD), the Department of Energy (DOE), the General Services Administration (GSA), and the National Aeronautics and Space Administration (NASA);[8] the Office of Management and Budget's (OMB) Office of Federal Procurement Policy (OFPP); the White House's Office of the Federal Environmental Executive; the Environmental Protection Agency (EPA); the Biobased Manufacturers Association; commodity groups such as the National Corn Growers Association and the United Soybean Board; environmental organizations such as Green Seal; consumer groups such as the Consumer's Choice Council; and two testing entities—the Department of Commerce's National Institute of Standards and Technology (NIST) and Iowa State University—that have entered into agreements with USDA to develop testing protocols for biobased products.[9] We also interviewed representatives of 15 biobased manufacturing companies and reviewed the documentation they provided. We selected these companies to provide a mix of biobased product types and raw materials used to manufacture these products. In general, our work focused on biobased products other than biofuels such as ethanol, biodiesel, and biogas because provisions to promote the production of biofuels are addressed elsewhere in the farm bill.[10] We conducted our review from May 2003 through February 2004 in accordance with generally accepted government auditing standards. Appendix I provides additional information on our scope and methodology.

[8]Two of these agencies, DOD and GSA, have dual roles—first, as procuring agencies subject to the farm bill biobased purchasing requirements and second, as major suppliers of goods and services to other federal agencies. Specifically, Defense Logistics Agency and GSA maintain central stock inventories and vendor supply lists for use by all federal agencies.

[9]The agreement between NIST and USDA is an interagency agreement. The one between Iowa State University and USDA is a cooperative agreement.

[10]Farm bill biobased procurement requirements exclude the procurement of motor vehicle fuels and electricity.

Results in Brief

While farm bill provisions for purchasing biobased products present USDA with a formidable challenge, its actions to implement the bill's requirements have fallen short and have slowed other agencies' efforts. USDA issued proposed guidelines in the *Federal Register* on December 19, 2003, more than a year later than the farm bill requirement for final guidelines. These guidelines take only limited steps toward meeting the requirements of the farm bill. While the guidelines recommend some procurement practices and practices for vendor certification, they do not identify items designated for preferred procurement, or provide information on their availability, relative price, performance, and environmental and public health benefits, as called for in the legislation. According to USDA officials, although the agency hopes to have some items designated before the end of calendar year 2004, the process for designating other items discussed in the preamble to the proposed guidelines will take years, possibly until 2010. In addition, as new biobased items are developed and enter the market, these items will also need to be designated. Regarding other biobased-related requirements of the farm bill, USDA has not yet developed a labeling or recognition program or completed its work on preferred procurement practices known as the model procurement program. USDA anticipates that the model procurement program will serve two purposes: to guide its purchases of biobased products and to assist other agencies in developing their biobased procurement programs required by the legislation. In the meantime, as the top four procuring agencies await USDA's fulfillment of these requirements—particularly the designation of items for preferred procurement—they have taken only limited steps to procure biobased products. For example, some agencies are purchasing biobased cleaners, lubricants, deicers, and/or dining ware because these products are more readily biodegradable or composted.

USDA could accelerate its implementation of the farm bill biobased purchasing requirements by developing a comprehensive management plan for how it will implement these requirements and by making its compliance with them a higher priority. The lack of a comprehensive plan, including defined tasks and milestones, identification of available staff and financial resources, and a description of how the work will be coordinated, has contributed to USDA's slow progress in issuing the biobased procurement guidelines. For example, during the course of our work we found confusion among USDA officials about when various aspects of the farm bill biobased requirements should be completed. USDA developed a list of milestones for fulfilling these requirements only after we requested such a list in May 2003; and even then, this list was informal, reflecting primarily the thinking of a few officials without

coordinating the list with another concerned office. Without a comprehensive plan, including clearly defined tasks and milestones, it is difficult to set priorities, use resources efficiently, measure progress, and provide agency management a means to monitor this progress. According to a number of officials representing USDA, other agencies, commodity groups, or manufacturers, USDA should also make its compliance with the farm bill biobased requirements a higher priority to speed the agency's completion of this work. At present, without this sense of priority, USDA has not devoted adequate resources to fulfilling these requirements. For example, the USDA office responsible for developing most aspects of the guidelines has limited staff and has not received funding for this effort. As a result, this office assigned two staff on a part-time basis to develop the guidelines. In addition, these staff have found it difficult to compete with higher-priority projects for the resources they need to develop the guidelines. For example, these staff waited several months to receive assistance from staff in another USDA office with experience in rules preparation to help them draft the *Federal Register* notice containing the proposed guidelines. Given these problems, we are recommending that USDA develop a comprehensive, written plan for completing the work to fulfill the farm bill requirements and make clear the staff and financial resources and the priority to be assigned to this work so that it is completed as expeditiously as possible.

Most federal agencies, testing organizations, commodity associations, and manufacturers we spoke with believe that testing biobased products for content and performance is generally appropriate; but they question the usefulness and costs of life-cycle analysis, which under the proposed guidelines, manufacturers would be required to provide to procurement officials upon request. According to officials from the top four purchasing agencies and the two testing organizations, content testing is important to ensure that products meet minimum biobased content specifications, and performance testing is a key factor in making purchasing decisions. These officials generally believe that manufacturers should bear the costs of these tests if they want to sell to the federal government. Biobased manufacturers generally agree with the need for these tests and with their responsibility for bearing at least some of the associated costs. However, some manufacturers said that they should be able to self-certify the biobased content of their products in lieu of content testing, based on their knowledge of their manufacturing process. Regarding life-cycle analysis, most of the agencies and manufacturers questioned the need for doing this analysis. USDA must consider life-cycle costs in designating items and has indicated that if manufacturers voluntarily provide life-cycle cost information it may help speed the designation process. Manufacturers

would only be required to provide this information under the rule as proposed if a procurement official requested the information. The agencies generally did not believe that the information would be useful for purchasing decisions because procurement staff would find the life-cycle analysis too detailed to follow and generally not useful without comparative information on petroleum-based products; USDA does not expect to provide such comparative information. Manufacturers generally agreed with this view, noting that the cost of life-cycle analysis is high—as much as $8,000 for a single product—and they questioned whether they alone should bear this cost in order to make sales to the federal government. However, USDA officials note that they believe such information would be helpful to procurement officials and that manufacturers could choose not to participate in the procurement if they did not want to provide life-cycle cost information.

In commenting on a draft of this report, USDA said the report does not present a complete and balanced view of the progress made in implementing the biobased provisions of the farm bill, adding that the report emphasizes negative interpretations without fully reflecting the progress achieved. We believe the report provides a fair and accurate description of the farm bill requirements and USDA's efforts to comply with these requirements to date. USDA also indicated that it disagrees with our recommendation on the need to develop and execute a comprehensive management plan. Specifically, USDA said that it does not believe such a plan would have accelerated its work on the proposed rule issued in December 2003, given the complexity of the issues that had to be resolved and the substantial amount of consultation across federal agencies and within USDA that was necessary. We disagree and continue to believe that USDA should develop a comprehensive, written plan that discusses, among other things, the tasks, milestones, resources, coordination, and reporting needed for completing the work necessary to fulfill the farm bill requirements. Furthermore, we believe that factors such as the complexity and breadth of the issues to be considered, the internal and external consultation necessary, and the farm bill's ambitious time frames for the completion of this work underscore the need for a comprehensive, written plan.

Regarding our recommendations that USDA clearly identify and allocate the staff and financial resources to be made available for implementing these requirements and clearly state the priority to be assigned to this work, USDA said it would draw on our review and recommendations as it approaches development of subsequent proposed rules for designating items and the labeling program. We believe that USDA should be more

proactive in this regard and make clear the staff and resources to be made available for completing this work and the priority to be assigned to the work. These matters could also be addressed in a comprehensive, written plan for completing the work.

Background

Description of Biobased Products

Biobased products are industrial and consumer goods composed wholly, or in significant part, of biological products, renewable domestic agricultural materials (including plant, animal, and marine materials), or forestry materials. These biological products and agricultural and forestry materials are generally referred to as biomass.[11] Corn, soybeans, vegetable (plant) oils, and wood[12] are the primary sources used to create biobased products. In some cases, these biobased sources are combined with other materials such as petrochemicals or minerals to manufacture the final product. For example, soybean oil is blended with other components to produce paints, toiletries, solvents, inks, and pharmaceuticals. However, some biobased products, such as corn starch adhesives, are derived entirely from the plant feedstock. Table 1 provides further information on biobased products made from plant-based resources. Appendix II lists sources for additional information on these and other biobased products.

[11]The farm bill defines "biomass" as any organic material that is available on a renewable or reoccurring basis, including agricultural crops; trees grown for energy production; wood waste and wood residues; plants (including aquatic plants and grasses); residues; fibers; animal wastes and other waste materials; and fats, oils, and greases (including recycled fats, oils, and greases).

[12]USDA's proposed guidelines exclude biobased products originating from a mature market. Therefore, wood products such as lumber or plywood made from traditionally harvested forest materials are excluded from the preferred procurement program. However, other biobased products made from wood waste or wood residues are included in the procurement program.

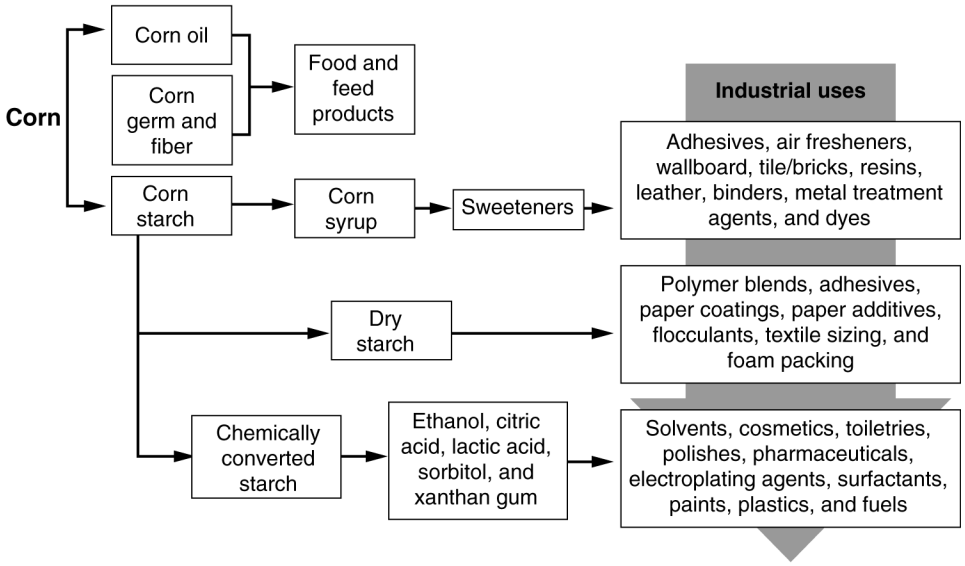
Table 1: Common Biobased Industrial and Consumer Products

Biobased source	Products
Corn	Solvents, pharmaceuticals, adhesives, starch, resins, binders, polymers, cleaners, and ethanol
Soybeans	Paints, toiletries, solvents, inks, pharmaceuticals, lubricants, biodiesel, carpet backing, and foam insulation
Vegetable oils	Surfactants in soaps and detergents, pharmaceuticals, inks, paints, resins, cosmetics, fatty acids, and lubricants
Wood	Paper, cellulose for fibers and polymers, resins, binders, adhesives, coatings, paints, inks, fatty acids, and road and roofing pitch

Source: Energetics, Incorporated for the U.S. Department of Energy, *Industrial Bioproducts: Today and Tomorrow*, July 2003.

The many derivatives of corn illustrate the diversity of products that can be obtained from a single plant-based resource. As well as an important source of food and feed, corn serves as a source for ethanol and sorbitol, industrial starches and sweetners, citric and lactic acid, and many other products. Figure 1 shows the many uses of corn, including its industrial uses.

Figure 1: Biobased Products Made from Corn Grain



Source: Energetics, Incorporated for the U.S. Department of Energy, *Industrial Bioproducts: Today and Tomorrow,* July 2003.

Importance of Biobased Products

Biomass resources are naturally abundant and renewable, unlike fossil resources.[13] According to the DOE,[14] in the continental United States, about 500 to 600 million tons of plant matter can be grown and harvested annually in addition to our food and feed needs. These abundant resources can be used in the growing biobased products industry to help meet the nation's demand for energy and products while reducing its dependence on imported oil.[15] In addition, supplementing petroleum resources with biomass can provide other important benefits such as growth in rural economies and lower emissions of greenhouse gases and pollutants.

According to DOE, the impacts of the growing biobased products industry on rural economies have yet to be quantified, but these impacts could be very positive.[16] Expanding this industry will require an increase in production and processing of biomass that could provide a boost to rural areas. For example, expansion could create new cash crops for farmers and foresters, many of whom currently face economic hardship. In essence, this growth could move the agricultural and forestry sectors beyond their traditional roles of providing food, feed, and fiber to providing feedstock for the production of fuels, power, and industrial products—making these sectors an integral part of the transportation and industrial supply chain. In addition, development of a larger biobased products industry would require new processing, distribution, and service industries. In general, these industries would likely need to be located in rural communities close to the feedstock and could potentially result in

[13]Fossil resources, such as oil, coal, and natural gas, are formed in the earth from plant and animal remains through natural processes that take millions of years. In contrast, biomass is a renewable resource that can be replenished with each new growing season.

[14]In general, our references to DOE in this section of the report can be attributed to *Industrial Bioproducts: Today and Tomorrow*, July 2003, a study prepared by Energetics, Incorporated under contract to DOE. This study was co-authored by DOE staff and draws on a number of sources, including prior studies issued by DOE.

[15]Currently, the United States imports about 65 percent of the oil it uses. According to DOE, this heavy dependence on imported oil negatively affects the U.S. trade balance and exposes our economy to potential disruptions in supply. About 16 percent of all petroleum used in the United States is used in producing industrial and consumer products. The remainder is used in producing various fuels and distillates.

[16]According to remarks made by the President in 1999, if the nation's use of biobased products, including biofuels such as ethanol and biodiesel, triples by 2010, this growth would create as much as $20 billion annually in new income for farmers and rural communities by that year. In addition, according to DOE, this growth would create about 50,000 new high technology jobs in small processing plants in rural America and up to 130,000 such jobs in biopower, bioproducts, and biofuels industries.

positive impacts on rural communities through increased investment, income, taxes, and employment opportunities.

Regarding environmental benefits, biomass is carbon-fixing, and represents a way to produce fuels, power, and products without contributing to global warming, according to DOE. Although some fossil resource inputs may be needed for the production of biomass and biobased products—such as fuel to run farm equipment, petrochemical fertilizers and pesticides to produce the biomass, and the energy needed to manufacture the biobased products made from this biomass—biomass removes carbon dioxide, a significant greenhouse gas, from the atmosphere through photosynthesis.[17] The carbon component is then fixed, or bound up, in the biomass and stays in the biobased product made from this biomass for a relatively long period of time before it is released through biological decay. According to DOE, when petroleum is used as the feedstock to manufacture many products, such as plastics, up to 25 percent of the carbon in the petroleum is lost to the atmosphere during production. However, producing these products directly from biomass reduces the carbon released during production and increases carbon-fixing plant matter.[18] In addition, as a renewable resource, biomass represents a way to recycle carbon in the environment; in contrast, the use of fossil resources results in a net release of carbon to the environment. Finally, many biobased products are readily biodegradable, meaning they can be safely placed into a landfill, composted, or recycled and do not emit hazardous volatile organic compounds or toxic air pollutants.

According to DOE, the potential for biobased products to move into entirely new and nonconventional markets is substantial. New biobased products with improved economic and/or environmental performance could make significant inroads in markets historically dominated by other

[17]Photosynthesis is the chemical process by which carbohydrates are formed in the chlorophyll-containing tissues of plants exposed to light. Carbohydrates are compounds consisting of carbon, hydrogen, and oxygen that include sugars, starches, and celluloses. In general, plants utilize carbon dioxide from the atmosphere and water from the ground in the photosynthesis process.

[18]According to DOE, the potential for reducing carbon released to the atmosphere through the substitution of biobased products for petroleum-based products is about 3.5 million metric tons of carbon equivalents annually by 2010. In essence, this switch includes substituting the energy stored in carbohydrate molecules from a renewable source (plants) for the energy stored in hydrocarbon molecules from a nonrenewable source (fossil resources such as petroleum) and would represent an increasing reliance on biology in lieu of geology to meet the nation's resource needs.

materials. For example, according to the Biobased Manufacturers Association, about 300 companies are now producing nearly 800 biobased products to replace other materials. These companies include a number of major corporations or their subsidiaries. In addition, increasing environmental consciousness has created "green consumerism"—a segment of consumers who are willing to pay more for products that are less harmful to the environment. Currently, many of those "green" products are biobased, such as corn-based plastic ware, soy-based engine lubricants, and citrus-based household cleaners.

Perhaps the greatest factor driving the growth of biobased products will be their acceptance by the public, business enterprises, and government as a solution to some of the nation's most pressing resource problems. However, according to USDA, it often takes 15 to 20 years for a new material to be accepted and adopted by industry; and consumers, businesses, and government procurement officials are often reluctant to switch from familiar products to new ones. Thus, to make significant inroads, biobased products will need to be environmentally sound and competitive with traditional products in both performance and cost. The increased use of these products will also require favorable government policies, such as continued support for biobased research and development and affirmative procurement programs that emphasize biobased purchases for government needs. In addition, their increased use will depend on the nation's continued desire to reduce its dependence on imported oil and further technology improvements that will lead to new applications and more efficient production of biobased products.

Federal Efforts to Promote the Use of Biobased Products

In the last 10 years, the federal government has taken steps to promote the use of biobased products. For example, the President issued an executive order in 1998,[19] replacing a similar executive order issued in 1993, to encourage federal agencies to buy products that are environmentally preferable and/or biobased. A subsequent executive order was issued in 1999 with the aim of tripling the nation's use of biobased fuels and products by 2010.[20] Regarding legislation, the Biomass Research and Development Act of 2000 directs DOE and USDA to closely coordinate

[19]Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition* (Sept. 14, 1998).

[20]Executive Memorandum to the Secretary of Agriculture issued with Executive Order 13134, *Developing and Promoting Biobased Products and Bioenergy*, (Aug. 12, 1999).

their research and development efforts on new technologies for the use of biomass in the production of biobased industrial products. The 2002 farm bill reauthorized the biomass act, continued funding for biomass research and development programs, and set forth federal agency purchasing requirements for biobased products. The legislative history of the farm bill states that Congress enacted the biobased provisions to energize new markets for these products and to stimulate their production.

With respect to promoting federal purchases of biobased products, the 1998 executive order required USDA to issue a Biobased Products List by March 1999.[21] Once the list was published, federal agencies were encouraged to modify their procurement programs to give consideration to biobased products. USDA published a notice in the *Federal Register* on August 13, 1999, to solicit public comments on a process for considering items for inclusion on this list and on criteria for identifying these items. As we reported in June 2001,[22] USDA expected to complete this list by fiscal year 2002—3 years later than the executive order required. However, USDA did not complete the list because the 2002 farm bill set out new biobased purchasing requirements for USDA to implement. In the meantime, although the Federal Acquisition Regulation was amended to implement the executive order,[23] federal agencies generally were waiting for USDA to publish a list before making any final decisions or modifications to their procurement programs. Whereas the executive order encouraged, but did not require, federal agencies to purchase biobased products, the farm bill generally requires that agencies give preference to these products.

[21]Executive Order 13101, § 504.

[22]U.S. General Accounting Office, *Federal Procurement: Better Guidance and Monitoring Needed to Assess Purchases of Environmentally Friendly Products*, GAO-01-430 (Washington: D.C.: June 22, 2001).

[23]The Federal Acquisition Regulation specifies rules that agencies must follow in their procurement actions. On June 6, 2000, the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council published a final rule amending the Federal Acquisition Regulation to implement Executive Order 13101. 65 Fed. Reg. 36016 (2000).

USDA Delay in Issuing Biobased Purchasing Guidelines Has Slowed Other Agencies' Efforts

While USDA was faced with an ambitious task, its actions and consequently those of other agencies to implement the farm bill requirements for purchasing biobased products have been limited. USDA issued proposed guidelines in the *Federal Register* on December 19, 2003,[24] more than a year later than the farm bill requirement for final guidelines. These guidelines take only limited steps toward meeting the requirements of the farm bill. While the guidelines recommend some procurement practices and practices for vendor certification, they do not identify items designated for preferred procurement or provide information on their availability, relative price, performance, and environmental and public health benefits. Although USDA hopes to have some items designated before the end of calendar year 2004, the process for designating other items discussed in the preamble to the proposed guidelines will take years, possibly until 2010. In addition, as new biobased products are developed and enter the market, these items will also need to be designated. Regarding other biobased-related requirements of the farm bill, USDA has not yet developed a labeling or recognition program or completed its work on preferred procurement practices known as the model procurement program to guide both its own biobased purchases and those of other agencies. In the meantime, as the top four procuring agencies await USDA's fulfillment of these requirements—particularly the designation of items for preferred procurement—they have taken only limited steps to procure biobased products. For example, some agencies are purchasing biobased cleaners, lubricants, deicers, and/or dining ware because these products are readily biodegradable and composted.

USDA's Initial Efforts Have Only Partially Met the Farm Bill Requirements

USDA's proposed guidelines only partially meet the requirements of the farm bill. While the guidelines recommend some procurement practices and practices for vendor certification, they do not identify items designated for preferred procurement or provide information on their availability, relative price, performance, and environmental and public health benefits. However, in the preamble to the guidelines, USDA discusses possible items for future designation. In the preamble, USDA has grouped these items by category, with each category consisting of one or more items and each item consisting of one or more branded biobased products. For example, "Lubricants and Functional Fluids" is one suggested category, hydraulic fluids is an item within that category subject

[24] *Guidelines for Designating Biobased Products for Federal Procurement*, 68 Fed. Reg. 70730 (proposed Dec. 19, 2003).

to designation, and "ABC Hydraulic Fluid" made by the ABC company is a branded biobased product related to that item. At present, the preamble discusses 11 categories of items and suggests a minimum biobased content for the items in these categories.[25] Appendix III provides a complete list of these categories and the items listed under each, as well as additional information on provisions of the proposed guidelines. However, the proposed guidelines do not designate any items for preferred procurement given that USDA has not yet considered the availability of these items or the economic or technological feasibility, including life-cycle costs, of these items as required by the farm bill.

Under the proposed rule, once an item is designated, manufacturers will be able to certify that their biobased products meet the characteristics of a designated item. USDA has established a biobased information Web site for this purpose. USDA anticipates that federal procuring agencies will use this Web site to obtain current information on designated items, contact information on manufacturers and vendors, and access to information on product characteristics relevant to procurement decisions. In addition, USDA anticipates that as the biobased product industry develops, new items and associated products will enter the market. Thus, new items will be designated, as necessary.

In addition, USDA has only minimally provided information on recommended procurement practices pending completion of its model procurement program. For example, the proposed guidelines discuss the tests that should be used to establish the content, performance characteristics, and/or life-cycle costs of a product, including the standards or specifications applicable. However, USDA officials said the model procurement program, when complete, will contain considerably more guidance on recommended procurement practices. USDA expects to issue the final version of these proposed guidelines by April 2004, but it does not expect to have adequate information for designating more than a

[25]USDA groups the items discussed in the preamble in the following categories: (1) adhesives; (2) construction materials and composites; (3) fibers, paper, and packaging; (4) fuel additives; (5) landscaping materials, compost, and fertilizer; (6) lubricants and functional fluids; (7) plastics; (8) paints and coatings; (9) solvents and cleaners; (10) sorbents; and (11) plant and vegetable inks. According to the preamble, the items and the indicated biobased content of items contained within the categories are based on a study conducted in 2002 by the Concurrent Technologies Corporation for USDA's Agricultural Research Service.

few items before the end of calendar year 2004.[26] USDA estimates that it will complete the overall blueprint for a comprehensive, model procurement program by September 2004, and will have many of the specific components of the program under development or tested and implemented by that time.

The process for designating items will be time consuming. For example, to designate the items discussed in the preamble to USDA's proposed guidelines, USDA will likely initiate a number of rulemakings over a period of years. According to the timeline provided by New Uses staff, this process will likely not be completed until early 2010. USDA officials noted that these rulemakings may not correspond to the 11 product categories discussed in the preamble; the agency's ability to move forward with designating individual items will depend on the availability of information needed for this purpose. As a result, a given rulemaking may address items that span two or more categories. For each rulemaking, a proposed rule would be developed and published first, followed by a 30- or 60-day comment period, the time needed to consider these comments, and then publication of the final rule.

USDA must also complete its work on its recommended procurement practices (the model procurement program), the voluntary recognition program, and the voluntary labeling program. According to USDA officials, the model procurement program serves two purposes.[27] First, it will constitute USDA's biobased procurement program. All federal agencies, including USDA, are required to develop such a program. Second, the model program will serve as a guide to other agencies in developing their own preferred procurement programs.[28] USDA officials explained that this

[26]In January 2004, USDA officials, including a New Uses official directly involved in the guidelines preparation, expressed doubt as to whether the agency can meet the anticipated issuance date—April 2004—for the final guidelines. These officials cited factors such as to the number and complexity of comments made on the proposed guidelines and the continued controversy and confusion as to what testing should be done for biobased products as reasons that may delay the final guidelines issuance.

[27]As part of the model procurement program, USDA also plans to develop a framework for measuring the use of biobased products within USDA and for determining related benefits. This framework, if it is adopted by other procuring agencies, may provide a tracking mechanism for OFPP's required biennial reports to Congress on agencies' progress in purchasing biobased products.

[28]According to the farm bill, agency procurement programs must contain, at a minimum, (1) a biobased products preference program, (2) an agency promotion program to promote this preference program, and (3) an annual review and monitoring of the effectiveness of the agency's procurement program.

will fulfill the farm bill requirement placed on USDA to recommend procurement practices. USDA plans to incorporate the voluntary recognition program into its model procurement program. In addition, once the model procurement program is complete, USDA plans to seek a change to the Federal Acquisition Regulation to reflect these procurement practices. Changes to this regulation also require a rulemaking.[29] Finally, USDA plans to address requirements for the labeling program in a future rulemaking.

Considering the amount of work that remains to be done to fulfill the farm bill requirements, it seems likely that USDA's fulfillment of these requirements will take years, particularly for the designation of items for preferred procurement that were discussed in the preamble of USDA's proposed rule. Thus, although the farm bill required USDA to promulgate guidelines, including the designation of items for procurement, within 180 days of the legislation's enactment—by November 2002—it is not likely that the designation of all of the items discussed in the preamble to the proposed guidelines will be completed until the spring of 2010, according to USDA estimates. However, the agency hopes to have at least some of these items designated by the end of calendar year 2004. In addition, as the farm bill recognizes by allowing USDA to revise its guidelines from time to time, the process of designating items is a continual one as new biobased items will continue to enter the market. Appendix IV provides a timeline showing the chronology of steps USDA plans to fulfill the farm bill requirements for the federal procurement of biobased products.

Federal Agencies Have Procured Small Quantities of Biobased Products

Without final USDA guidelines designating items for preferred procurement, the top four procuring agencies generally are reluctant to undertake an agencywide biobased procurement program. Officials from these agencies indicated that until they clearly understand whether a product meets USDA's definition of a biobased product, it would not be advantageous to establish a purchasing program agencywide. However, even though these agencies have not implemented their own biobased procurement programs, we found that some of them have procured limited quantities of biobased products. For example:

[29]The Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council publish rulemakings in the *Federal Register* amending the *Federal Acquisition Regulation*.

- The Defense Logistics Agency (DLA)—the supplier for DOD and several civilian agencies—has procured and is now testing such biobased products as food service cutlery for service personnel overseas and hydraulic fluid for military helicopters. According to DLA officials, these products are appealing—assuming they meet necessary performance specifications—because they are readily biodegradable, which may make them easier to dispose of. These officials indicated that they are working closely with USDA to ensure that the products tested will ultimately be products that will meet USDA's criteria for biobased products. However, these officials stated that their agency could test more products if USDA would publish guidance designating biobased products for purchase. Figure 2 shows wheat starch-based plastic cutlery that DLA is testing for field use.

Figure 2: Biobased Cutlery

Source: Defense Logistics Agency.

- The Department of the Interior (Interior) purchases biobased products directly from manufacturers and has requested that their contractors use biobased products in some services. In an effort to promote the use of

biobased products in national parks, the National Park Service Facilities Management Division has covered the incremental costs for park purchases of biobased products over the use of traditional products; in 2003, they provided $42,000 towards this promotion. For example, a wildlife reserve located in Alaska purchased a biobased deicer, made from corn and other agricultural products, to clear roads and sidewalks. Unlike deicers that rely on salt or petrochemicals, biobased deicers can be formulated to have less impact on surface waters and vegetation. Several national parks also are buying biobased fuels and additives for their snowmobiles because they produce less toxic emissions. In addition, biobased hydraulic oils are being used in construction equipment at many park sites because spills of these lubricants pose less environmental risk and are less costly to clean up. Furthermore, the cafeteria-service contractor in Interior's headquarters building in Washington, D.C. uses biobased plates and bowls, made primarily of potato starch and limestone. A pilot project undertaken with USDA's Beltsville Agricultural Research Center demonstrated the ability to compost the plates and bowls along with cafeteria food waste. Figure 3 shows the application of a biobased deicer by an Interior employee. Figure 4 shows other biobased products used by Interior.

Figure 3: Application of a Biobased Deicer by Interior Employee

Source: The Department of the Interior.

Figure 4: Display of Biobased Products Used by Interior

Source: The Department of the Interior.

The items depicted include various biobased cleaners, lubricants, degreasers, and lavatory supplies.

- In addition to its research activities to develop new uses of agricultural commodities for producing biobased products,[30] USDA's Agricultural Research Service is taking steps to use biobased products as well. For example, the agency's Beltsville Agricultural Research Center in Maryland (the Center) spent about $8,500 in fiscal year 2003 for biobased products—primarily cleaners, hydraulic fluids, and lubricants used in its farm machinery. In addition, the Center uses biobased fuels, such as soy-based biodiesel, in this type of machinery. In fiscal year 2003, the Center purchased about $523,000 in biobased fuels. Center officials noted that the clean-up of accidental spills of biobased hydraulic fluids and lubricants is

[30]In fiscal year 2003, the Agricultural Research Service received appropriations of $19 million for bioenergy research and $50 million for biobased products research.

far less expensive than the petrochemical alternatives because the biobased products are readily biodegradable.[31] These officials also expressed their belief that maintenance costs for equipment using these products has dropped, compared with the costs associated with using petroleum-based alternatives, although they noted that they have not thoroughly studied and documented this anecdotal observation. According to these officials, the Center hopes to increase biobased purchases by 70 percent in fiscal year 2004. In addition to the Center's direct purchases of biobased products, some of its service contractors use biobased products when performing work at Beltsville. Center officials were unable to tell us how much their contractors spend on biobased products. Figure 5 shows some of the biobased products used at the Center. Figure 6 shows Center farm equipment in which biobased lubricants and fuels are used.

[31]According to a senior official in the Office of the Federal Environmental Executive, USDA has not coordinated with EPA regarding how spills of biobased hydraulic fluids and lubricants should be handled, including whether the clean up of these spills should be done any differently than spills of petroleum-based alternatives. The Director of EPA's Oil Spill Staff confirmed in February 2004 that USDA had not contacted his office to discuss this matter. According to this official, EPA has not made a specific ruling regarding how spills of biobased hydraulic fluids and lubricants should be handled. However, absent such a ruling, EPA does not make a distinction between spills of these biobased products and their petroleum-based alternatives: both leave a sheen on top of water and must be cleaned up.

Figure 5: Biobased Cleaning Products Used at USDA's Beltsville Agricultural Research Center

Source: Agricultural Research Service, USDA.

The items depicted in the supply cabinet include biobased detergents, soaps, and degreasers.

Figure 6: Tractor Run with Biobased Lubricants and Fuels at Beltsville Agricultural Research Center

Source: Photo by Keith Weller, Agricultural Research Service, USDA.

This tractor is one of 150 vehicles used at the Beltsville Agricultural Research Center that uses biobased products such as engine oil, cutting oils, grease, and cleaners, as well as biodiesel fuel.

USDA Could Accelerate Implementation of the Biobased Procurement Program by Developing a Comprehensive Management Plan and Assigning Adequate Resources

USDA could more effectively marshal its resources to fulfill the farm bill biobased procurement requirements in a timely manner with a written, comprehensive management plan. Such a plan would define tasks and set milestones, identify available resources and expected outcomes, and describe how the department will coordinate its efforts to implement the plan. USDA did not have such a plan to guide its preparation of the proposed guidelines issued in December, and we believe that this lack of a plan may have contributed to delays in completing this segment of the work. Furthermore, except for the development of the model procurement program and voluntary recognition program, the agency does not have a comprehensive plan to guide its work to fulfill the farm bill's other biobased requirements. Finally, USDA's implementation of the biobased provisions could be accelerated if the department assigned more staff and financial resources to this work and gave it a higher priority.

Need for Better Planning and Coordination

USDA assigned primary responsibility for implementing the farm bill biobased procurement provisions to its Office of Energy Policy and New Uses (New Uses office), located within the Office of the Chief Economist. The conference report for the farm bill encouraged USDA to carry out these provisions under the aegis of the New Uses office. Among other things, this office is responsible for developing the procurement guidelines, including designating items for procurement, recommending practices for procurement and for certification by vendors of the percentage of biobased content in their products, and providing information on the availability, relative price, performance, and environmental and public health benefits of the items designated. The New Uses office also is primarily responsible for establishing the voluntary labeling program. In addition, USDA charged its Office of Procurement and Property Management (Procurement office) with developing the model procurement program and the voluntary recognition program.

When we asked New Uses officials in May 2003—a year after farm bill enactment and 6 months after the legislation deadline for USDA's completion of the biobased procurement guidelines—for their written management plan to implement the farm bill requirements, they indicated that they did not have a plan. At our request for the agency's timeline for complying with these requirements, these officials indicated that they did not have a timeline either, but offered to create one, which they provided to us several weeks later in June 2003.

While the timeline is a start, it falls short of being a comprehensive plan in a number of respects. First, the timeline provides for delays in meeting milestones, stating "this is an optimistic schedule; various delays could push this date [for the proposed guidelines] back as much as 6 months or more, which would similarly push back all following milestones." Indeed, there have been delays. For example, the timeline states that the proposed guidelines will be published in the *Federal Register* on October 1, 2003, but they were not published until December 19, 2003. According to USDA officials, additional delays, not anticipated in the timeline, could postpone some of the expected completion dates by as much as a year. These officials noted that these delays may result from the difficulty of working through the various concerns and conflicting views of the many stakeholders to this effort, a process that one New Uses official said was akin to "swimming in molasses." A comprehensive plan would discuss possible sources of delay and how they might be mitigated.

Second, New Uses staff developed the timeline without consulting with the USDA office responsible for developing the model procurement program and the voluntary recognition program—the Procurement office. When we met with officials from the Procurement office in September 2003, they said that they had not seen the timeline we received from the New Uses office in June 2003. When we showed these officials the timeline, they indicated disagreement with some of the dates related to their portion of the work. A comprehensive plan would discuss how the work should be coordinated among interested offices to avoid these types of misunderstandings.

Third, the timeline does not describe how coordination will be done with other interested agencies. The farm bill requires that USDA consult with EPA, GSA, and NIST before developing the procurement guidelines. The legislation also requires USDA to consult with EPA in establishing the voluntary labeling program. As a practical matter, it would also be important for USDA to coordinate with the top four procuring agencies—DOD, DOE, NASA, and GSA—as well as other agencies such as the Office of the Federal Environmental Executive. During our work, we contacted relevant officials representing these agencies; most expressed concern about what they considered to be a lack of timely and effective coordination on USDA's part, although officials from some of the agencies seemed generally satisfied. Some of those who expressed concerns about coordination noted that USDA had been more attentive, relatively speaking, to interagency consultation in its earlier efforts to develop a list of biobased products for procurement under the 1998 executive order. In addition, a senior official of the Office of the Federal Environmental

Executive said that USDA has not effectively coordinated with EPA and DOE officials responsible for programs that promote government purchases of environmentally friendly, recycled content, or energy efficient products. Specifically, this official noted that USDA does not have a clear understanding of how its biobased guidelines will impact regulations related to these other programs. In addition, this official opined that USDA is missing the opportunity to incorporate the lessons learned from the development of these other programs. In light of these concerns, during our work we asked the New Uses staff for minutes or other written documentation of coordination meetings. These staff indicated that they had not documented internal or external coordination meetings in writing.[32] A comprehensive plan would identify agencies with which coordination should occur, describe the frequency and manner of these contacts, and indicate how the results of these meetings would be documented.

Fourth, the timeline does not describe how progress reporting will be done, what form these reports will take, or to whom these reports will be made. New Uses officials told us that although they do not prepare regular progress reports, they do discuss the status of their work on the farm bill biobased provisions at weekly staff meetings with the Chief Economist and that this official periodically briefs the Secretary of Agriculture.[33] In addition, these officials indicated that the status of their work is reported weekly to USDA's farm bill implementation team and that this team also reports to agency's subcabinet officers. However, without a comprehensive management plan, including clearly delineated tasks and associated milestones, we believe it would be difficult for managers to put into context the relative progress being made on this work, to identify needed adjustments, and to hold accountable the officials responsible for its completion. A comprehensive plan would describe who the officials responsible for implementing the farm bill requirements would report to and the frequency and manner of periodic progress reports.

In contrast to the New Uses office's lack of a management plan, the Procurement office prepared a detailed written management plan for

[32]At a meeting with USDA staff in February 2004, a New Uses official indicated that if given time, he could probably find examples of old e-mails discussing coordination meetings. However, we noted that we had requested written documentation of these meetings during our work and that this official said these meetings were not documented in writing.

[33]The New Uses office is placed organizationally under the Office of the Chief Economist.

conducting its portion of the work.[34] This document contains the elements of a comprehensive plan, including identifying the work to be done, the associated tasks and milestones, available resources, anticipated costs, and the type and frequency of progress reporting. The plan also discusses the need for coordination with other USDA offices and federal agencies and how this coordination will be accomplished. Unfortunately, however, this plan applies only to limited aspects of the work USDA must complete to fulfill the farm bill requirements. The New Uses office is responsible for the majority of the work needed to fulfill these requirements; yet, as discussed, it lacks a comprehensive plan for completing this work.

We met with USDA officials, including New Uses staff, in February 2004 to discuss further the lack of a comprehensive management plan and other issues identified in our work and their significance. At that meeting, the New Uses staff provided us a document entitled, "Implementing Section 9002 of the Farm Bill." This document was attached to an e-mail dated June 2002 that referred to the attachment as an "*early draft* implementation plan for Section 9002." New Uses staff indicated that this document was evidence of their planning. However, our analysis of this document reveals that it is not a comprehensive management plan for implementing the farm bill requirements. First, the e-mail refers to the document as an early draft; apparently it never advanced beyond this stage. Second, the document lacks most elements of a comprehensive plan, such as a description of specific tasks, associated milestones, and the frequency, manner, and documentation of coordination meetings and periodic progress reporting.[35] Instead, the document generally restates the farm bill requirements and the related conference report language, discusses some options for addressing these requirements, and presents a rationale for hiring a contractor with the requisite skills to implement the farm bill provisions under the management oversight of the New Uses office. Interestingly, although a contractor was not hired,[36] the document

[34]*Management Plan for Design, Development and Deployment of USDA's Federal Biobased Product Preferred Procurement Program*, January 9, 2004.

[35]In general, a comprehensive plan also would discuss the goals or expected outcomes of an initiative. In this case, the farm bill makes clear these goals or outcomes: recommend procurement practices, designate items for procurement, and establish programs for labeling and recognition.

[36]While USDA did not hire a consulting firm to implement the biobased provisions under the New Uses office's direction, it used funds authorized by the farm bill for testing to enter into cooperative agreements with two testing organizations to develop testing guidance and an information Web site for biobased products.

notes that, "Contractor performance would be evaluated on an annual basis against pre-agreed-upon achievement milestones, with an opportunity to re-direct resources if necessary." Thus, although the New Uses office apparently planned to use a list of specific tasks and associated milestones to judge the contractor's progress and hold this firm accountable, the New Uses staff, who had to undertake this work without contractor assistance, did not develop a similar list of tasks and milestones to guide their work. As discussed, New Uses staff did not develop a list of milestones until the spring of 2003, and only at our request.

Furthermore, at our February 2004 meeting, USDA officials expressed the view that although they had missed the farm bill biobased-related deadlines and most farm bill biobased procurement requirements remain unfulfilled, they had made noteworthy progress in publishing the proposed guidelines in December 2003. These officials discussed and subsequently provided us with a document listing work activities they had undertaken leading up to the publication of these guidelines. Among other things, the list notes that during the summer and fall of 2002, USDA developed the aforementioned "implementation plan," held various internal meetings and external consultations, and began drafting the guidelines. Thereafter and throughout calendar year 2003, the list primarily shows that USDA went through several rounds of vetting and revising the guidelines, based on reviews done by the OMB and USDA's Office of General Counsel. In addition, USDA officials noted that throughout this process their collective thinking evolved as to the form and content of the guidelines and included considerations such as (1) whether the list of biobased products that was being developed by the agency under the 1998 executive order had relevance in light of farm bill criteria for designating items and (2) whether a more simplified, less-burdensome approach regarding the content of the guidelines would still satisfy the legislation's requirements. Finally, New Uses officials stated that the notice of proposed rulemaking containing the proposed guidelines was developed far more quickly—by a measure of years—than the rulemakings for two other programs that they view as relevant: the preferred procurement program for recycled products developed by EPA and the organic product labeling program developed by USDA.

In citing the lack of a management plan, we are not questioning whether New Uses staff have worked hard or whether the complexity and novelty of the issues they faced were challenging. Rather we are raising the question of whether the efficiency of this work has suffered because of a lack of a comprehensive plan to guide it. Clearly, the other USDA office involved in implementing the farm bill biobased requirements thought it

was important to develop a thorough management plan to guide its portion of the work to ensure the efficient use of available resources and timely completion of the work. Furthermore, we are unable to comment on the relevance of comparing the development of various rulemakings cited by New Uses staff because such an analysis is outside the scope of our work. However, we believe there are probably lessons to be learned from EPA's experience in developing the procurement program for recycled products that would benefit USDA's efforts to develop a similar program for biobased products.

Careful planning for a major initiative is a recognized good business practice. Furthermore, the need for adequate planning in federal programs is established in legislation such as the Government Performance and Results Act of 1993,[37] Presidential executive orders, circulars of OMB, and agency regulations to ensure that federal program managers know what they want to accomplish, how they are going to accomplish it, and when it will be accomplished. Without a comprehensive plan for implementing the farm bill requirements assigned to the New Uses office, including clearly defined tasks and milestones, it is difficult for USDA to set priorities, use resources efficiently, measure progress, and provide agency management a means to monitor this progress. Furthermore, the lack of a plan only serves to delay the agency's completion of legislatively required actions.

Need for Additional Resources

USDA did not allocate the staff needed to expedite the biobased procurement effort. It assigned responsibility for this effort to two staff in the New Uses office who also had other responsibilities—in effect, they worked part-time on biobased procurement. While these New Uses officials had assistance from time-to-time from staff in other USDA offices, including staff who had been involved in the agency's earlier efforts under the executive order, the availability of these staff was more ad hoc, subject to the demands of other work to which they were assigned. In addition, according to these New Uses officials, no one in their office had experience in writing rules; and they had to wait several months before staff from another office with this experience could be assigned to help write the notice of proposed rulemaking containing the guidelines for publication in the *Federal Register*.[38] However, New Uses officials said that while they were waiting for this assistance, they were able to continue

[37]Pub. L. No. 103-62, 107 Stat. 285 (1993).

[38]Staff from USDA's Animal and Plant Health Inspection Service provided this assistance.

with other aspects of the work. Nevertheless, although these New Uses officials stated that they do not believe that the guidelines could have been issued in any case by the farm bill deadline, they believe that the lack of adequate personnel assigned specifically to this effort was a source of delay.

Regarding funding, the farm bill did not specifically authorize any funds for developing the biobased procurement guidelines, and USDA did not provide any funds to the New Uses office for this effort from other programs. In essence, the New Uses office had to absorb these costs from its operating budget; and as a result, this office assigned only two staff to work part-time on meeting the farm bill requirements, as discussed.[39] The New Uses office began its work soon after passage of the farm bill. However, the farm bill authorized $1 million annually for testing biobased products. To date, the New Uses office has used these funds to contract with Iowa State University and NIST to develop testing protocols for biobased products and an information Web site on biobased products.

Regarding development of a model procurement program and the voluntary recognition program, the Procurement office did not begin this work until the fall of 2003 because of a lack of identified funding for this purpose until that time. Specifically, in September 2003, USDA's Rural Development Mission Area transferred about $500,000 to the Procurement office for this purpose. In addition, the Procurement office added about $25,000 of its own funds to this sum. This office used these funds to contract with the DOE's Oak Ridge National Laboratory and a consulting firm to, among other things, assist in developing the office's comprehensive plan for implementing this portion of the work. Oak Ridge also will be involved in the plan's implementation under the Procurement office's direction. In addition, USDA transferred a staff member from its Office of Small and Disadvantaged Business Utilization to the Procurement office to oversee this effort. While Procurement office staff indicated that the funds identified to date should carry them through the

[39]According to USDA's Office of Budget and Program Analysis and relevant documents, the President's budget proposals for USDA for fiscal years 2003 and 2004 did not request funds specifically for developing the biobased procurement guidelines. However, the President's budget proposal for USDA for fiscal year 2005 seeks, among other things, an increase of $2.5 million to be used for the biobased procurement program. Specifically, these funds are to be used to designate specific groupings of biobased products for procurement by federal agencies, establish and maintain a products database, develop a product labeling system, and allow for the continued operation and maintenance of the procurement program, once established, on a governmentwide basis.

end of fiscal year 2004, they said additional funding will be needed in the future to continue their work on the model procurement program. For example, the staff member who oversees this effort estimated that about $450,000 will be needed in fiscal year 2005 and about $500,000 will be needed in fiscal year 2006.

Need for Assigning a Higher Priority

According to USDA staff who worked on developing a biobased products list under the 1998 executive order, assigning responsibility for developing the farm bill biobased procurement guidelines to the New Uses office should have given this effort more agency attention because this office reports to the Chief Economist who in turn reports directly to the Secretary of Agriculture. Previously, work on developing a list of biobased products was split among several line agencies and offices, including the Agricultural Research Service, the Cooperative State Research, Education, and Extension Service, and the Procurement office, that do not enjoy this direct access to the Secretary. However, despite this expectation of greater agency attention, USDA has made limited progress in fulfilling the farm bill requirements; and several USDA officials indicated that this work is not a high priority, relative to other agency initiatives. In addition, stakeholders outside of USDA also believe that the agency has not given sufficient management attention to the fulfillment of the farm bill biobased provisions. For example, representatives of commodity associations and manufacturers stated that although they had hoped for timely and effective procurement guidelines from USDA, the issuance of guidelines has been delayed because this effort is not a priority for the agency.

In our earlier work, related to USDA's implementation of the 1998 executive order,[40] USDA officials indicated that they had made limited progress in publishing a list of biobased products for procurement because of a lack of dedicated resources and higher agency priorities. Although USDA's issuance of federal procurement guidelines for biobased products, as well as USDA's establishment of a voluntary labeling program and voluntary recognition program, is now legislatively required, this work still suffers from a lack of adequate resources and management attention.

[40]U.S. General Accounting Office, *Federal Procurement: Better Guidance and Monitoring Needed to Assess Purchases of Environmentally Friendly Products*, GAO-01-430 (Washington, D.C.: June 22, 2001).

Stakeholders Generally Agree That Some Testing of Biobased Products Is Necessary, but They Question the Need For Life-Cycle Analysis

Most federal agencies, testing organizations, commodity associations, and manufacturers we spoke with generally believe that testing biobased products for content and performance is appropriate, but they question the usefulness and costs of life-cycle analysis. According to officials from the top four purchasing agencies and the two testing organizations, content testing is important to ensure that products meet minimum biobased content specifications, and performance testing is a key factor in making purchasing decisions. These officials generally believe that manufacturers should bear the costs of these tests, if they want to sell to the federal government. Biobased manufacturers generally agree with the need for these tests and with their responsibility for bearing at least some of the associated costs. However, some manufacturers said that they should be able to self-certify the biobased content of their products in lieu of content testing, based on their knowledge of their manufacturing processes. Regarding life-cycle analysis, most of the agencies and manufacturers questioned the need for doing this analysis. USDA is required to consider life-cycle costs in determining whether to designate an item for preferred procurement and has indicated that if manufacturers voluntarily provide life-cycle cost information it may help speed the designation process. Manufacturers would only be required to provide this information under the rule as proposed if a procurement official requested the information.[41] However, the agencies generally did not believe that life-cycle information would be useful for purchasing decisions because procurement staff would find the analysis too detailed to follow and generally not useful without comparative information on petroleum-based products; USDA does not expect to provide such comparative information. Manufacturers generally agreed with this view, noting that the cost of life-cycle analysis is high—as much as $8,000 for a single product—and they questioned whether they alone should bear this cost in order to make sales to the federal government.

The farm bill authorized USDA to use $1 million per year of the Commodity Credit Corporation's funds from fiscal year 2002 through fiscal year 2007 for testing of biobased products. Initially, as discussed in its proposed guidelines, USDA plans to use these funds to focus on gathering the necessary test information on a sufficient number of products within an item (generic grouping of products) to support regulations to be

[41]According to the preamble to USDA's proposed guidelines, USDA is considering requiring the analysis of the life-cycle costs and health benefits of a product in order for the product to qualify for use of the "U.S.D.A. Certified Biobased Product" label.

promulgated to designate an item or items for preferred procurement. However, the farm bill also allows that these funds may be used to support contracts or cooperative agreements with entities that have experience and special skills to conduct such testing. The $1 million for fiscal year 2002 was used for agreements with testing organizations to establish standardized tests for determining the biobased content and life-cycle analysis characteristics of biobased products. Part of this money also was used to develop a biobased products information Web site. USDA views the establishment of this Web site as integral to fulfilling the farm bill requirement for providing information on products. USDA is using the $1 million for fiscal year 2003 to evaluate selected products using the standardized tests to establish benchmarks for designating items for preferred procurement. The agency is also using some of this money to complete and maintain the information Web site. USDA anticipates that $1 million for fiscal year 2004 will be used to cost-share with manufacturers some of the expenses associated with testing products in order to develop the information needed to designate items for preferred procurement.

In general, USDA plans to bear the cost of any testing that may be needed to establish baseline information for designating items. Regarding this testing, in its proposed guidelines USDA indicates that it may accept cost sharing from manufacturers or vendors for this testing to the extent consistent with USDA product testing decisions. However, during this period, USDA will not consider cost sharing in deciding what products to test. When USDA has concluded that a critical mass of items has been designated, USDA will exercise its discretion, in accordance with competitive procedures outlined in the proposed guidelines, to allocate a portion of the available USDA testing funds to give priority to testing products for which private firms provide cost sharing for the testing. At that point, cost-sharing proposals would be considered first for small and emerging private business enterprises.[42] If funds remain to support further testing, proposals from larger firms would also be considered.

USDA's proposed guidelines would require manufacturers and vendors to provide relevant product characteristics information to federal procuring agencies on request. For example, under the proposed guidelines, manufacturers would have to be able to verify the biobased content of

[42]As defined in USDA's proposed guidelines, small and emerging private business enterprises include any private business that employs 50 or fewer employees and has less than $1 million in projected annual gross revenues.

their products using a specified standard. In addition, federal agencies would have to rely on third-party test results showing the product's performance against government or industry standards. Furthermore, manufacturers would have to use NIST's Building for Environmental and Economic Sustainability (BEES) analytical tool to provide information on life-cycle costs and environmental and health benefits to federal agencies, when asked. USDA recommends that federal agencies affirmatively seek this information.

Most Stakeholders Agree that Content and Performance Testing Are Necessary

According to officials we contacted from the top four purchasing agencies and the two testing organizations—Iowa State University and NIST—content and performance testing are necessary to help federal agencies make purchasing decisions. Content testing is necessary to ensure that products meet the biobased content specifications for designated items.[43] Furthermore, the results of performance testing are a key consideration, along with product availability and price, for federal procurement officials when selecting a product for purchase, whether the product is biobased or not.[44] These agency and testing organization officials also believe that manufacturers should bear the costs of content and performance testing because these tests are considered normal business costs associated with marketing products.

Ten of the 15 biobased manufacturers we contacted agree that content and performance testing are necessary. Two other manufacturers agreed that one of these tests was necessary, but they did not agree on which test. Most of these manufacturers also acknowledged their responsibility for bearing at least some of the costs for these tests. However, some of the manufacturers believe that they should self-certify content, based on their knowledge of their manufacturing process, including the feedstock used. These manufacturers suggested that USDA could conduct random content

[43]Content is determined by doing carbon testing. This testing, done by an accredited laboratory, is able to differentiate between "new" carbon derived from plant materials (carbohydrates) and "old" carbon derived from fossil resources (hydrocarbons). The biobased content is determined by the amount of carbon derived from plant materials.

[44]Performance testing, done by accredited testing organizations, assesses a product's performance against standards provided by the American Society for Testing and Materials; the International Standards Organization; Federal civilian or military specifications; or other industry sources. For example, such testing may be done on a biobased engine or gear oil to determine if it meets relevant standards for lubricity under a variety of potential operating conditions, including extreme heat or cold.

testing to verify these certifications. Similarly, representatives from the Biobased Manufacturers Association stated that they believe, based on input from their member companies, that manufacturers should self-certify the content of their products. These association officials suggested that content testing should only be required when there is a challenge to these certifications. Most of the manufacturers believed that the requirement for providing performance testing information is reasonable and that, because the cost of this testing is an expected cost of doing business, they should bear this expense.

Stakeholders Generally Question the Need for Life-Cycle Analysis

Officials representing the top four procurement agencies, manufacturing companies, the Biobased Manufacturers Association, and commodity associations generally questioned the need for life-cycle analysis of biobased products.[45] Under USDA's proposed guidelines, manufacturers are invited to voluntarily submit their product to a life-cycle analysis using the BEES analytical tool developed by NIST, so that USDA can obtain information it is required to consider in designating items for preferred procurement. However, once an item has been designated, the manufacturer would have to provide information on life-cycle costs, if asked to do so by a procuring agency, using BEES for their particular product. While some manufacturers indicated that they do not object to performing life-cycle analysis per se, and a few even indicated that they have done such an analysis already to use the results in marketing their product(s), these stakeholders questioned USDA's decision to rely solely

[45]A life-cycle analysis (or assessment) of a product includes a "cradle to grave" examination of the product's economic and environmental performance. Regarding economic performance, the costs of initial investment, replacement, operation, maintenance and repair, and disposal are generally included. Regarding environmental performance, the environmental and public health impacts of all stages in a product's life are usually examined, including raw material acquisition, manufacture, transportation, installation, use, and recycling and waste management.

on one analytical tool—BEES—to perform this analysis.[46] Other stakeholders pointed out that any life-cycle analysis results for biobased products would be of limited usefulness without comparable results for similar products that are petroleum based.

Stakeholders voiced the following opinions regarding whether life-cycle analysis results are, in general, useful and/or whether USDA should rely solely on the BEES analytic tool for doing this analysis:

- Many of the officials representing manufacturers and commodity associations believe that federal purchasers will not find life-cycle analysis results for biobased products to be useful unless they have comparable results for competing petroleum-based products. For example, if federal purchasing officials have information on the economic and environmental impacts of a biobased product, but do not have similar information for its petroleum-based alternative, these officials will not be able to determine if the higher initial purchase cost of the biobased product is offset by its lower maintenance and disposal costs and/or lower environmental impacts. Even officials from USDA and the testing organizations acknowledged that the usefulness of BEES results for biobased products would be greater if similar results were available for petroleum-based alternatives. These officials said that although the farm bill does not address life-cycle analysis for petroleum-based products, they hope that manufacturers of these products will submit them to BEES analysis voluntarily so that comparable data are available. However, other stakeholders questioned why a manufacturer of a petroleum-based product would incur this expense voluntarily, especially if the BEES results could cast the manufacturer's product in an unfavorable light. USDA officials added that procuring agencies could, if they choose, also require manufacturers of petroleum-based products to provide this

[46]BEES is an analytic software tool for performing life-cycle analysis that was developed by NIST. Its initial application was for the evaluation of building products. BEES relies on standards promulgated by the American Society for Testing and Materials for determining economic impacts and by the International Standards Organization for determining environmental impacts. Economic impacts are expressed as total dollar costs and environmental impacts are indicated as an aggregate environmental performance score. BEES can be used to determine trade-offs between competing products. For example, BEES can be used to demonstrate that a short-lived, low initial-cost product is often not the cost-effective alternative. Instead, the purchase of a higher initial cost product may be justified if it is more durable and maintenance-free and less costly to dispose. Recently, under contract with USDA, NIST adapted BEES to perform life-cycle analysis on biobased products. For example, NIST has updated its database to include performance data for eight major biomass inputs used in manufacturing biobased products: soybeans, corn, wheat, rice, cotton, canola, potatoes, and wool.

information in order to make sales to the agencies, but other stakeholders opined that the agencies are not likely to do so because they do not now seek this type of information. USDA officials also noted that to ensure a level playing field it is important that manufacturers and vendors use the same life-cycle analysis tool to ensure consistent and comparable results.

- Many manufacturer and commodity association officials stated that the cost of the life-cycle analysis was too expensive for most small manufacturers to bear. According to NIST, the cost of testing a product using the BEES analytic tool is about $8,000. The cost of subsequent testing of related products from the same manufacturer is about $4,000 per product tested. For small manufacturers with fewer than 500 employees, the cost of testing is $4,000 for the first product and $2,000 for each additional product, assuming similar processing steps and the continued availability of federal cost-share assistance.[47] Some USDA officials expressed the view that these costs are not exorbitant, adding that the costs of content testing is even cheaper, falling in the range of a few hundred dollars.

- Federal procurement officials indicated that life-cycle analysis is generally not an important factor in procurement decisions. A product's price, availability when needed, and ability to meet performance specifications are the most important considerations, according to these officials. In addition, a number of manufacturer and commodity association stakeholders questioned whether procurement officials would even understand the significance of the results of a life-cycle analysis. However, USDA officials noted that the impetus to purchase biobased products also should come from the agency program officials who generate the requirements for the goods and supplies that procurement staff purchase. With this in mind, the Procurement office's plan for developing the model procurement program includes major tasks related to training and outreach to groups other than just the procurement staff. If these other groups who generate the purchase requirements also understand the potential benefits of biobased products and the legislative requirements for giving these products preference in federal purchasing, then they may stipulate in their purchase requests that procurement staff buy biobased alternatives. Similarly, these groups may stipulate in service contracts that firms purchase and use biobased products.

[47]According to USDA's proposed guidelines, the agency could provide up to 50 percent of the cost of testing a small manufacturer's product using BEES.

- Some manufacturers, citing the detailed nature of the BEES analysis, expressed concerns that trade secrets related to their product could be compromised. However, according to a NIST official primarily responsible for adapting the BEES analytic tool for evaluating biobased products, the information submitted for BEES analysis will not be subject to Freedom of Information Act requests. This official also indicated that contracts made with third-party testing organizations for conducting BEES analysis will include language imposing penalties for improperly divulging product information. In addition, this official said that life-cycle information generated for designating items through the testing of branded products will be aggregated in such a way so as not to reveal the "recipe" (contents and structure) of a given product.

Conclusions

USDA has yet to fulfill many of the farm bill biobased procurement requirements. Among other things, USDA has not issued final procurement guidelines that designate items for preferred procurement. USDA's work has been slowed by the lack of a comprehensive management plan outlining the tasks, milestones, resources, coordination, and reporting needed for its completion. In addition, USDA has not assigned sufficient staff and financial resources or given sufficient priority to this effort to ensure its timely completion. Because other federal agencies' procurement of biobased products largely hinges on USDA's fulfillment of these farm bill requirements, USDA action is critical.

Recommendations

To ensure USDA's timely implementation of the farm bill biobased purchasing requirements, we recommend that the Secretary of Agriculture carry out the following three recommendations:

- Direct the Office of Energy Policy and New Uses to develop and execute a comprehensive management plan for completing this work. Among other things, such a plan should discuss the tasks, milestones, resources, coordination, and reporting needed for completing this work.
- Clearly identify and allocate the staff and financial resources to be made available for completing this work.
- Clearly state the priority to be assigned to this work.

Agency Comments and Our Evaluation

We provided a draft of this report to USDA for review and comment. We received written comments from the agency's Chief Economist, which are presented in appendix V. USDA also provided us with suggested technical corrections, which we have incorporated into this report as appropriate.

USDA indicated that it believes the report does not present a complete and balanced view of the progress it has made in implementing the farm bill biobased procurement provisions. Specifically, USDA said that the report emphasizes negative interpretations without reflecting the very considerable progress achieved, or how favorably that progress compares with other government efforts to develop preference programs, such as the EPA's program for the purchase of recycled products. We believe the report provides a fair and accurate description of the farm bill requirements and USDA's efforts to comply with these requirements to date. The scope of our work did not include a comparison of USDA's efforts to implement these requirements to the efforts of other agencies to implement other procurement preference programs. However, we have previously reported on EPA's efforts to implement legislative requirements for the purchase of recycled products, and in doing so we raised issues similar to those we are raising with USDA in this report.[48] Namely, we reported that EPA lacked a comprehensive, written strategy for completing the work and had not given the work adequate staffing and resources and priority.

Regarding our recommendation that the New Uses office develop and execute a comprehensive management plan for completing the work needed to fulfill the farm bill biobased purchasing requirements, USDA indicated disagreement. Specifically, USDA said it does not believe such a plan would have accelerated its work on the proposed rule issued in December 2003, given the complexity of the issues that had to be resolved and the substantial amount of consultation across federal agencies and within USDA that was a necessary component of developing this rule. We disagree and continue to believe that USDA should develop a comprehensive, written plan that discusses, among other things, the tasks, milestones, resources, coordination, and reporting needed for completing the work necessary to fulfill the farm bill requirements. Such a plan would also serve as a basis for communicating USDA's progress with the Congress and others, including the department's senior management.

[48]U.S. General Accounting Office, *Solid Waste: Federal Program to Buy Products With Recovered Materials Proceeds Slowly*, GAO/RCED-93-58 (Washington, D.C.: May 17, 1993).

Furthermore, we believe that factors such as the complexity and breadth of the issues to be considered, the internal and external consultation necessary, and the farm bill's ambitious time frames for the completion of this work underscore the need for a comprehensive, written plan or strategy for the completion of this work. Finally, we note that another USDA office, the Office of Procurement and Property Management, developed a comprehensive, written plan for the completion of its limited portion of the biobased work. Among other things, this plan discusses the need for consultation, identifies the internal and external stakeholders to consult with, and enumerates specific tasks related to this consultation.

Regarding our recommendations that USDA clearly identify and allocate the staff and financial resources to be made available for implementing the farm bill biobased purchasing requirements and clearly state the priority to be assigned to this work, USDA did not address these recommendations directly. However, USDA said that it would draw on GAO's review and recommendations as it approaches the development of subsequent proposed rules for designating items and for development of the labeling program. We believe that USDA should be more proactive in this regard and make clear the staff and financial resources to be made available for completing this work and the priority to be assigned to this work. These matters could also be addressed in a comprehensive, written plan or strategy for completing the work.

We also obtained comments from the DLA, DOE, Interior, EPA, GSA, NASA, NIST, and the Office of the Federal Environmental Executive on excerpts of the report that were relevant to their agencies. Their clarifying comments were incorporated into this report, as appropriate.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. We will then send copies to interested congressional committees; the Secretary of Agriculture; the Secretary of Energy; the Director, OMB; and other interested parties. We will make copies available to others on request. In addition, the report will be available at no charge on GAO's Web site at http://www.gao.gov.

If you have any questions about this report, please contact me at (202) 512-3841. Key contributors to this report are listed in appendix VI.

Sincerely yours,

Lawrence J. Dyckman
Director, Natural Resources
and Environment

Appendix I: Objectives, Scope, and Methodology

At the request of the Ranking Democratic Member of the Senate Committee on Agriculture, Nutrition, and Forestry, we reviewed issues related to the federal government's progress in implementing the biobased purchasing provisions of the Farm Security and Rural Investment Act of 2002 (the farm bill). Specifically, we agreed to examine (1) actions that the U.S. Department of Agriculture (USDA) and other agencies have taken to carry out the farm bill requirement to purchase biobased products; (2) additional actions that may be needed to enhance implementation of this requirement; and (3) views of agencies, manufacturers, and testing organizations on the need for and costs of testing biobased products.

To determine the actions USDA has taken to carry out the farm bill requirement for purchasing biobased products and to determine the additional actions that may be needed to enhance implementation of this requirement, we conducted interviews with USDA officials in the Office of Energy Policy and New Uses (New Uses office) and analyzed documents they provided to us. We also contacted officials in other USDA offices, including the Agricultural Research Service; Cooperative State Research, Education, and Extension Service; Office of General Counsel; and the Office of Procurement and Property Management (Procurement office). In addition, we spoke with officials at Iowa State University and the Department of Commerce's National Institute of Standards and Technology (NIST) who are developing testing standards for biobased products under agreements with USDA. Furthermore, we reviewed USDA's *Guidelines for Designating Biobased Products for Federal Procurement*, a proposed rulemaking published in the *Federal Register* on December 19, 2003. Related to this rulemaking, we attended two public meetings held by USDA in Washington, D.C.: a biobased workshop held on October 28, 2003, to discuss USDA's use of biobased products and the status of the proposed rulemaking and a meeting on January 29, 2004, to allow the public an opportunity to comment on the proposed rule.

To determine the actions that other federal agencies have taken to carry out the farm bill requirement to purchase biobased products, we interviewed officials at the top four procuring agencies—the Department of Defense (DOD), the Department of Energy (DOE), the General Services Administration (GSA), and the National Aeronautics and Space Administration (NASA)—and analyzed the documents that they provided to us. These agencies account for the majority—about 85 percent—of the federal government's purchasing; the DOD alone accounts for about 67 percent of federal purchasing. The officials we contacted included program staff who identify purchasing requirements and procurement staff who make the purchasing decisions, including the selection of vendors

and products used. They also included environmental management or health officials who may be responsible for promoting the use of biobased products at their agencies. We also interviewed officials at DOE, the Defense Logistics Agency, the Environmental Protection Agency (EPA), GSA, NASA, the Office of Management and Budget's (OMB) Office of Federal Procurement Policy (OFPP), and the White House's Office of the Federal Environmental Executive to determine the extent to which USDA had coordinated with these agencies in implementing the farm bill biobased purchasing requirement.

To obtain the views of federal agencies, testing organizations, manufacturers, environmental groups, consumer groups, an advocacy group, and commodity associations on the need for and costs of testing biobased products, we contacted the following entities:

- *Federal agencies*: DOD, DOE, EPA, GSA, NASA, OFPP, and White House's Office of the Federal Environmental Executive.
- *Testing orga*nizations: Iowa State University and NIST.
- *Manufacturers*: Biobased Manufacturers Association and 15 biobased products manufacturers from a list of member companies provided by the association. The manufacturers chosen represent a cross section of biobased products—at least one producer in each of the 11 biobased item categories proposed by USDA—and feedstock (e.g., corn, soybeans, vegetable oils, etc.). They are also geographically dispersed: Arizona, California, Florida, Iowa, Illinois, Maryland, Massachusetts, Minnesota, Ohio, Texas, Washington, and Wisconsin.
- *Environmental groups*: Environmental and Energy Study Institute and Green Seal.
- *Consumer groups*: Center for the New American Dream and Consumer's Choice Council.
- *Advocacy group*: New Uses Council.
- *Commodity associations*: American Soybean Association, National Corn Growers Association, and the United Soybean Board.

Most of our contacts with these entities occurred prior to USDA's publication of its guidelines for designating biobased products for procurement in December 2003, although we also obtained information

from some of these contacts after this document was published. In either case, in our interviews with these sources we sought their views on what the proposed guidelines should contain. In addition, for manufacturers of biobased products, we sought information on their experiences in selling to the government, including any impediments encountered. We also sought their views on the types of testing that should be done on biobased products; the associated costs of these tests; how testing costs should be paid; and how available federal funding for testing should be used. We summarized and contrasted the views of the various stakeholders.

In general, our work focused on biobased products other than biofuels such as ethanol, biodiesel, and biogas because provisions to promote the production of biofuels are addressed elsewhere in the farm bill. However, some mention of biofuels was unavoidable in discussing the nature and importance of biobased products, including their effect on carbon in the environment and on their potential economic impact on farms and rural communities.

We conducted our review from May 2003 through February 2004 in accordance with generally accepted government auditing standards.

Appendix II: Sources for Information on Biobased Products

The following list provides the names, addresses, and Web sites for sources of information on biobased products used in our work.

American Soybean Association
12125 Woodcrest Executive Drive, Suite 100
Creve Coeur, MO 63141-5009
Web site: www.soygrowers.com

Biobased Manufacturers Association
11701 Borman Drive, Suite 300
St. Louis, MO 63146-4193
Web site: www.biobased.com

Biomass Research & Development Initiative (DOE/USDA)
U.S. Department of Energy
1000 Independence Avenue, SW, Mail-Code EE-1
Washington, D.C. 20585
Web site: www.bioproducts-bioenergy.gov

Biotechnology Industry Organization
1225 Eye Street, NW, Suite 400
Washington, D.C. 20005
Web site: www.bio.org

Consumer's Choice Council
1367 Connecticut Avenue, NW, Suite 300
Washington, D.C. 20036
Web site: www.consumerscouncil.org

Environmental and Energy Study Institute
122 C Street, NW, Suite 630,
Washington, D.C. 20001
Web site: www.eesi.org

Green Seal
1001 Connecticut Avenue, NW, Suite 827
Washington, D.C. 20036-5525
Web site: www.greenseal.org

National Corn Growers Association
632 Cepi Drive
Chesterfield, MO 63005
Web site: www.ncga.com

New Uses Council
c/o Doane Agricultural Services
11701 Borman Drive, Suite 300
St. Louis, MO 63146-4193
Web site: www.newuses.org

Office of the Federal Environmental Executive
1200 Pennsylvania Ave, NW, Mail 1600S
Washington, D.C. 20460
Web site: www.ofee.gov

The Center for a New American Dream
6930 Carroll Avenue, Suite 900
Takoma Park, MD 20912
Web site: www.newdream.org

United Soybean Board
16640 Chesterfield Grove Road, Suite 130
Chesterfield, MO 63005-1429
Web site: www.unitedsoybean.org

USDA Office of Energy Policy and New Uses
300 7th Street, SW, Room 361
Washington D.C. 20024-0130
Web site: www.biobased.oce.usda.gov

USDA Biobased Products and Bioenergy Coordination Council
Office of Technology Transfer
Agricultural Research Service
5601 Sunnyside Avenue, Room 4-1152
Beltsville, MD 20705-5131
Web site: www.ars.usda.gov/bbcc/

U.S. Department of Energy
Industrial Technologies Program, EE-2F
1000 Independence Ave., SW
Washington, D.C. 20585
Web site: www.oit.doe.gov/agriculture

U.S. Environmental Protection Agency
Comprehensive Procurement Guidelines
Office of Solid Waste (5305W)
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460
Web site: www.epa.gov/cpg

Appendix III: Key Provisions of USDA's Proposed Guidelines

This appendix summarizes key provisions of USDA's notice of proposed rulemaking, *Guidelines for Designating Biobased Products for Federal Procurement*, published in the *Federal Register* (69 Fed. Reg. 3533) on December 19, 2003. Specifically, table 2 describes proposed biobased product categories and the items to be included in each as discussed in the preamble to the proposed guidelines. Table 3 enumerates other key provisions proposed in the notice.

Table 2: Proposed Biobased Product Categories and Related Items as Listed in the Preamble

Product categories	Types of items
Adhesives	• adhesive products • adhesive additives • finished products with biobased adhesives
Construction materials and composites	• construction material • composite panels • molded reinforced composites • insulating foams and films • components of mixed system products
Fibers, paper, and packaging	• fibers • fibers composites • composite packaging materials • woven fiber products • packaging materials • uncoated printing and writing papers • coated printing and writing papers • bristols • newsprint • sanitary tissues • paperboard and packaging products • other paper products
Fuel additives	• solid fuels • liquid fuel additives
Landscaping materials, compost, and fertilizer	• landscaping materials • compost • fertilizer

Product categories	Types of items
Lubricants and functional fluids	• crankcase oils (water cooled engines) • crankcase oils (air cooled engines) • 2-cycle engine oils • fifth-wheel grease • automotive and other metal complex grease • total loss lubricants (wire rope, bar-chain, etc.) • turbine and other industrial lubricants • penetrating oils • general purpose and other • hydraulic, power steering, transmission fluids • brake fluids • cutting, drilling, and tapping oils (neat use) • metal working concentrates (for dilution) • forming pastes and extreme pressure stamping • concrete and asphalt release • metal foundry and mold release • transformer oil and dielectric fluids
Plastics	• biodegradable foams • durable foams • biodegradable films • durable films and coatings • water-soluble polymers • compostable molded products • molded plastics and composites/biobased resins • molded composites/biobased fibers • synthetic fibers
Paints and coatings	• formulated product
Solvents and cleaners	• formulated product • neat product (concentrate)
Sorbents	• sorbents • sorbent systems
Plant and vegetable inks	• news inks—black • news inks—color • sheet-fed inks • forms inks • heat-set inks • specialty inks

Source: Preamble to USDA's proposed guidelines.

Table 3: Other Key Provisions of USDA's Proposed Guidelines and Future Plans as Indicated in the Preamble

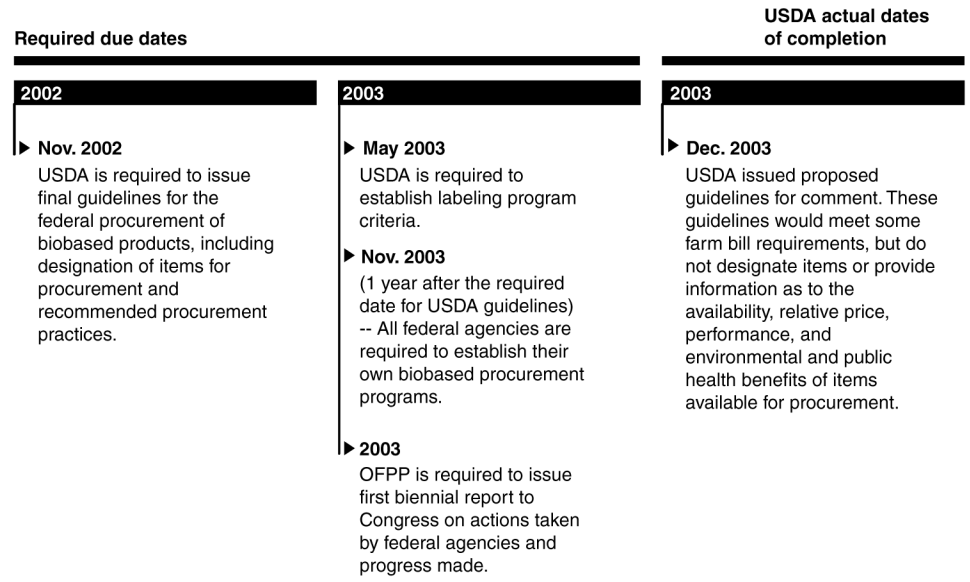
Subject	Key provisions
Objectives of the guidelines	• Determine the minimum level of biobased material a designated item must contain. • Propose items available for designation under the guidelines; explain the factors to be considered in their designation (availability, economic and technological feasibility, and life-cycle costs). • Identify in the guidelines the information on availability, relative price, performance, and environmental and public health benefits that USDA will provide to federal agencies on items designated for preferred procurement. • Set forth recommended practices for procuring biobased products and designated items.
Biobased products proposed for exclusion	• Biobased products that have mature markets. • Garments, household items, and industrial or commercial products made from silk, cotton, or wool, unless made with a substantial amount of a biobased plastic product. • Wood products made from traditionally harvested forest material. • Products having significant national market penetration prior to 1972.
Federal agencies' responsibilities	• Give a procurement preference, with certain exceptions, to designated items with the highest percentage of biobased content practicable. • Incorporate in procurement specifications biobased item preferences consistent with the USDA guidelines. • Establish an agency affirmative procurement program that includes a biobased products preference program, an agency promotion program to promote the preference program, and an annual review to monitor the effectiveness of the agency's procurement program.
Biobased Web site	USDA plans to • gather information on price, performance, and environmental and public health benefits from manufacturers and vendors for products, and store this information on a Web site; • invite manufacturers and vendors to voluntarily provide the noted information for the biobased products they intend to offer to federal agencies; and • use the voluntary, Web-based information system as the principal clearinghouse of information on manufacturer and vendor contact information, currently available products, and relevant product characteristics.

Testing	• USDA is authorized to use $1 million of the Commodity Credit Corporation's funds per year for each of the fiscal years 2002 through 2007 to support testing requirements.
	• USDA will consider cost-sharing for products of small and emerging private businesses for Building for Environmental and Economic Sustainability (BEES) and performance testing.
	• Collection of test results information will differ based on whether the items have been designated as part of the preferential purchasing program.
	  • Manufacturers that want to participate in the initial designation stage of the program must submit data for content, performance, and BEES testing.
	  • Manufacturers that do not participate in the designation stage have the responsibility to inform federal procurement officials that the items comply with the USDA guidelines, including the biobased content of the product. When asked for such information from federal agencies, manufacturers and vendors must provide performance and BEES data.

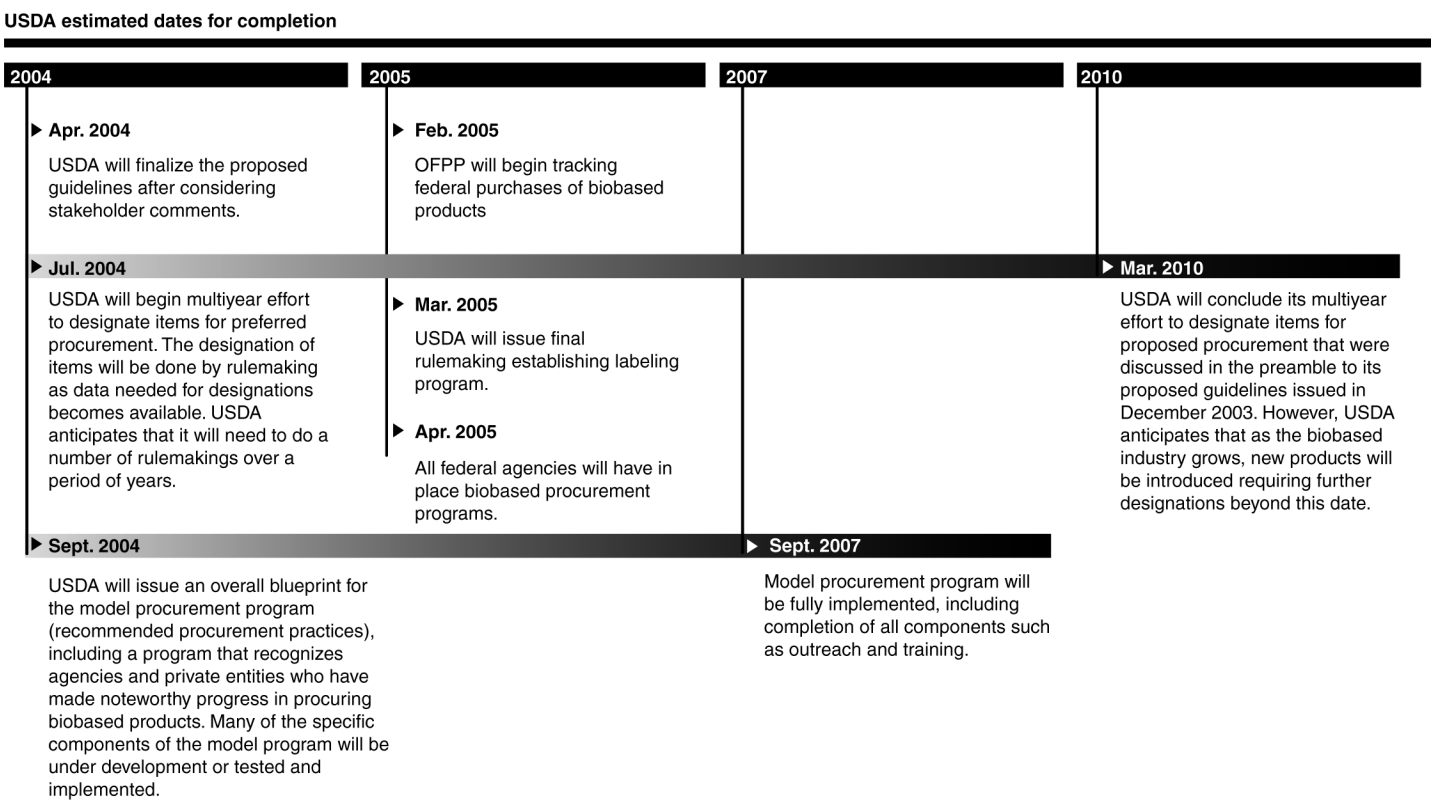
Subject	Key provisions
Voluntary labeling program	• Biobased products that qualify for preferred procurement will be eligible for the "U.S.D.A. Certified Biobased Product" label, when this program is developed. • Eligibility in this program requires BEES analysis and specific performance testing.

Source: USDA's proposed guidelines and preamble to these guidelines.

Appendix IV: Chronology of Steps Completed or Planned by USDA to Comply with the Farm Bill Requirements



Source: GAO analysis of USDA information.


USDA estimated dates for completion
2004
2005
2007
2010
Apr. 2004
USDA will finalize the proposed guidelines after considering stakeholder comments.
Feb. 2005
OFPP will begin tracking federal purchases of biobased products
Jul. 2004
USDA will begin multiyear effort to designate items for preferred procurement. The designation of items will be done by rulemaking as data needed for designations becomes available. USDA anticipates that it will need to do a number of rulemakings over a period of years.
Mar. 2005
USDA will issue final rulemaking establishing labeling program.
Apr. 2005
All federal agencies will have in place biobased procurement programs.
Mar. 2010
USDA will conclude its multiyear effort to designate items for proposed procurement that were discussed in the preamble to its proposed guidelines issued in December 2003. However, USDA anticipates that as the biobased industry grows, new products will be introduced requiring further designations beyond this date.
Sept. 2004
USDA will issue an overall blueprint for the model procurement program (recommended procurement practices), including a program that recognizes agencies and private entities who have made noteworthy progress in procuring biobased products. Many of the specific components of the model program will be under development or tested and implemented.
Sept. 2007
Model procurement program will be fully implemented, including completion of all components such as outreach and training.

Appendix V: Comments from the U.S. Department of Agriculture

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

MAR 23 2004

United States Department of Agriculture

Office of the Secretary

Office of the Chief Economist

14th & Independence Ave., SW
Washington, DC 20250

Mr. Lawrence J. Dyckman
Director, Natural Resources and Environment
General Accounting Office
Washington, D.C. 20548

Dear Mr. Dyckman:

Thank you for providing the U.S. Department of Agriculture (USDA) with your draft report, *Biobased Products: Improved USDA Management Would Help Agencies Comply with the Farm Bill's Purchasing Requirements.* I would like to offer the following comments for your consideration and ask that a copy of this response be included in your final report.

See comment 1.

We believe the report does not present a complete and balanced view of the progress made in implementing the provisions in Section 9002 of the Farm Security and Rural Investment Act of 2002 (7 U.S.C. 8102). The report emphasizes negative interpretations without reflecting the very considerable progress achieved, or how favorably that progress compares with other Government efforts to develop preference programs, such as the Environmental Protection Agency's (EPA) program for purchase of recycled products under Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6962).

See comment 2.

In particular, the report fails to recognize that the 6-month timeframe mandated for full implementation of the Federal Biobased Products Preferred Procurement Program in Section 9002 was not realistic. Given the novelty and complexity of the program, the time needed for mandated consultation with other Government Agencies, the lack of appropriated funds to support program development and implementation, and the time needed to conduct the requisite rulemaking activities under the Administrative Procedure Act, the statutory time frame was simply not feasible. We believe the General Accounting Office (GAO) report should have addressed this issue.

See comment 3.

The report indicates that a more formalized and definitive plan for implementation would have speeded implementation, and implies that the statutory timeframe could have been achieved. We appreciate GAO's suggestions for a more prescriptive management plan, but we do not believe that would have accelerated the work on the proposed rule given the complexity of the issues that had to be resolved and the substantial amount of consultation across Federal Agencies and within USDA that was a necessary component of developing the proposed rule. The report's statement that USDA had no plan for implementation of the program is wrong. GAO asked for a particular style of plan; instead USDA

See comment 4.

See comment 5.
See comment 6.

had a more general, written adaptive plan composed of several parts. GAO asked for an overall time line, which USDA consolidated from its plan and provided to GAO. USDA's plan included an implementation strategy, a time line and major tasks that had to be accomplished as well as other related written documents that were used to develop and refine the plan. These documents comprised an adaptive plan that recognized important issues would require resolution and that development of a consensus would emerge during the consultations with Government Agencies required under the statute.

See comment 7.

Development of a formal definitive plan that anticipated all exigencies in advance would not have been more effective in this case, since information gathered during the consultations often affected USDA's approach and time line. An adaptive plan that took into account the new information developed in the consultations was a more practical and efficient approach. That plan did make work assignments, allocate available resources, and establish milestones. (It is important to recognize the $1 million per year the statute provided for the fiscal years 2002 through 2007 was designated to support testing of biobased products and was not available to support the regulatory development process.)

See comments 4, 5, and 6.

See comment 8.

USDA conducted necessary consultations with the EPA, the National Institute of Science and Technology, the General Services Administration, the Office of the Federal Environmental Executive, the Office of Management and Budget (OMB), and the Defense Logistics Agency. The OMB, in turn, required that the draft regulations be reviewed by all members of the Federal Acquisition Regulation Council, an unprecedented review for a USDA rule. These consultations were meaningful consultations and, as such, consumed time.

See comment 9.

The GAO report implies a lack of management oversight within USDA over the implementation process. However, weekly progress reporting by the Office of Energy Policy and New Uses (OEPNU) to my office and to USDA's Farm Bill Implementation Team occurred throughout the period covered by the GAO report. Time lines were frequently discussed. Progress reports on implementation were included as part of a weekly report prepared by the Farm Bill Implementation Team for weekly briefings of USDA sub-cabinet officers. The Federal Biobased Products Preferred Procurement Program is included in USDA's *Performance and Accountability Report for FY 2003* and will be included in the report for 2004. This report is required by the Federal Managers' Financial Integrity Act to ensure programs are being operated effectively and efficiently.

See comment 10.

The GAO report suggests that there were long periods when no work was progressing on the implementation of this program. On page six of the draft report is this sentence: "For example, these staff waited several months to receive assistance from staff in another USDA office with experience in rules preparation to help them draft the *Federal Register* notice containing the proposed guidelines." No such several month delay occurred. From mid-May of 2002, until the proposed rule was published in the *Federal Register* there was constant on-going work and progress related to development of the program and the proposed rule.

See comment 11.

See comment 12.

See comment 13.

See comment 14.

See comment 15.

See comment 16.

USDA's Office of the General Counsel (OGC), Office of Budget and Program Analysis, and the Office of the Chief Economist were all directly involved in reviews and clearance of proposed rule language, as was OMB, and all members of the Federal Acquisition Regulation Council. Of necessity, these review and clearance processes are very time consuming and the time involved in each clearance step cannot accurately be determined before hand. The GAO report fails to take into account time requirements for intra- and interagency clearance.

The report also expresses concerns gathered from manufacturers and vendors of biobased products, and from trade associations regarding the degree to which the proposed rule would require testing of products for biobased content, environmental and health effects, and life-cycle costs. Many of those comments appear to have been gathered prior to the publication of the proposed rule in the *Federal Register* on December 19, 2003, or they were gathered from individuals who did not have a clear understanding of the rule. Since we are in the midst of consideration of the comments, USDA is limited by the Administrative Procedure Act in responding substantively to GAO's concerns because our ultimate position on these issues will be informed by the public comments. We can say, however, that the concerns raised in the GAO report do not reflect the balance of discussion in the public comments received on the proposed rule during its 60-day public comment period. Those public comments are available for review by the public – and GAO – at the offices of OEPNU.

For example, the GAO report criticizes the testing for life-cycle cost analysis and environmental and health effects as part of the proposed rule, describing how requiring life-cycle costing (LCC) information from a manufacturer is onerous and that government procurement officials will not necessarily find any value in such information, particularly if there is no comparison with fossil energy-based counterparts. We based our position in the proposed rule on the beliefs that even without such comparisons, LCC information is highly valuable and that over time LCC information on fossil energy-based counterparts will increase. We will consider all public comments received regarding LCC information and address those comments when publishing the final rule.

The public comments on the proposed rule received by USDA also reflect a much broader range of opinion regarding testing than the GAO report indicates. The comments include evidence of support for testing and for rigor in standards to qualify for the program. For example, a major manufacturer of biobased products indicated that it "supports the use of BEES as a model to determine life-cycle cost and environmental and health benefits." Another comment from a major trade association, though raising concerns about testing costs, asserts that "USDA could list the types of consideration Federal agencies could take into account when looking at the costs associated with using a product that go beyond the initial price" in order to overcome adverse price differentials between biobased products and fossil energy-based products. That information would come from test data providing information on environmental and health effects, life-cycle costs, performance data, etc. Senator Tom Harkin, in a letter to USDA commenting on the proposed rule, pointed out the importance of looking beyond the initial purchase price comparisons when Federal Agencies weigh purchases of biobased products

versus fossil energy-based products. Senator Harkin wrote "USDA could, for example, tell agencies to consider a variety of factors having to do with the true price, such as product life span, energy savings, health benefits, and the like." Again, USDA will consider all comments received relating to testing requirements and address those comments when publishing the final rule.

See comment 17.

The GAO report is critical of the proposed rule because the rule did not include actual designation of items (generic groupings of biobased products) for Federal procurement, and did not include the voluntary labeling program. On the advice of OGC, OEPNU did not include actual designation of items or establishment of the labeling program in the proposed rule. The statute identifies substantial information that the Secretary is required to consider prior to item designation by regulation and additional information she is required to provide Federal Agencies when designating items. The proposed rule delineates the process by which that information would be generated and gathered. Only after that process has gone through public comment and become a final rule can USDA then propose a rule, that follows the provisions of the process rule, to designate items and seek public comment on the proposed designations.

Given the statutory language with which USDA worked, and on the advice of OGC, it was determined that the preferred procurement program would have been legally vulnerable had designations of items been proposed prior to the establishment of the program guidelines through rulemaking. Similarly, the complexity and detail of a rule to establish the voluntary labeling program made it impractical to include the voluntary labeling program in this proposed rule prior to establishing the parameters of the underlying program.

See comment 18.

The GAO report questions the time likely to be required to designate by regulation the number of items that USDA has identified in the preamble to the proposed rule. USDA currently is in the process of developing such information for a number of items and expects to go forward with its first tranche of items for designation this year. USDA will vigorously pursue designation of subsequent items as quickly as the required information can be developed.

See comment 19.

The GAO report references interviews with users of biobased products who indicate an advantage of using such products is the reduced cost and effort of cleanups of product spills, as compared to fossil energy-based products. OEPNU is not aware that EPA has developed separate regulatory rules for handling biobased product spills. We recommend that GAO discuss the biobased product users comments with EPA to verify the accuracy of these statements.

USDA's objective in developing the Federal Biobased Products Preferred Procurement Program has been to move as quickly as possible, subject to available resources, to successfully implement a program consistent with the statutory obligations that will increase the volume of biobased products purchased by Federal Agencies. Because this program will lead to one type of product being preferred over another in Federal procurement, USDA's strategy has also been to design a process aimed to ensure the program will survive possible legal challenges.

Mr. Lawrence J. Dyckman
Page 5

USDA appreciates GAO's review and will, as we approach the development of subsequent proposed rules for designating of items and for development of the labeling program, draw on GAO's review and recommendations.

Sincerely,

Keith Collins
Chief Economist

The following are GAO's comments on the U.S. Department of Agriculture's letter dated March 23, 2004.

GAO Comments

1. On page 29 of the draft report (now p. 28), we state USDA's view that their progress compares favorably to EPA's implementation of its program for the purchase of recycled products. We also state that a comparison of USDA's efforts to implement the biobased procurement provisions in section 9002 of the farm bill with government efforts to develop other preference programs, such as EPA's program for the purchase of recycled products,[1] was outside the scope of our work. However, we have previously reported on EPA's efforts to implement this program. Specifically, in May 1993, we reported that EPA's efforts were slowed by a lack of a comprehensive, written strategy for completing this work.[2] Among other things, we noted that such a strategy would lay out funding and staff needs, goals and milestones, information and coordination needs, and a systemic approach to selecting items for procurement guidelines. We also noted that this strategy would serve as a basis for communicating EPA's progress to the Congress and others, including the agency's senior management. In addition, we reported that EPA's efforts to fulfill the legislative provisions for the purchase of recycled products lacked priority and adequate staffing and resources, and because of the agency's slow progress in identifying recycled products for preferred procurement, other federal procuring agencies had made little progress in developing their own affirmative programs for the purchase of these products. The conference report for the farm bill notes that the new program for the purchase of biobased products by federal agencies is modeled on the existing program for the purchase of recycled materials. Presumably, there are lessons to be learned from EPA's experience in implementing the recycled program. However, more than 10 years after the issuance of our earlier report, we are now raising similar concerns regarding USDA's implementation of the farm bill biobased procurement provisions.

[1]Under the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6962), the Congress directed federal procuring agencies to purchase items composed of recovered materials and directed EPA to designate the items agencies should purchase.

[2]U.S. General Accounting Office, *Solid Waste: Federal Program to Buy Products With Recovered Materials Proceeds Slowly*, GAO/RCED-93-58 (Washington, D.C.: May 17, 1993).

2. USDA is correct in stating that we do not offer an opinion on whether the farm bill time frame for full implementation of the biobased procurement program is realistic. This is a matter that USDA must address with the Congress. However, we do offer our views on how this implementation process might be accelerated. Regarding the specific factors that USDA cites as slowing this process, we believe these factors are adequately discussed in the draft report. On page 29 (now p. 28), we acknowledge that the complexity and novelty of the issues that USDA faces are challenging. On page 26 (now p. 25), we state that the farm bill requires USDA to consult with other agencies, including EPA, GSA, and NIST. On page 28 (still p. 28), we also state that USDA provided us a list of work activities indicating that it conducted external consultations with other agencies during the summer and fall of 2002. On page 30 (still p. 30), we state that the farm bill did not specifically authorize funds for developing the biobased procurement guidelines. And on page 17 (now p. 16), we note that a number of rulemakings will be necessary to fulfill the farm bill biobased purchasing requirements and that the issuance of these rulemakings will take years to complete. We also describe on that page the steps in the rulemaking process. Furthermore, we make other statements in the draft report that reflect the difficulties USDA faces. For example, on page 4 (now p. 5) we state that USDA faces a formidable challenge in implementing the farm bill provisions for purchasing biobased products. On page 14 (still p. 14), we state that USDA was faced with an ambitious task regarding these provisions. And on page 25 (still p. 25), we note that USDA officials said that delays may result from having to work through the various concerns and conflicting views of the many stakeholders to this effort, a process that one official described as akin to swimming in molasses.

3. We believe that factors such as the complexity and breadth of the issues to be considered, the internal and external consultation necessary, and the ambitious time frames for completing the work underscore the need for a comprehensive, written plan or strategy for the completion of this work was and is necessary.

4. We did not ask for "a particular style of plan." Beginning with our entrance meeting with USDA officials in May 2003, we asked for a copy of any written plan these officials had prepared that described how they intended to complete the work necessary to fulfill the farm bill biobased requirements. At that meeting, officials from the Office of Energy Policy and New Uses (New Uses office) stated that they did not have a written plan for this work, although the work had been ongoing for nearly a year. Approximately 9 months later, at our exit meeting

with USDA officials in February 2004, officials from the New Uses office provided us a draft document dated June 2002 as evidence of their planning. In our view, this document falls far short of being a comprehensive plan for completing this work, as discussed on pages 27 to 28 of the draft report (still pp. 27 to 28). New Uses staff neither mentioned the existence of an "adaptive plan composed of several parts" during our work—May 2003 through February 2004—nor did they provide us documentation of this plan. In contrast, another USDA office, the Office of Procurement and Property Management (Procurement office), developed a comprehensive, written plan for the completion of its limited portion of the biobased work, which it provided to us in January 2004, soon after it identified funds to begin this work.

5. After officials of the New Uses office told us in May 2003 that they did not have a written plan, we asked these officials if they had developed a list of tasks and associated milestones for their work. These staff indicated they had not done so, but would create this list for us. At the time, these staff indicated it would take them 2-3 weeks to develop this information. We received this timeline about 3 weeks later, in early June 2003.

6. Other than the plan prepared by the Procurement office for its limited portion of the work, we have seen no evidence that USDA—specifically the New Uses office—has a comprehensive, written plan for completing this work.

7. We agree that in developing a plan it is not possible to anticipate every exigency. However, agencies frequently prepare "formal definitive" plans without being able to anticipate every possible exigency, including planning documents related to the Government Performance and Results Act, such as strategic and annual performance plans, and planning documents related to the day-to-day activities of agencies, such as the implementation of programs, legislative initiatives, and other activities. USDA appears to draw a distinction between consultations and planning—that consultations must precede planning. We believe that the need for consultations, including how these consultations will be done and documented, should be addressed along with other considerations in a comprehensive, written plan for completing the work needed to fulfill the farm bill biobased requirements. We note that the Procurement office addressed the need for consultations in the management plan it prepared for completing its portion of the biobased work.

8. On page 28 of the draft report (still p. 28), we state that USDA provided us a list of work activities indicating that it conducted external consultations with other agencies during the summer and fall of 2002. During our work, we discussed coordination issues with the agencies cited by USDA, as noted on page 26 of the draft report (now pp. 25 to 26). In light of comments received from these other agencies on relevant excerpts of the draft report, the report has been clarified to identify some of the concerns these agencies cited.

9. On pages 26 to 27 of the draft report (now p. 26), we state that the New Uses staff reports to the Chief Economist in periodic staff meetings and that this official periodically briefs the Secretary of Agriculture. The report has been clarified to reflect the frequency of these meetings and other reporting cited by USDA. However, we continue to believe that without a comprehensive, written plan for completing the biobased work, it is difficult for managers to put into context the relative progress being reported, to identify needed adjustments, and to hold accountable the officials responsible for the work's completion.

10. The draft report does not suggest that there were long periods when work was not progressing on the implementation of the biobased procurement program. However, the draft report does raise issues on whether this work has progressed efficiently in the absence of a comprehensive, written plan for its completion and a commitment of sufficient staff and financial resources and management attention.

11. The report has been adjusted to make clear that the delay in receiving assistance from another office to help draft the *Federal Register* notice did not prevent other aspects of the work from proceeding.

12. On page 28 of the draft report (still p. 28), we state USDA provided us a list of work activities indicating that it conducted external consultations with other agencies during the summer and fall of 2002.

13. On page 44 of the draft report (now p. 43), we state that most of our audit work was done prior to USDA's publication of its proposed rule in December 2003. This was a function of our need to be responsive to our requester's time frames for completing the work and delays in USDA's issuance of the proposed rule. However, subsequent to the rule's publication, we also obtained relevant information and views from some contacts, including commentary on the proposed rule posted in newsletters or on Web sites of organizations such as the Biobased Manufacturers Association. In addition, we attended the public meeting held on January 29, 2004, at USDA headquarters in

Washington, D.C., in which stakeholders orally offered comments on the rule.

14. The public comment period closed on February 17, 2004. USDA is currently analyzing and summarizing these comments. Eventually, USDA will discuss these comments in its final rulemaking for the biobased procurement guidelines.

15. The report does not criticize the testing of life-cycle cost analysis and environmental and health effects as part of the proposed rule. The report reflects the views of a variety of relevant stakeholders regarding this and other testing issues. In a number of cases, these stakeholders offered negative or critical views, or otherwise expressed concerns. The report accurately reflects these views.

16. In reviewing a copy of the Senator's letter, we also note that he expressed several concerns. For example, he stated that USDA is many months behind the schedule Congress laid out for biobased product purchasing in the farm bill. Regarding testing, the Senator said that the BEES model should probably not be the only model allowed or required for life-cycle analysis of biobased products; he noted that the statute does not require it and that agencies themselves could determine which tests are necessary and incorporate them into their procurement guidelines. In addition, the Senator said that this information would be of little value to procurement agents if they do not have comparable life-cycle analysis results for petroleum-based counterparts. Furthermore, the Senator expressed concerns about the potential cost of testing on small and large businesses, suggested that biobased content be self-certified, and noted that agencies could require BEES analysis or other third-party testing in the event it is warranted, such as when the veracity of a manufacturer's claim is in dispute.

17. The report accurately states that USDA has fallen short in implementing the farm bill biobased purchasing requirements. The report accurately describes the content of the proposed rule, including what is addressed specifically in the proposed guidelines or in the preamble to these guidelines. It is factual that the proposed guidelines do not designate any items for preferred procurement or include the voluntary labeling program.

18. The report states the time likely to be required to designate the items that USDA identified in the preamble to the proposed rule. This information is based on a timeline furnished by USDA.

19. On pages 18 to 22 of the draft report (now pp. 18 to 21), we accurately reflect the views of some agency officials who believe that the advantages of biobased hydraulic fluids and lubricants are (1) the reduced cost and effort of cleanups of product spills, as compared with fossil resource-based alternatives and/or (2) the ease of disposal because these products are biodegradable. However, as noted on page 22 (fnt. 29) of the draft report (now p. 21, fnt. 31), we discussed these views with EPA. The Director of EPA's Oil Spill Staff stated that the agency had not made a specific ruling regarding how spills of biobased hydraulic fluids and lubricants should be handled; in the absence of a ruling, this official said that EPA does not make a distinction between spills of these biobased products and their petroleum-based alternatives.

Appendix VI: GAO Contacts and Staff Acknowledgments

GAO Contacts

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James R. Jones, Jr. (202) 512-9839

Acknowledgments

In addition to the individuals named above, Jeanne Barger, Rani Chambless, and Carol Herrnstadt Shulman made key contributions to this report. Important contributions were also made by Oliver Easterwood, Lynn Musser, Anne Stevens, Amy Webbink, and Linda Kay Willard.

Related GAO Products

Federal Procurement: Government Agencies Purchases of Recycled–Content Products. GAO-02-928T. Washington, D.C.: July 11, 2002.

Federal Procurement: Better Guidance and Monitoring Needed to Assess Purchases of Environmentally Friendly Products. GAO-01-430. Washington, D.C.: June 22, 2001.

Solid Waste: Federal Program to Buy Products With Recovered Materials Proceeds Slowly. GAO/RCED-93-58. Washington, D.C.: May 17, 1993.

Solid Waste: Progress in Implementing the Federal Program to Buy Products Containing Recovered Materials. GAO/T-RCED-92-42. Washington, D.C.: Apr. 3, 1992.

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