



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON D C 20460

OFFICE OF  
POLICY PLANNING AND EVALUATION

February 26, 1990

Enclosed for your review is a draft report, **Environmental Labeling in the United States, Background Research, Issues, and Recommendations**, prepared for EPA's Office of Pollution Prevention.

This draft report, written by Applied Decision Analysis, surveys the status of labeling programs in other countries and describes their goals and structures. The report also reviews several U.S. government labeling programs and discusses their effectiveness. Based on this research, Applied Decisions Analysis suggest goals, functions, and structure for a national U.S. environmental labeling program.

We are sending you this report for your information; however, we are also very interested in your review and comment on this report before we finalize it. If you have any comments please send them to:

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Please note that the report does not necessarily reflect EPA policy.

Thank you for your help in this matter.

ADA-89-2085

**ENVIRONMENTAL LABELING  
IN THE UNITED STATES  
BACKGROUND RESEARCH, ISSUES,  
AND RECOMMENDATIONS**

**DRAFT REPORT**

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**December 5, 1989**

**This is a draft document that does not necessarily reflect Environmental Protection Agency policy. The opinions expressed herein are entirely those of the authors.**

## **FOREWORD AND ACKNOWLEDGEMENT**

Applied Decision Analysis, Inc. has prepared this draft report for review by EPA and other interested agencies. It is our hope that the report will generate discussion, as well as serve as a basis for developing an environmental labeling program in the U.S. Comments on the report will be incorporated into a final version at a later date.

In preparing this report, ADA used information and source materials provided by a large number of individuals from several different U.S. and foreign governments, as well as industrial, non-profit, and academic backgrounds. In addition, the chapter containing recommendations for a U.S. environmental labeling program was developed with the assistance of three consultants:

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**These individuals provided valuable information and insights. They will also review and comment upon this draft of the report.**



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## **CHAPTER 1 INTRODUCTION**

Government labeling of "environmentally compatible" products has become a widely discussed topic in recent months. West Germany has had an environmental labeling program for more than ten years. Several other countries, as well as the European Economic Community, have started or are considering new environmental labeling programs. This report describes the findings of research efforts on environmental labeling in other countries and the effectiveness of labeling programs in general, and provides recommendations as to the goals, functions, and structure of an environmental labeling program in the U.S.

Chapter 2 surveys the status of the labeling programs in other countries, and describes their goals and structures. The California state law known as "Proposition 65" is also described, as it has had effects on labeling at the national level. Finally, a few examples of other environmental shopping and recycling efforts in the U.S. are discussed. The purpose of this chapter is to educate the reader on the status of other environmental labeling programs, compare them, and assess their effectiveness when possible.

Chapter 3 reviews several U.S. government labeling programs and discusses their effectiveness. These programs include nutrition labeling, appliance energy efficiency labeling, automobile fuel economy labeling, and cigarette labeling. The effectiveness of third-party labels (such as the Good Housekeeping seal) is also addressed. The purpose of this chapter is to apply the results of past labeling efforts to future ones by identifying the key factors that determine the success of a labeling program.

Chapter 4 combines the insights gained from the second and third chapters with additional research results to suggest the goals, functions, and structure for a U.S. environmental labeling program. The purpose of this chapter is to recommend how a U.S. environmental labeling program should operate, but not to argue in favor of its existence. The chapter assumes that the program may be pursued, and proposes how best to do so.

Also included in Chapter 4 are the recommended next steps for EPA to take if an environmental labeling program is pursued. These include immediate actions and additional research.

## **CHAPTER 2 ENVIRONMENTAL LABELING PROGRAMS**

### **Introduction**

Environmental labels, or "eco-labels," are government-sponsored seals of approval that are applied to certain products to inform consumers about the environmental impacts of the products. The first major environmental labeling program was launched over ten years ago by West Germany. During the last two years, several other federal governments have begun similar programs. The primary purpose of this report is to evaluate the options for implementing such a national-level labeling program in the United States (U.S.)

In the U.S., a wide variety of activities involving the dissemination of environmental information have taken place mostly at the state and local level. One example of note is California's Proposition 65. Other examples include "environmental shopping" campaigns and catalogs, and recycling-labeling programs.

This chapter focuses on government-sponsored environmental labeling programs in countries other than the U.S., and also discusses related activities in the U.S. In the following sections, we list the major non-U.S. labeling programs and describe their main features and similarities. We also include a section describing California's Proposition 65 and another listing some of the relevant environmental shopping, consumer-information, and recycling-labeling programs in the U.S.

The information sources for this chapter are given in Appendix A. Published information about international environmental labeling programs was quite scarce until recently. The news media has covered the topic sporadically, and little is written about the newest European programs. This report therefore relied on a substantial amount of telephone research, in addition to literature searches, to collect information and identify privately published reports and papers. For the sections summarizing Proposition 65 and other U.S. programs, we relied on news articles and published government reports as well as telephone research.

## **Overview of Environmental Labeling Programs**

The major environmental labeling programs are run by the governments of West Germany, Canada, Japan, and Norway. Several other countries, as well as the European Economic Community (EEC), are preparing plans for labeling programs. The major programs emphasize positive, rather than negative, labeling; products receive a label indicating that they are in some way aligned with the goal of preserving the environment. The programs share similar goals and procedures. Their goals include

- helping consumers make environmentally-conscious purchases,
- encouraging product manufacturers and sellers to develop environmentally acceptable products and manufacturing processes, and
- increasing environmental awareness in general.

California's Proposition 65 is structured differently; it uses negative, or warning, labels. In addition to eliminating pollutants from drinking water, it has the ambitious goal of protecting consumers and workers from carcinogenic or reproductive-toxic substances; it emphasizes preventing health risks rather than just protecting the environment. Other relevant programs in the U.S. have different goals ranging from promoting recycling to reducing municipal solid waste to promoting environmental protection in general.

The labeling programs in other countries are usually administered by a government organization and/or an independent advisory board, and often involve the public. Products or product categories are selected as candidates to receive the label. An organization or board designs criteria for awarding the label to these products. Manufacturers voluntarily apply to use the label on their products, and if accepted, pay a small fee for the right to do so.

Proposition 65 is implemented by the Governor of California, an advisory board, the State Health and Welfare Agency, and several other agencies. It is enforced by the State Attorney General's office, and it also involves the public. Other programs discussed in this chapter have a variety of administrative structures.

The sections below describe the environmental labeling programs in West Germany, Canada, Japan, and Norway. We also discuss the plans for similar programs in Sweden, a joint Scandinavian program, an EEC-wide program, and the plans in other countries. To the extent possible, the following aspects are covered for each program:

- its background and history,
- the product categories it covers,
- the type of label(s) it uses,



- the governmental or institutional processes involved,
- the criteria for using the label on products, and
- the effectiveness of the program (if known), in modifying consumers' and producers' knowledge and behavior

The effectiveness of the programs (and of labeling in general) is particularly important to our evaluation of ways to implement a similar program in the U.S. Effectiveness is made up of three components:

- **Awareness** - do consumers and producers know about the labels?
- **Acceptance and Values** - how do consumers and producers react to the labels? Do they care whether a product is labeled or not? Do they agree with the goals of the labeling program?
- **Choice Behavior** - if consumers and producers are aware of the labels, and care about them, do they affect consumer choices?

The sections below provide information about the effectiveness of the environmental labeling programs along these three dimensions, where such information is available.

The non-U.S. environmental labeling programs are organized in chronological order: West Germany's program was begun first, followed by Canada and Japan on approximately the same schedule, followed by Norway, Sweden, the joint Scandinavian program, the EEC, and other proposed programs. Proposition 65 and selected relevant U.S. shopping, information, and labeling programs are discussed in the later sections. Table 1 summarizes the key characteristics of the non-U.S. environmental labeling programs and Proposition 65. Figure 1 shows reproductions of the environmental labels used in West Germany, Canada, and Japan.

### **West Germany: Blue Angel**

West Germany is recognized as the innovator of "eco-labeling," having launched its program ten years before anyone else. In 1976, the Organization for Economic Cooperation and Development (OECD) adopted a Recommendation urging its members to develop comprehensive waste management policies, including information campaigns for industry and consumers. Partly in response to this, West Germany's Federal Environment Agency (FEA) established the Blue Angel program in 1978.

Blue Angel labels were approved for 500 products by 1984. In the last two years, this number has risen dramatically. By 1987, the label appeared on 2000 products; by

**TABLE 1.**

**SUMMARY OF FIVE MAJOR LABELING PROGRAMS**

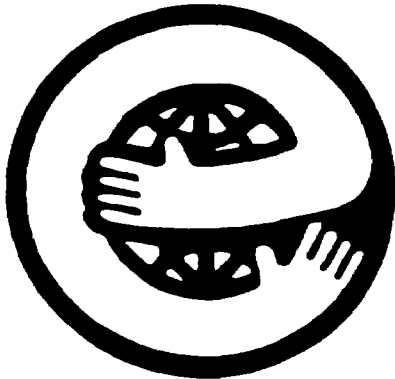
<b>CATEGORY PROGRAM</b>	<b>BACKGROUND, HISTORY</b>	<b>PRODUCT CATEGORIES</b>	<b>TYPE OF LABEL</b>	<b>INSTITUTIONS</b>	<b>PRODUCT CRITERIA</b>	<b>EFFECTS</b>
<b>West Germany: Blue Angel</b>	Est 1978 500 Products by 1984 2000 Products by 1987 3000 Products by 1988 Now over 3100 Products in 57 categories.	57 Categories Incl aerosols, recyclables, paints, batteries, car parts, boilers, appliances	Blue Angel Blue logo with words of explan- ation	Est by Federal Environment Agency, run by FEA, Environmental Label Jury, Inst for Product Safety and Labeling	Cradle to grave approach Beneficial compared to other products of same purpose	Highly accepted recognized Growing Increased recycling re- duced pollution
<b>Canada Environmental Choice</b>	Force est 1987. Program announced June 1988. 3 guidelines com- pleted July 1989 6 more guidelines currently pro- posed.	3 established Re-refined oil, recycled construction material, recycled plastic 6 more proposed	Maple leaf made of 3 doves, sym- bolizing govern- ment, industry, consumers	Environmental Choice Board, Environment Canada, Canadian Standards Association	Cradle to grave approach	High interest response from industry consumers Effects not yet known
<b>Japan Eco-Mark</b>	Announced 1988 Launched February 1989	Proposed initial list aerosols, kitchen strainers/ filters, compost-makers, recycled books & maga- zines.	2 hands encircling the earth, words of explanation	Environment Agency Eco-Mark office 2 committees de- signed, will publicize	Cradle to grave approach Little/no pol- lution when discarded	Positive res- ponse from consumers Less enthu- siasm from industry Effects not yet known
<b>Norway</b>	Proposed late 1988 First products labeled early 1990.	Probable initial list paper products, aerosols, etc. Later household chemicals	Proposed Label for joint Scandinavian program	New, independent non-profit group with Council and Board	Cradle to grave approach Least harmful compared to other products of same purpose	Industry interest Effects not yet known
<b>California Proposition 65</b>	Passed by California voters in November 1986 Current attempts to amend it or strike it down seem unsuc- cessful	Requires warnings on all consumer products not meeting "no significant risk" level Also protects drinking water and workers	No logo Wording on warning labels varies	Governor's office, Advisory panel, State Health & Welfare Agency, State Attorney General	Warning or No significant risk level for products containing po- ssible carcinogen reproductive toxins	Had significant effect on labeling precipitated much legislation de- bated initial media coverage



Canada - EcoLogo



West Germany - Blue Angel



Japan - EcoMark

**Figure 1. ENVIRONMENTAL LABELS USED IN OTHER COUNTRIES**

1988, it appeared on 3000 products in 50 categories. As of August 1989, 3100 products in 57 categories were labeled. Ninety percent of the products bearing the label are manufactured by West German companies; the other ten percent are manufactured by companies in twelve other European countries. The categories of products covered are diverse. They include:

- Non-CFC aerosols
- Returnable glass bottles
- Bottle banks (collection systems for used bottles)
- A variety of recycled paper, rubber, and glass products
- Re-useable packaging
- Re-treaded tires
- Asbestos-free floor coverings, clutch facings, brake linings
- Low-pollution and low-mineral paints
- Zinc-air batteries
- Low-emission oil- and gas-fired boilers
- Low-noise appliances and vehicles
- Solar-energy products.

A complete list of labeled products appears in Table 2.

The label West Germany uses is the "Blue Angel," an angel inside a circle of grain. The logo was adapted from the logo of the United Nations Environment Program. The wording on the logo originally read "Environment-friendly because..." followed by the criterion used, for example, "contains more than 50% recycled material." However, the wording on the label has been accused of being misleading; environmental groups claim that no product is "environment-friendly." The wording is thus being simplified. For example, one label reads "Helps reduce waste."

The process for defining product categories, establishing criteria, and approving products for the Blue Angel involves three groups: the Federal Environment Association (FEA), the Environmental Label Jury (EL Jury), which is a group of representatives from industry, scientific, and consumer organizations, and the Institute for Product Safety and Labeling (abbreviated RAL), an independent standards-setting organization.

Briefly, the process is as follows. The general public, including product manufacturers, may suggest products or categories to the FEA. The FEA screens these suggestions and passes them on to the EL Jury, which then formulates a list of products or product categories for detailed evaluation. Next, the RAL organizes public hearings and the FEA appoints a group of experts who define the criteria for awarding the Blue Angel to products in these categories.

The hearings are chaired by the RAL and involve the FEA and several additional participants: the Federation of German Industries, the Consumers' Working Group, and the Goods Test Foundation, a consumer quality testing organization. Thus industry and consumer interests are represented over and above their representation on the EL Jury.

TABLE 2.

## PRODUCT CATEGORIES IN WEST GERMANY

RAL UZ 1		re-usable tires
RAL UZ 2		re-usable glass bottles
RAL UZ 3		spray cans without fluorocarbons in the areas of cosmetics (incl. hair spray), indoor and furniture sprays and sprays for every day use purposes (until 31.12.1989)
RAL UZ 3 (new)		low waste hairsprays, deodorants and shaving foams (from 01.01.90)
RAL UZ 4		glass collection bin campaign
RAL UZ 5		sanitary crepe paper made from recycled paper
RAL UZ 6		low noise lawn mowers
RAL UZ 9		low emission oil-atomizing burners
RAL UZ 10		asbestos free floor coverings
RAL UZ 11		asbestos free brake linings
RAL UZ 12 a		low pollutant coatings
RAL UZ 12 b		powder coatings
RAL UZ 13		salt-free, neutralizing spreading material
RAL UZ 14		recycled paper
RAL UZ 15		recyclable printed material
RAL UZ 16		zinc air-batteries
RAL UZ 17		potting containers made from recycled materials
RAL UZ 18		corrosion protection coatings low in lead and chromates
RAL UZ 19		durable, low-noise car mufflers
RAL UZ 20		asbestos-free clutch linings
RAL UZ 21		sound-proofed glass collection bins for noise sensitive areas
RAL UZ 23		waste water-poor car wash plants
RAL UZ 24		environmentally compatible pipe cleanser
RAL UZ 25		reusable capsules for cream machines and soda siphons
RAL UZ 26		reusable drop box for feed
RAL UZ 27		reusable packings for transportation
RAL UZ 28		reusable trays and similar industrial packings
RAL UZ 29		waste water neutral cold cleanser
RAL UZ 30		products made from recycled plastics and rubber
RAL UZ 31		motor vehicles with exhaust gas treatment
RAL UZ 32		water-saving toilet flush tanks
RAL UZ 33		electronically operated shower batteries
RAL UZ 34		pesticide-free pest control for indoor use
RAL UZ 35		wall paper made from recycled paper
RAL UZ 36		construction materials made from recycled paper
RAL UZ 37		PCB-free cooling and insulation liquids for electrical appliances
RAL UZ 38		low-formaldehyde products from wooden materials (for indoor use)
RAL UZ 39		low-emission gas burners
RAL UZ 40		low-emission combined water heating and cycling-water heaters
RAL UZ 41		low-emission burner-boiler units with gas burner (with fan)
RAL UZ 42		low-noise moped
RAL UZ 43		water-saving flow restrictors
RAL UZ 44		water-saving pressurized flushers
RAL UZ 45		soil meliorators and soil agents made from compost materials
RAL UZ 46		low-emission energy-saving oil burner-boiler units
RAL UZ 47		solar-power operated products and mechanical watches
RAL UZ 48		readily biodegradable lubricants for motor-saw chains
RAL UZ 49		construction materials made mainly of recycled glass
RAL UZ 50		lithium batteries free of mercury and cadmium
RAL UZ 51		"environmental ticket" (for public transport)
RAL UZ 52		highly insulating multi-layer window glass
RAL UZ 53		low-noise construction machines (compressors, power aggregates, wheel loaders, excavators, excavator loaders)
RAL UZ 54		low noise garden chaff cutters for compost materials
RAL UZ 55		reusable, refillable typewriting ribbon cassettes and toner cartridges
RAL UZ 56		recycled cardboard
RAL UZ 57		thermal processes (using hot air) to combat xylophagous insects

Following the hearings, the recommendations of the RAL and the FEA's expert group are submitted to the EL Jury. The Jury makes the final decisions on the inclusion of the product category and the criteria to be used, and publicizes its decisions.

With the criteria in place, manufacturers apply for the right to use the label on their products, and the product testing process begins. The RAL is responsible for testing products with the cooperation of the FEA. Before a manufacturer is awarded a contract to use the Blue Angel, comments are solicited from the FEA, the Federal State in which the manufacturer is located, and possibly other institutions (such as the Federal Health Agency). The local agencies that are familiar with the manufacturer are queried to find out whether the manufacturer complies with local pollution standards, and how its environmental record stands in general. If the manufacturer has shortcomings in this area, the Blue Angel may be refused for its products.

If the RAL concludes that the product is eligible to use the Blue Angel, a private contract is written between the manufacturer and the RAL. The manufacturer pays a small fee and may then use the label for the next three years. The fee covers the RAL's costs to administer the program. The contract terms resemble those of licensing a trademark. Violations of the contract, or the use of the trademark (Blue Angel) without a contract, would be enforced through the civil court system.

In general, the Blue Angel can be awarded to products which "when compared with other products fulfilling the same function and when considered in their entirety, taking into account all aspects of environmental protection (including the economical use of raw materials), are, as a whole, characterized by a particularly high degree of environmental soundness without thereby significantly reducing their practical value and impairing their safety." (Source: FEA, Information Sheet on the Environmental Label, in Environmental Labelling in the EFTA-Countries, August 1989.)

The designers of the Blue Angel program recognized the difficulty of evaluating the environmental merit of a product on many characteristics, over the product's entire life cycle. Therefore, traditionally the qualification criteria were limited to a single most important criterion that allowed comparison with other products. For example, the criterion for recycled paper products was the percentage of waste paper content. The single criterion selected for vacuum cleaners, on the other hand, was quietness.

This "single-criterion" approach has been criticized by manufacturers and consumers as being narrow-minded. However, recent statements by individuals involved in the program emphasize that the design of product criteria and product testing do include consideration of the entire product cycle and of all aspects of environmental protection. They explicitly recognize that for specific product groups, the environmental criteria can be narrowed down to individual aspects and phases of production because of irrelevance, lack of differentiation, or lack of available information on the other environmental impacts of the products. The Blue Angel program has always used a "cradle-to-grave" approach to developing product criteria, although the resulting criteria may consist of only one criterion.

Recently the standard for awarding the Blue Angel to recycled paper products was tightened from a requirement of 51% waste paper to one of 100% waste paper. Other standards are also being reviewed and tightened to keep them from becoming obsolete as technologies improve and more products meet the original standards.

The Blue Angel program is the only "positive eco-labeling" program that has been in place long enough to be evaluated along all three dimensions of effectiveness. The large number of products carrying the Blue Angel logo almost certainly means that producers (at least in some product categories) are aware of the program, have accepted it, and consider it important enough to warrant changing their products and/or manufacturing processes. About 200 suggestions for new product categories are received each year from manufacturers.

One source (a report by Environmental Data Services, abbreviated ENDS) gives additional evidence that the Blue Angel has succeeded in encouraging manufacturers to develop ways to reduce pollution, and to consider their products' effects on the environment when making design and manufacturing decisions. For example, paper manufacturers have been significantly affected by consumer demand for recycled paper bearing the Blue Angel label. One manufacturer invested substantially in a new machine to use 100% waste paper in a variety of tissue products.

On the consumer side, the Blue Angel program seems to be well-known and has contributed to consumer awareness of environmental issues. A survey of 3000 households in 1987 showed that 78.9% were familiar with the Blue Angel label. Consumer demand for recycled paper products and acrylic paints with the Blue Angel logo has been healthy. However, according to several sources, there is no published, thorough study of the impacts of the Blue Angel program on particular product sectors or brands, or on changes in consumer attitudes. The ENDS report examines this issue in a qualitative way. The only quantitative evidence of the program is stated by the German government: The program has resulted in a cumulative reduction of 40,000 tonnes of solvents from household paints entering the waste stream.

The Blue Angel program appears to have been a success in achieving its main goals. All of the other environmental labeling programs underway or being planned have been designed with the Blue Angel program as the model. Many observers have commented that West Germans are unusually environmentally aware to begin with - more so than other Europeans, and probably more so than Canadians or Americans. Reasons typically given for this include the Green Party's role in German politics, and the well-publicized acidic damage to German forests such as the Black Forest. The "Green attitude" in West Germany made the Blue Angel program possible, and has contributed to its success.

Despite its success, the Blue Angel program has received some criticism. Complaints about the program are that the criteria have become outdated for some product categories, the overall quality of the products is not given sufficient

consideration, and that the single-criterion approach is not broad enough. Manufacturers in some product sectors have decided not to use the logo on their products, although they could. One reason they give is that they disagree with the logo's criteria. Another is a fear that their products that do not carry the logo will be perceived as inferior to those that do carry it.

Still, many companies see the logo as a marketing opportunity, and use it successfully as such. The varying reactions to the program seem to depend on the particular marketplace, and the company's attitude toward its consumers and its marketing strategies. The program has been revised in response to these criticisms. For example, many of the product criteria and corresponding labels have been changed. Also, a major consumer testing organization is now formally included in the testing process to verify the overall quality of the products that receive the Blue Angel.

### **Canada: Environmental Choice**

Canadians have become increasingly concerned about their environment in recent years. Acid deposition in Canada, and the disagreements between the Canadian and U.S. governments about its causes, are just one example of the concern on the part of the Canadian citizens and their government. In April 1987, the World Commission on Environment and Development published a report, "Our Common Future," that stimulated the formation of a Canadian task force to consider the report's recommendations.

A series of meetings and the publication of policy documents followed. In June 1988, the Canadian Government launched its Environmentally Friendly Products campaign, intended to help individual consumers be better informed and make a difference through their buying power. At the first meeting of the advisory and management board of the program, the board members voted to change the name to Environmental Choice for the same reason the Blue Angel wording was changed: "Environmentally friendly" is not an accurate description, as products can be environmentally benign without really improving the environment. However, the front of the Environmental Choice publicity brochure still reads "How to Find Planet-Friendly Products."

The first three product guidelines for Environmental Choice were completed in July 1989. Six more guidelines are currently proposed. The product categories covered by the three completed guidelines are:

- re-refined oil used in the base stock for lubricating oil
- construction material consisting of recycled wood-based cellulose fiber
- plastic products using recycled plastic.

The product categories covered by the six proposed guidelines (announced on August 1, 1989) are:



- zinc-air batteries
- sanitary paper from recycled paper
- fine paper from recycled paper
- vegetable oils for consumer and industrial use (but not oils for food products)
- recycled rubber
- low-pollution water-based paints.

The label that will be used to distinguish these products is the "EcoLogo," a maple leaf made up of three doves, symbolizing the three sectors that join forces to protect the environment: the government, industry, and consumers. The logo will be accompanied with an explanatory phrase that varies from product to product, for example, "over 50% re-refined oil" or "contains 100% recycled paper." These phrases must appear in French and English below the logo. They are not inscribed within the logo, as are the phrases on the Blue Angel. Product manufacturers have some freedom to choose the placement and lettering size of the phrases.

Canada's process for defining product categories, establishing guidelines, and approving products is modeled after West Germany's. Three main groups are involved in the process: Environment Canada (the government agency sponsoring the program), the advisory/managerial Environmental Choice Board (a panel of experts from various fields), and the Canadian Standards Association (CSA), an independent testing and standards-setting organization. These three groups closely parallel the three organizations involved in the Blue Angel program. In addition, a central Secretariat composed of about ten staff members provides support for the program. The Minister of the Environment represents the program politically.

The labeling process in Canada is still undergoing some revision. Based on our discussions with the Secretariat, Board members, and CSA, we understand that the present process is as follows. Suggestions for product categories are solicited by the Secretariat from the general public, including individuals, business, and other organizations. These suggestions are screened by the Board; Environment Canada prepares a briefing note on each accepted suggestion. The Board reviews these and may accept or reject the product category. The Board may also ask for more technical information from CSA, Environment Canada, or others.

If the product category is accepted, CSA takes charge of preparing the guidelines (criteria) for the category. CSA has a Coordinating Technical Committee responsible for developing product guidelines. The Technical Committee sets up task forces, using experts from business, environmental, and consumer backgrounds, to develop specific guidelines. The Technical Committee, although set up by CSA, includes members from Environment Canada and several other organizations as well as three members from CSA.

Once the guidelines are prepared, they are reviewed by the Board and may be accepted, rejected, or set aside for further review or development. Once the guidelines

are accepted, they are announced by the Minister of the Environment. The public then has 60 days to comment. Comments are directed to the CSA, which then prepares a report on the results. The Board reviews the report to prepare a final decision on the inclusion of the product category in the program; a 2/3 majority vote is necessary for acceptance of the category. The Board prepares a recommendation and a public announcement for accepted categories.

With the product category and guidelines in place, a manufacturer may apply to CSA for a license to use the EcoLogo. If its product is accepted by the CSA, the manufacturer pays a license fee (\$1500 to \$5000 annually) and is allowed to use the logo for one to three years. The manufacturer also pays for any product testing required by the guidelines. These fees are higher than those imposed by the Blue Angel program. The Environmental Choice program is intended to be self-sustaining within two years.

The Environmental Choice program uses a cradle-to-grave approach to determine product criteria. The objectives of the program clearly state that the products labeled ("product, service, process or packaging"), must be environmentally sound in their production, use, and disposal, without any reduction in performance and safety, when compared to other products fulfilling the same function. The implementation of the cradle-to-grave approach, however, is still somewhat ad hoc. In the short term, the Environmental Choice program is mainly concerned with selecting products that:

- are environmentally benign,
- have an obvious, compelling reason for being selected, and
- have a high market profile.

Earlier in the implementation of the program, a matrix-based approach was considered that would award points to each candidate product based on its environmental acceptability at each stage of its life cycle. The points would be weighted to arrive at a final score, which would have to show an acceptable average level in order for a product to be awarded the logo. This method is still being developed and is not explicitly used in the program yet.

The Environmental Choice program has not been in place long enough for its effectiveness to be assessed. According to individuals involved in the program, the response from consumers and most industry sectors has been positive. As in Germany, businesses specializing in recycled products have been particularly enthusiastic.

Based on the statements made in the three established product guidelines, the Environmental Choice program has the potential to be very effective in reducing waste and pollution. The guidelines state that 300 million liters of used oil from automobiles are discarded each year; waste paper enters the waste stream at a rate of 4 million tonnes annually, contributing about 35% by weight of the municipal waste stream; and

plastic products account for approximately 7% by weight, or 30% by volume, of annual municipal solid waste in Canada. Thus, the potential for waste reduction is large just from the first three product categories, which is no doubt one of the main reasons why these categories were selected.

### Japan: Eco-Mark

Japan's Eco-Mark program was announced in 1988. In May 1988, Japan's Environment Agency issued a White Paper that addressed a new direction for domestic environmental policy. It stated that pollution prevention should be considered in every stage of production, use and disposal of products, and that consumers should be educated more to help them realize that environmental problems are their concern and responsibility. The program was formally launched in February 1989. Japan's program is similar to Canada's and Germany's.

According to the most current source we have found (the ENDS report), the initial product list for the Eco-Mark program was announced earlier this year, and includes:

- personal care, non-chemical-propellant aerosol products
- kitchen strainers and filters
- compost-makers for organic wastes
- books and magazines from recycled paper.

A draft list of products to be added later included electric cars, solar-powered products, low-mercury batteries, machinery and appliances that consume less water or energy, recycled plastic and wood products, and bottle banks.

Japan uses a label that is intended to convey the image of "saving the Earth with our own hands" - a pair of hands encircling the Earth. The logo also says "Protects the Earth" together with a brief product-specific reason, such as "Protects the ozone layer." This format is quite similar to the Blue Angel format.

The Eco-Mark program was designed by two committees, one of which will be responsible for the publicity effort as well. The central role in implementing the program will be held by the Eco-Mark office of the Environment Agency. This office will decide on product categories, design the criteria, and handle applications to use the logo. As with Germany and Canada, manufacturers will pay a small fee to use the logo; the privilege lasts for two years, after which it must be renewed.

The criteria for awarding products the Eco-Mark label are that the products cause little or no pollution in use, improve the environment in use, cause little or no pollution when discarded, and otherwise contribute to conservation of the environment. Thus the criteria seem to represent a cradle-to-grave approach. The Eco-Mark criteria will be designed to encourage manufacturers to innovate; criteria may therefore be stricter than the corresponding criteria of other countries' programs. For example, aerosols may

have to be not only free of CFCs to qualify, but also free of carbon dioxide due to its contribution to global warming

According to Japan's Environment Agency, responses from consumer and environmental organizations have been positive, while industry has been less enthusiastic. In a brief informal survey in Japan, several well-educated professionals knew very little about the program or were even unaware of it. No other information is available yet as to the effectiveness of the program.

### **Norway**

Norway's eco-labeling program is planned, but is not fully underway. It has developed concurrently with a fair amount of debate about a possible coordinated labeling system for all the Scandinavian countries (discussed below). A working group has studied and proposed alternatives for implementing Norway's eco-labeling system. At this time, the program in Norway is being set up, and it should be in operation around the end of 1989.

The first set of product groups proposed for the program may include:

- paper products, including bags, packaging, and wallpaper
- aerosols that contain no ozone-depleting substances
- refrigerators that contain no CFCs
- low-noise products
- insulating material
- returnable containers.

The second set of products will include those for which it is more difficult to develop criteria, such as household chemicals.

According to the ENDS report, Norway previously planned to use the Blue Angel as the logo for its program because it is well established and recognized. However, more recent sources indicate that the Blue Angel will not be used. The joint Scandinavian program will require a common symbol for all the Scandinavian countries, and a design for this label has been proposed.

The plan for implementing the program calls for a new, independent non-profit foundation to run the program; a Council, Board, and Secretariat will be involved. The Board, which will consist of eight members appointed by Norwegian government agencies and several other organizations, will have the authority to decide on adopting product criteria and on awarding the label to specific products.

The Council will be the foundation's "supreme governing body" and will consist of 19 members, also from government agencies and other interested groups. The

Council's role will be to set guidelines for the activities of the foundation, including procedures for developing and adopting labeling criteria

Companies applying for the label will have to provide their own evidence that their products comply. Product testing may also be carried out by Norway's official consumer organization. Successful applicant companies will pay a small initial fee and an annual fee to use the label on each approved product, as well as any testing expenses. The fees will be used to pay for a public information campaign as well as program expenses. After approval, the applicant may use the label for two to three years, after which time the product must again be tested. The Board is expected to review the standards frequently, making them stricter as justified by technological developments.

The product criteria for each category will be developed by independent groups of experts. The general criteria will include the recovery of raw materials, manufacturing processes, use, and waste. Products awarded the label must be the least environmentally harmful when compared with other products fulfilling the same function. In addition, products requiring labeling because of potential dangers to health or safety cannot be awarded the label.

Norway will start a consumer education campaign once labeled products are available for purchase. Industry has expressed keen interest in Norway's program. One reason for this is the perception that the environmental label may be a valuable marketing tool, both in the Norwegian market and in the EEC. Other effects of the program are not yet known.

## **Sweden**

Plans for an eco-labeling program in Sweden have been running just slightly behind those in Norway. In late December 1988, a Government Commission for Sweden presented a proposal for an environmental labeling program to the Minister for consumer affairs. The proposal recommended that the program be administered by an independent foundation that would have a Board, an advisory panel of representatives, and a Secretariat.

The proposed program resembled the planned program in Norway. As in Norway, the product criteria would be developed with the assistance of outside agencies and experts. The criteria would take into account the entire product life cycle, and products bearing the label "should not have too large a share of the market."

An alternative to setting up a new independent foundation was to coordinate the activities of the program with the Swedish Standards Institution, a standards-setting and certification organization. Very recently, the Swedish government decided in favor of this alternative, and the current plan is to let the Standards Institution administer the

program. They will set up groups similar to the proposed board and advisory panel. The system will probably begin operating around the beginning of 1990.

### Joint Scandinavian Program

As indicated above, there has been much discussion during the past year about the possibility of a coordinated eco-labeling program in Scandinavia. It has been decided that the Nordic (Scandinavian) countries will, in fact, coordinate their labeling systems with a common symbol and a common set of labeling criteria. Norway and Sweden, which have labeling programs underway or planned, will be the first participants. Finland and Iceland are expected to follow. Denmark falls into a unique category, as it is both a member of the EEC and a Scandinavian country. Apparently Denmark will participate in the EEC labeling program rather than the Scandinavian program.

### European Economic Community

The European Commission, in response to West Germany's Blue Angel program and in preparation for the opening of the European markets in 1992, has been investigating the possibility of a Community-wide eco-labeling program. The Commission has stated in its Environmental Action Programs that it intends to promote environmental protection, harmonize product standards, reduce waste, and promote recycling. The Commission has funded a feasibility study on the issue, carried out by the Danish Technological Institute in Copenhagen. Meetings were conducted in September 1989 to review the results of the study. The final report will be finished in December 1989.

Our research indicates that the Commission has decided that some kind of EEC-wide labeling program should be adopted before the opening of the Single Market. However, the details of the operation of the program must still be determined. The Commission may present a proposal to Council of Environment Ministers early in 1990, and discussions between the EEC and its members will begin then.

Preliminary plans for the EEC-wide labeling program call for it to be similar to, and consistent with, other programs. Products would be labeled on a cradle-to-grave basis and labeling would be voluntary. A multidisciplinary group of representatives would be involved. The management structure of the program would operate "at two levels:

- national as far as product selection, quality objectives and administrative procedures are concerned

- international as far as common criteria defining and monitoring of their application are concerned " (Source Environmental Labelling in the EFTA-Countries August 1989 )

The program would utilize a multi-criteria approach in the medium and long term. Initially, however, the program might focus on labeling products more suitable for using a single criterion, such as recycled paper.

### **France**

The ENDS report states that the French are certain to go ahead with an eco-labeling program during 1989 or early 1990. A feasibility study is due for completion during 1989. In earlier planning stages, the program was expected to cover CFC-free aerosols, recycled paper products, batteries, and recyclable drink containers. Overall, the program was planned to be similar to Germany's program.

### **The Netherlands**

According to the ENDS report, the Dutch have been discussing eco-labeling for some time. A feasibility study into the issue was commissioned and is being carried out by the Centre for Energy Saving and Clean Technology in Delft. Following the study, it is expected that the authorities will discuss the possibilities and probably launch a program in 1990. Our conversations with the embassy have confirmed that the program is planned, but not yet established, and the details still must be worked out. The program will be developed by the Department of the Environment with the help of industry and the government Councils. There is no firm timetable yet.

### **Great Britain**

The government of the United Kingdom (UK) recently published a discussion report on environmental labeling, which sets forth the government's position on the issue. The UK government favors an EEC eco-labeling program, and is positioning itself to influence the development of such a program. The report describes the system the government prefers for an EEC labeling program.

One key point made in the report is that the UK government prefers that the product criteria be limited in scope; for a variety of reasons, the UK government is not in favor of a cradle-to-grave approach. Thus, the UK is in direct disagreement with the philosophy of several other countries that have started or planned labeling programs. Since the publication of the government report, several manufacturing firms, trade and industry groups, and consumer associations in Great Britain have stated their support for some sort of eco-labeling program. At the same time, they have stated their disagreement with the government's preference not to use a cradle-to-grave approach.

## California: Proposition 65

Proposition 65, officially known as The Safe Drinking Water and Toxic Enforcement Act of 1986, is an initiative statute of the State of California. It became law as the result of a citizen petition that placed it on the general election ballot, voters passed it by nearly a two to one margin. Since its passage nearly three years ago, it has caused substantial controversy. It has led to prominent labeling of products such as alcohol and tobacco, and has caused widespread debate over the labeling requirements for a variety of other products. The effects of the law are still unfolding, and these developments are followed closely by California newspapers.

Proposition 65 requires the governor to list chemicals known to the state to cause cancer or reproductive toxic effects. Twelve months after the chemical is listed, businesses must not knowingly expose any individual to a "significant" risk level of the chemical without first providing a "clear and reasonable warning." This applies to consumers of a product containing the chemical, as well as workers who are exposed to the chemical on the job. Twenty months after the chemical is listed, businesses must not knowingly discharge the chemical in "significant" amounts into the drinking water supply. The protection of drinking water is a strict requirement; labels do not apply.

The "no significant risk level" was defined for reproductive toxins as being a "1000-fold safety factor," meaning that the amount of the chemical present should be no more than 1/1000 of an amount that causes "no observable effect." For substances causing cancer, the "no significant risk" level is the level resulting in one excess case of cancer per 100,000 people exposed for a lifetime. The latter definition was not given in the text of the proposition, but was chosen during the Health and Welfare Agency's interpretation process. The "1 in 100,000" risk level is consistent with federal regulatory policy.

The law is enforced as follows. Sixty days after notifying public authorities (usually the state Attorney General's office) of a potential violation, any individual or group may sue the violator. (Alternatively, the authorities may prosecute the alleged violator.) The burden of proof is on the accused violator to show that it is obeying the law, rather than on the accuser to show otherwise. The individual or group bringing the suit may eventually receive a percentage of the penalty fines imposed on the violator. Both this "bounty hunter" incentive and the reversed burden of proof represent a marked change from traditional regulation of toxic or carcinogenic substances. Each violation of the law carries fines of up to \$2500 per day.

Following its passage, Governor Deukmejian carried out the mandates of the proposition by naming a scientific advisory panel to help him construct lists of carcinogens and reproductive toxins. The governor also designated the State Health and Welfare Agency as the lead agency for directing implementation of the proposition. Several other state agencies also provide support.



On February 27, 1987, the governor proclaimed an initial list of 26 carcinogens and three reproductive toxicants, and a list of over 200 candidate (but not confirmed) carcinogens. This action was followed almost immediately by the filing of a suit (AFL-CIO et al. vs. Deukmejian et al.) challenging that the list was insufficient. In April 1987 a judge ruled that the list should be expanded to include more than 200 chemicals. This ruling was appealed. On July 20, 1989, the Court of Appeal confirmed the requirement to expand the list. However, by mid-1988 the list had been expanded anyway and it now contains well over 200 compounds.

Critics of the law charge that it will result in a proliferation of labels. There are thousands of products that contain some amount of the listed chemicals. The authors of the proposition claim its goal is not to see widespread warning labels on products, but to encourage manufacturers to make their products safe (and therefore not labeled.) However, some products are by their very nature carcinogens and/or reproductive toxins, and thus cannot escape labeling. Alcohol and tobacco are good examples.

Early in the implementation of the law, the alcoholic beverage industries agreed to post warning signs in stores, bars, and restaurants that sell liquor. The signs warn of both the carcinogenic and reproductive toxic effects of alcohol. The industry also decided not to oppose actively federal legislation to label all alcoholic beverage containers with birth defect warnings. The federal Alcohol Labeling Law was signed by President Reagan on November 18, 1988. Labeled alcoholic beverages will appear in the stores by the end of 1989.

Warnings on cigarette packages have been required by federal law since 1966. However, other forms of tobacco have not been labeled. In the first major enforcement action under Proposition 65, the state attorney general filed suit against tobacco companies, Safeway Stores, other grocery stores, and the Ingredient Communication Council (ICC) for failure to provide warning with the sale of cigars and pipe tobacco. In a settlement reached in October 1988, the tobacco companies agreed to label their products' packages in a manner similar to the federal cigarette labels.

Proposition 65 has precipitated much activity in addition to the developments described above. For example, industry groups representing food, drug, and cosmetic manufacturers have pursued various legal avenues to challenge the law and exempt themselves from its regulations. They have alleged that the law is pre-empted by FDA regulation and is unconstitutional. A temporary exemption was granted to food and drug manufacturers that are regulated by FDA. These industries have also attempted to have the law struck down altogether through federal avenues, on the grounds that it represents a threat to the need for "national uniformity" with respect to safety warnings. All these efforts have been unsuccessful thus far. According to the California Attorney General's office, no final decisions have been made with regard to any of this litigation.

In addition to lobbying and pursuing legal avenues to undermine Proposition 65, the same industry groups set up an 800-number telephone service to meet the

requirement to inform consumers about product risks. Instead of looking for labels or warning signs in supermarkets, consumers were directed to use this toll-free number to find out whether a particular product carried a warning. Many criticized this approach. In fact, according to the San Francisco Chronicle, environmentalists labeled it "1-800-BALONEY." The 800-number was challenged in court, recently a Sacramento Superior Court judge ruled that it is not an acceptable warning system. This ruling may set the stage for a large number of lawsuits. More than 8,300 products were represented by the toll-free number, 500 of which were admitted by their manufacturers to require warnings.

Other activity related to Proposition 65 is too broad to be described in detail here. Examples of settled and pending lawsuits and 60-day notices are:

- Pacific Gas and Electric is accused of discharging mineral oil into the drinking water supply and exposing workers to mineral oil at many of its substations.
- Lantern mantles containing thorium dioxide were sold without the required warning; the suit was settled and the lanterns are now labeled.
- The Solano County district attorney brought a suit against sellers of certain commercial paints, solvents, and resins for failing to provide clear and reasonable warning; the suit was settled.
- Employees of a plant nursery have filed suit alleging that they were exposed to asbestos.
- Lieutenant Governor Leo McCarthy has alleged that benzene is leaking from 174 underground storage tanks located throughout the state.
- The manufacturer and certain retailers of Liquid Paper have allegedly exposed users without a clear and reasonable warning; this product carried a warning message available on the 800-number, and this 60-day notice is the first one to be placed for a product covered by the 800-number since it was struck down. The manufacturer agreed almost immediately to reformulate the product.

Key observers of Proposition 65 have, predictably, disagreed as to its merits and effectiveness. Industry groups opposing the law have argued that it will be "too" effective in the sense that it will lead to an overwhelming number of labels on food, drugs, and cosmetics. This has not occurred so far, but could occur in the future as a result of the rejection of the 800-number warning system.

The state Attorney General's office comments (unofficially) that there have been some problems interpreting Proposition 65, but overall it is a good idea. Other objective observers have commented that it is too early to assess the law's full impact. For many

products and industries, extensive litigation activities have delayed its implementation. In industries where opposition has been less fierce, the law has added substantially to the scope of warnings on products that are known to cause ill effects.

### **Other Shopping and Labeling Programs**

A few examples of the other environmental shopping, information, and labeling programs that are underway or planned in the U.S. are summarized below. Several other programs, including state and local recycling programs and other solid-waste reduction programs, are described in the Kashmanian/Abt Associates report (1989). These other relevant programs, and the issues surrounding them, are much too numerous to describe here.

One of the main difficulties with the wide variety and large number of programs is the fact that governments and industry associations have not formulated a standard set of definitions of "recyclable", "recycled", "biodegradable", and other such terms. As a result, different industry groups, manufacturers, states and local governments have adopted their own definitions, some of which are based on the EPA Procurement Guidelines on cement and concrete, paper, lubricating oils, re-tread tires, and building insulation products. The New York State recycling program, described below, is one such effort.

**New York State Recycling Emblem:** In 1988, the New York State legislature passed the Solid Waste Management Act of 1988 requiring the Department of Environmental Conservation to set up a system for defining and labeling products that are recycled, recyclable or reusable. The emblem program has two goals:

- To encourage waste reduction and recycling among consumers and manufacturers by informing them of products that meet established standards for recycled content
- To protect consumers and manufacturers from misleading or false use of the words "recycled," "recyclable," and "reusable."

The New York State emblem is an outline of the state, embraced by a pair of circling arrows. Inside the emblem are written the words "recycled," "recyclable," or "reusable." The product manufacturer may also include a statement of actual content of recycled material inside the emblem, as long as it does not obscure any part of the original design.

To qualify for the "recycled" emblem, a product must meet minimum waste content percentages. These percentage standards have been established for several product categories, including:

- Building insulation
- Newsprint

- High grade bleached printing and writing papers
- Tissue products
- Unbleached packaging
- Recycled paperboard
- Cement
- Lubricating oils
- Steel
- Aluminum
- Copper
- Plastics
- Glass
- Solvents.

These standards were set in agreement with EPA Procurement Guidelines, where applicable, and after consultation with interested industry groups. The guiding principle behind the standards is to include as many products as possible initially, in an attempt to gain support from manufacturers and awareness from consumers. The standards may become more stringent once the program is established.

To use the "recyclable" emblem, a manufacturer must demonstrate that the consumer has actual opportunities to recycle the product. Similarly, to use the "reusable" emblem, the manufacturer must demonstrate the existence of opportunities to return the product for refilling or reuse.

The standards apply to any recycling emblem, statement, or advertisement used on or about a product in New York State. Any manufacturer wishing to use such an emblem or statement must submit proof that the product meets New York standards and receive permission to use such an emblem or statement. The product manufacturer may choose whether to use the New York State emblem, or to use another emblem. The program is voluntary.

The department has conducted public meetings on the proposed standards, and is now holding public hearings, as required by New York law. Program leaders expect the standards to go into effect early in 1990. Once the standards have been established, the program will conduct a public education campaign to teach consumers about the program.

**Pennsylvania Resources Council:** The Pennsylvania Resources Council has published a handbook, **"Become an Environmental Shopper,"** that promotes recycling and selective shopping. It emphasizes product packaging more strongly than product content, although it mentions aerosols and other "hazardous chemicals." It also provides tips for organizing environmental shopping campaigns. The Council also prepares an Environmental Shopping Product List containing products "packaged in recycled or recyclable packaging."

**Council on Economic Priorities:** The Council on Economic Priorities publishes **"Shopping for a Better World,"** a compact-sized guide to "socially responsible

supermarket shopping." CEP also published Rating America's Corporate Conscience, a book-length version. The small guide rates 139 companies on their performance along several attributes:

- Giving to charity
- Women's advancement
- Minority advancement
- Military contracts (or lack thereof)
- Animal testing (or lack thereof)
- Disclosure of information
- Community outreach
- Nuclear power
- South Africa, and
- Environment.

The "Environment" criteria emphasize packaging and recyclability, although they also mention pollution control equipment and biodegradability. Thus environmental impact is just one factor in CEP's definition of socially responsible shopping.

**Commercial Environmental Shopping Catalogs:** Several enterprises have compiled "environmental shopping" catalogs that sell products such as biodegradable diapers and garbage bags. One well-publicized example is published by Seventh Generation in Vermont, and others keep appearing. We do not know how many of these enterprises are non-profit and have environmental protection as their fundamental goal, and how many are profit-motivated.

## **CHAPTER 3**

### **EFFECTIVENESS OF EXISTING LABELING PROGRAMS IN THE U.S.**

#### **Introduction**

A wide variety of consumer and industrial products carry labels required by the government. These labels may provide a safety or health warning, or may simply provide information that the government believes buyers should know. The labels are tied to some larger policy goal or program, such as reducing demand for energy, increasing safety, or promoting good health. They serve as substitutes for extensive regulation that would prohibit all possibly detrimental or dangerous products or ingredients. The government hopes that consumers will make more informed product choices as a result of labeling programs. In addition, labeling protects product manufacturers from liability.

This chapter covers the results of our "background" labeling research; it summarizes a literature review on the effectiveness of several types of labels. Immediately below, we describe the product categories covered by the literature review. In the subsequent sections, we briefly describe our information sources, define the three elements of labeling effectiveness, summarize available research on the effectiveness of the selected types of labels, and conclude with an analysis of the factors that affect the success of a labeling program.

#### **Scope of Review**

A wide variety of products carry warning labels or other government-required labels. In assembling our literature review, we focused on a few specific categories of labeled products. We were interested in categories where information exists on the effectiveness of their labeling, and categories that are relevant to environmental labeling, the broader topic of this report. Thus, we are interested in commonly known products that are available to, and purchased by, the average American consumer.

Also, we are especially interested in labeled products that present consumers with a choice. It is difficult to measure the effectiveness or importance of a product label

when consumers have little choice but to use the product, or when all the products in the product category carry the same label

With these goals in mind, we identified the following categories of product labels:

- food and nutrition labels,
- household appliance energy efficiency labels,
- cigarette labels,
- automobile fuel economy labels, and
- drug and chemical labels.

The sections below discuss the effectiveness of labels in each of these categories. The first four categories are given closer attention than the category of drug and chemical labeling for two reasons: we found little research on drug and chemical labeling, and labeled drugs and chemicals (especially prescription drugs) do not always present a choice to consumers. Many prescription drugs are essential to life or health and are only available with a warning label.

We also include a brief section that summarizes relevant research on the effectiveness of seals and certifications; that is, labels that are not specific to a product category.

A few other labeling categories are intentionally omitted from this report: commercial pesticides, other poisons, and industrial materials and equipment. These products are not frequently encountered by the average consumer, and therefore are not as relevant to this report as are the other product categories.

### **Information Sources**

The information presented in this memorandum covers a wealth of material in many subject categories. We searched several commercial and library databases for combinations of key words such as "label" and "effect"; these databases included NTIS and the Government Publications Office, trade and industry databases, business publications, and academic journals. We also spoke with individuals at various government offices and agencies.

The articles and reports we obtained include academic papers, final reports prepared by contractors for government agencies, reports issued by government agencies, and news articles. Among the reports that describe original research, the

research methods vary widely, ranging from market research studies or surveys using a small number of respondents to an analysis of time series data on 12,000 consumers

Other reports we found are, like this chapter, literature reviews. In several places in this chapter, we describe research that is summarized by other authors' literature reviews. The wide scope of this report and the large amount of information available prohibited us from reviewing each original source cited in each literature review. The literature reviews all cover narrower sets of labeling categories than does this report.

One literature review that proved extremely helpful is titled Review of the Research Literature on the Effects of Health Warning Labels: A Report to the United States Congress. It is dated June 1987 and was prepared by Macro Systems, Inc. for the National Institute on Alcohol Abuse and Alcoholism. It is referenced here as the NIAAA report and used mainly in the sections on cigarette labeling and drug and chemical labeling.

### **Elements of Labeling Effectiveness**

We have adopted a definition of "effectiveness" that is consistent with the definitions used by other researchers as well as policy makers and market analysts. Labeling effectiveness manifests itself in three ways, each of which builds upon the previous ones:

- Awareness
- Acceptance, and
- Behavior change.

These three components are often used to describe the stages of market penetration of a new product or concept. First, the consumer must become aware of the concept. Next, he or she must accept the concept by reacting positively to it and/or perceiving some value in it. Finally, to be truly effective or successful, the introduction of the concept (or product or label) must result in some measurable behavior change.

In the case of a new product entering a market, behavior change would be measured as the extent to which consumers purchase the product. With labels, behavior change is measured as the extent to which consumers change their product purchases in a way that is consistent with the intended effect of the label.

In the case of labeling, there may be a second, parallel effect in addition to the effect on the consumer: the effect on the producer. If producers believe that a label on their product will be detrimental (or beneficial) to the sales of the product, they may reformulate the product or otherwise change their strategies. This has been one effect



of environmental labels such as West Germany's Blue Angel logo and California's Proposition 65 warning labels. However, for the labeled products discussed here, we uncovered little information on the specific producer effects. Often, labeling programs are introduced along with government standards (e.g., appliance energy efficiency standards, fuel economy standards) that mandate an effect on the products offered. In such cases, the effects of the label on the producer cannot be separated from the effects of the standards.

The discussions in the sections below reveal that consumers are usually aware of labels and believe they are a good idea. However, it is very difficult to measure the impact of labels on purchase behavior independent of other factors. Usually the strongest statement that can be made is that a labeling program is (or is not) effective in changing consumer behavior, together with its accompanying media program and other efforts. The independent effects of the label cannot typically be measured.

### **Food and Nutrition Labeling**

The Food and Drug Administration (FDA) has jurisdiction over food safety and ingredient disclosure. The FDA has implemented two kinds of labels on food products: safety warnings and nutritional information. This section will describe the purposes and effectiveness of both kinds of labeling programs.

#### **Purpose of Safety Labels**

Safety labels are used when the FDA and Congress determine that the danger from a food substance or additive is not severe enough to justify banning the use of the product outright, but is significant enough to warrant notifying the public of its possible dangers.

One example of a product with a safety warning is saccharin. According to the NIAAA report, the FDA proposed banning it in 1977, after a Canadian study found evidence that saccharin caused cancer in rats. After receiving a strongly negative response from the public, Congress implemented an 18-month study period, during which foods containing saccharin were to be clearly labeled. The label reads "Use of this product may be hazardous to your health. This product contains saccharin which has been determined to cause cancer in laboratory animals." At the end of the study period, it was decided that a ban was unnecessary and the warning label has been continued.

#### **Effectiveness of Safety Labels**

Schucker, Stokes, Stewart and Henderson (1983) analyzed time series data on diet soft drink purchases before and after the FDA proposed banning saccharin and Congress required warning labels. Their analysis showed that warning labels had a statistically significant impact on sales of diet soft drinks. Demographic analysis showed

that the warning label had the greatest effect on college-educated households, with the next greatest effect on households with young children. Since college-educated households account for a disproportionately large share of diet soft drink purchases, the effects of the warning label on this group were magnified somewhat in the overall effects of the label. The authors point out that the conclusions of the study are limited by the restricted amount of data available, which allowed neither an extensive study of the pre-warning baseline purchase habits nor a conclusive study of the length of the label effects.

Orwin, Schucker and Stokes conducted a later study in which they concluded that sales of diet soft drinks had been significantly reduced for a period of several years by the combination of publicity and warning labels. Their analysis shows that the effects of the publicity were much greater than the effects of the warning label, but they emphasize the difficulty of separating the effects of the two.

### Purpose of Nutrition Labels

FDA involvement in nutritional labeling of food products began in 1969, after a White House Conference on Food, Nutrition and Health report stated that malnutrition was extensive in the U.S. The report identified a lack of nutritional information, rather than an unavailability of nutritious food, as a major contributor to the malnutrition of U.S. consumers. In 1973, after a period of research, FDA announced final regulations effective July 1975 that required a nutrition label on some packaged food products. The label was necessary if a nutrition claim was made for the product in advertising or on the package, or if the product was fortified with additional nutrients.

The regulations require the following format for the label:

- An upper section with information about serving size, calories, fat, protein and carbohydrates
- A lower section with information on the percentage of the U.S. Recommended Daily Allowances (RDA) provided by one serving of the product for up to 20 nutrients.

Since the beginning of the labeling program, other information has been added to product labels, including information on sodium content and information on the presence of substances that cause strong allergic reactions in a significant fraction of the population, such as Yellow Dye No. 5 (tartrazine).

### Effectiveness of Nutrition Labels: Public Awareness and Acceptance

Public response to the concept of nutrition labels has been very positive from the start. Lenahan et al. (1973) studied a test nutritional labeling program conducted before the FDA requirements were announced. The results of the study indicated that 96.5

percent of the respondents approved of the idea of a nutritional labeling program, and 50.9 percent said that they would use the labels at least occasionally. Two months into the test, 26.3 percent of respondents had noticed the labels, 16.2 percent understood them, and 9.2 percent said they had used the labels at least once. In addition, respondents reported that they perceived benefits from labels even if they did not actually report using the labels. Consumers responded strongly that they believed nutrition labels would

- encourage the food industry to offer more nutritious foods,
- cause the food industry to begin to advertise on the basis of nutrition, which would increase public awareness of nutrition issues,
- generally increase public confidence in the food industry, and
- satisfy the public's basic right to know.

Daly (1976) found similar positive attitudes toward nutrition labels among households in New York. In this study, 91 percent of the respondents agreed with the need for nutrition labels, and 89 percent said that nutrition labels would increase their confidence in the food industry. The greatest potential problem with actual use of the labels was that although 90 percent of the respondents said that they would use nutrition labels, the percentages of respondents actually demonstrating a sufficiently high familiarity with nutritional concepts and the necessary mathematics were much lower.

#### Effectiveness of Nutrition Labels: Measurable Changes in Purchase Behavior

The effects of the nutritional labeling requirement are hard to quantify. There has not been a nationwide survey of malnutrition conducted since the labeling began that could be compared to the report that started the labeling effort. Self-reporting surveys of consumers indicate that about 50 percent of consumers use labels occasionally (Jacoby et al., 1977). Consumer researchers generally agree that actual use is probably much lower.

The strongest effect has been on the purchases of products containing components perceived to be "negative" such as sugar, fat, or sodium. A 1981 report by Putnam and Welmer found that 2/3 of the consumers surveyed reported making a recent change in food consumption, and of those, 9 out of 10 said that the change was to reduce negative food components. A 1986 study conducted by Russo et al. found that posting summary nutritional information for "positive" or beneficial ingredients had no significant impact on food purchases, but that summaries of "negative" or detrimental ingredients had significant impact. The impact disappeared once the summary displays were removed from the store.

In the specific case of sodium, a 1983 telephone survey conducted for the FDA found that 49 percent of respondents report that they had purchased products labeled "low sodium" or "salt free." People who had medical reasons to limit their sodium consumption were much more likely to read sodium labels than were people who felt no concern about sodium. Age, income and education all affected the use of sodium information.

Events of the last few years suggest that, in addition to shifting purchases away from negative substances, people are also willing to buy a beneficial substance that they believe will reduce the effects of a detrimental one. Spurred by nutritional research such as the National Cancer Institute study linking wheat bran with reduced risk of colon cancer, sales of cereal have risen 22 percent since 1987 (Business Week, 1989).

Studies that attempt to determine what information consumers actually obtain when making a purchase decision support the contention that nutritional labeling is not having much effect on consumer purchases. The 1977 Jacoby et al. study of information acquisition found that the percent of consumers acquiring some form of nutrition information ranged from a high of 21 percent for calorie information to a low of 2 percent for fat content. When consumers were not provided with brand information, the percentages increased, but not substantially. The authors of the study emphasize that these results were obtained with the abnormal condition of shopping for a single product; when a more typical shopping trip of twelve products was simulated, information acquisition dropped by more than 50 percent. The authors of the study estimate that an information acquisition rate of 10 percent is probably the real world case.

Research indicates that education and income are the best predictors of nutrition label use, with age also playing a role (Jacoby et al., 1977; Hadden, 1986).

### Problems with Nutrition Labels

Extensive research has been done to determine why nutrition labels are infrequently used, and to see whether alternative nutrition information formats increase the use of nutrition information. The main theories are:

- consumers think that comparing the nutrition labels on all products in a given category is too time-consuming;
- consumers do not have the necessary skills and/or background information to use nutrition labels effectively;
- consumers do not perceive a need for nutrition information.

The following paragraphs contain details of the research that leads to these theories

The task of reading and comparing nutrition label information for all products in a product class appears to be too troublesome for most consumers. Russo et al. (1976) compared the results of several studies, including their own, some studies tried to increase nutritional awareness and some tried to reduce the effort required to make nutritional comparisons across brands. They found that nutritional awareness programs, such as the National Heart, Lung and Blood Institute study in 1983, do not change shoppers' purchases, while effort reducing programs, such as one of the Russo et al. experiments and the Muller 1982 study, do change shopping practices. They concluded, therefore, that nutrition labels do not work because the effort required is too great.

Levy et al. (1985) tested an alternative format to the standard nutrition labels. They conducted a survey in Washington, D.C., and Baltimore, MD, in which shelf labels were used to identify food items with low calorie, sodium, cholesterol, or fat content. Purchases of labeled products were tracked over a two-year period, and compared to purchases of the same products in stores without shelf labels. Sales of the tracked products rose between 4 and 8 percent more in the stores with labels than in the stores without labels. Furthermore, the effect was fairly constant over the two-year period; changes in purchases were not restricted to the brief period at the beginning of the program which was accompanied by a promotional media campaign.

The authors of the study suggest that the benefits of the shelf labels stemmed primarily from their ability to stimulate a purchase response from those consumers who were already interested in a special type of product, by reducing the amount of effort needed to act upon that interest.

Even when consumers do take the time to look at nutrition labels, studies show that many of them do not understand the information provided well enough to make better product choices. Jacoby et al. (1977) tested the ability of consumers to use the information contained in a typical nutrition label. Only half of the respondents understood that nutrition information was provided in terms of a single serving rather than in terms of the entire package. The ability to reasonably define calories, carbohydrates, fat and protein was also low; the high was a 26 percent ability to define calories, while the low was a 4 percent ability to define fat. (The standard for "reasonably define" was that the answer had to correspond fairly well to definitions provided in nutrition pamphlets written for the general public.) Fewer than 20 percent could give any estimate of the carbohydrates, fat, or protein needed daily by an average adult.

The idea that an inability to comprehend nutrition labels may restrict their use is further supported by data indicating that nutrition label users are more likely to understand the labels than are non-users. Daly (1981) conducted a survey of the household major food shoppers. Among those respondents who self-reported that they use nutrition labels, 74.5 percent were able to correctly answer a multiple choice question deriving the amount of a product that would provide the full U.S. RDA of a

nutrient. Among those respondents who reported that they do not use nutrition labels only 49.7 percent answered the same question correctly.

Finally, many consumers do not appear to be convinced that they need to use nutrition labels. Daly (1981) surveyed self-reported reasons for non-use among respondents who report that they do not use nutrition labels. The most commonly reported reason for non-use was "I trust my ability to select nutritious foods without using the label information," with which 79 percent of respondents agreed. Other "shopping practice" reasons, such as lack of time and reliance on brand-name products, were also chosen by 30 percent or more of the respondents. No more than 18 percent agreed with reasons having to do with perceived inability to read or comprehend the nutrition label.

Feick et al. (1986) suggests that consumers do not use nutrition labels extensively because they acquire substantial amounts of information from sources such as magazines, television, conversation with other consumers, books, pamphlets, and a lifetime of experience.

In contrast, consumers do appear willing and able to change their purchases when they are convinced that some particular food substance is important to their health. After the publicizing of evidence that oat bran may lower levels of blood cholesterol, consumers have purchased 70 percent more cereals containing oat bran; a survey of Pepsi drinkers even found that 74 percent reportedly would switch to Coke if it contained oat bran (Business Week, 1989). These food fads can also be explained by other theories discussed earlier in this section. The publicity and promotion of the "nutrient of the month" help to reduce the amount of effort required to obtain, and act upon, nutrition information.

Formal research on the effects of nutrition labels on producers is much less available than consumer research; therefore, we cannot answer the question of whether nutrition labels have caused food manufacturers to reformulate their products. In recent months, examples of food product reformulations have been widely publicized. In response to concerns about cholesterol, cereal manufacturers reformulated products containing tropical oils. Manufacturers of many types of foods have added oat bran to the ingredients in response to public demand. However, these actions occurred mainly in response to media publicity that was spurred by medical research, not by labeling.

## **Household Appliance Energy Efficiency Labeling**

### **Background of Energy Efficiency Labels**

By federal law, labels are affixed to home appliances showing the energy consumption of the appliance. This program was preceded by a voluntary labeling program housed in the Department of Commerce's National Bureau of Standards; the voluntary program was in effect from 1973 through 1975. Air conditioners were the first

appliances to be labeled in this program, and voluntary participation was high. In December 1975, Congress passed the Energy Policy and Conservation Act (EPCA) which attempts to improve the efficiency of home appliances by requiring energy labels. The Federal Trade Commission was given responsibility for establishing the format of the labels, while the Department of Energy (then Federal Energy Administration) was given responsibility for a consumer education program to complement the labeling program (McNeill, Wilkie 1979; DOE 1980).

EPCA proposed that the energy labels should disclose the average annual dollars of energy use for the appliance and a comparison with similar models. The FTC proceeded to design a set of preliminary labels, which were announced in 1978. These labels were altered and final labels were announced in 1979. Although the labels vary for different types of appliances, they typically contain:

- the estimated yearly cost to operate the appliance, based on the national average electric rate (\$/kWh)
- the estimated yearly cost to operate the most and least efficient similar models
- a table showing the estimated yearly cost to operate the appliance for varying electric rates (\$/kWh), and varying usage habits.

Much research was done before and after their introduction. The sections below summarize the results on the public awareness and acceptance of the labels, and on the measurable impact of the labels.

#### **Effectiveness of Energy Labels: Public Awareness and Acceptance**

According to Anderson and Claxton (1982), attitude studies have been conducted in Great Britain and Canada as well as in the U.S. to determine consumers' views on the usefulness of energy labels. A study in Great Britain found that 91 percent of consumers surveyed favored energy labeling. Eighty-one percent of refrigerator buyers surveyed in Western Canada believed that consumers would find energy labels useful. A study for the FTC in 1977, to help them design the U.S.'s energy labels, found that the subset of consumers who sought and used energy information preferred detailed information.

Surveys also show that American consumers at that time were definitely aware of, and concerned about, the energy crisis and conservation. However, surveys conducted in the late 1970's (prior to the introduction of the energy labels) showed that consumers ranked "energy use" and "cost to operate" quite low on the list of attributes they consider when choosing an appliance to purchase. Thus, to change consumers' purchase behavior, the labels would have to not only make consumers aware of energy-

and cost-efficient appliances, but also change their values for them. It was hoped that the dual labeling-educational effort would help serve this purpose.

#### Effectiveness of Energy Labels: Measurable Effects and Problems

In 1976, just after the passage of EPCA, DOE (then FEA) studied the feasibility and likely effects of the labeling and education program. A study by Human Sciences Research reviewed past labeling programs, assessed the effectiveness of the proposed program, and proposed educational and informational activities.

To study the potential effectiveness of the labeling program, they interviewed about 100 consumers who were shopping for refrigerator-freezers. They separated these subjects into three groups and subjected them to three levels of treatment:

- no information relevant to their purchase;
- an "Energy Guide" label (not the same one that was eventually adopted); and
- an "Energy Guide" label in addition to an educational/persuasive pamphlet and 15-minute audio-visual presentation.

The researchers tracked the purchases that the subjects eventually made. They found that the third level of treatment, where the most information was supplied, caused the subjects to purchase significantly more energy-efficient refrigerator-freezers than the other subjects. Moreover, the second level of treatment - the Energy Guide only - did not lead to a significant effect when compared to the subjects who were given no information. The conclusion from this research was that the energy labels alone were insufficient to cause behavioral changes; information programs were needed as well.

A later study for DOE (1980) sought to construct a baseline forecast of the effect of the labeling and educational program on the main categories of appliances. Policy Planning and Evaluation, Inc. studied this question from several approaches, and conducted a pre-test of an advertising campaign to promote energy awareness. They concluded that the labeling and education program would have only a slight influence on purchases of dishwashers, electric furnaces, and clothes washers; a moderate influence on purchases of refrigerators, refrigerator-freezers, freezers, central air conditioners, room air conditioners, gas furnaces, and water heaters; and a major influence on purchases of oil furnaces.

McNeill and Wilkie (1979) studied the overall effect of the energy labels and the relative effects of different formats for the labels. As in earlier studies, they chose refrigerator-freezers as the product to be used in the experiment. Their research subjects consisted of 180 women in the Gainesville, Florida area. Subjects received varying levels and types of information on four refrigerator models and were given a series of information acquisition and recall tasks. The researchers found that the



subjects did read and recall the energy labels, especially with regard to one highly inefficient model. However, the results did not suggest that the energy labels would significantly influence purchase behavior. The study also found that the units used for disclosing information on the labels (e.g., dollars per year versus dollars per month) made little or no difference.

Anderson and Claxton (1982) also studied the empirical effect on energy labels on consumers' choice of refrigerator; their research took place in Western Canada. They varied the type of information given on the label as well as the level of energy information given by the sales staff in the department stores. They found that the energy information had a significant impact on the purchases of small energy efficient refrigerators, but no impact on the purchases of large refrigerators. They also concluded that the sales staff were not as convincing as they could have been in encouraging consumers to consider energy efficiency. The sales staff increased the awareness of the energy labels, but did not influence choice.

In 1985, a study was conducted for Bonneville Power Administration (BPA) on consumer response to the energy labels and other incentives to purchase more efficient appliances. The study, which was conducted as part of the preparations for a BPA promotion of energy-efficient appliances, involved telephone interviews with retailers, manufacturers, and energy efficiency experts. It concluded (among other results) that the Energy Guide labels may help raise consumer awareness of energy efficiency issues, but they do not change consumer purchase behavior. Respondents to the study concluded almost without exception that the labels were hard to read and interpret, reported costs that may be incorrect because they are based on national average electric rates, and were not updated often enough.

Bonneville subsequently designed and tested a program called Blue Clue. The program awards a large, attractive blue ribbon to refrigerators that are in the top 15% of efficiency in their size and function class. Efficiency measures are based on the same data used by the FTC for the energy labels, but use a standard DOE method to calculate the energy efficiency rating considering other factors in addition to annual operating costs.

The program is voluntary; appliance retailers (not manufacturers) place the ribbon on the products. Over 75 utilities in Bonneville's service territory are participating as well as several utilities in the Northeast. Bonneville considers the program to be a success. The program has generated a great deal of interest by other utilities, especially in the Northeast where several are adopting similar programs. However, there have been no conclusive follow-up studies to assess the effectiveness of the Blue Clue label.

The California Energy Commission (CEC) conducts research on the efficiency of appliances used in California and on the factors that affect the demand for energy efficiency in California. CEC's Conservation Report (1988) summarizes recent research in this area and makes several points and assertions:

- Residential consumers' demand for more energy-efficient homes and appliances has increased in the last decade (increasing this demand is one of the responsibilities of the CEC) but should be increased further
- There is a large difference between the average efficiency of residential appliances in California and the maximum efficiency available, thus there is high "technical potential" for increasing consumer energy savings.
- One important factor determining demand for energy efficiency is packaging; the FTC energy labels on appliances have been shown to be confusing and are used by less than half of appliance shoppers.
- Simpler energy labels that concentrate on a few key concepts would be more useful to consumers than the current labels.
- The information on the labels is often quickly outdated.

These conclusions are consistent with other researchers' criticisms of the energy efficiency labels, including Bonneville's. A conversation with Michael Messenger of the CEC, who is very familiar with research in this area, further confirmed some of the perceived problems with the labels. Researchers have continued to find, in recent years, that consumers often do not understand or use the cost information shown on the labels. One California utility conducted group interviews about consumers' understanding of the labels and discovered that about half of the participants severely misunderstood the information on the labels. The CEC report also states that the federal government is considering making changes to the energy labels, but unfortunately has no plans to market-test the new designs.

The information supplied by BPA, the CEC, and others shows that the traditional energy labeling program (Energy Guide) has not been particularly effective in either communicating energy information or changing behavior. This is not a surprising result given that even the pre-tests of the program suggested that it would have little effect, and that the markets for energy and electricity have softened considerably since the labels were introduced. Bonneville's energy efficiency labeling program has been tested, but not at the national level, and hard data are not available as to its effectiveness.

To summarize research in the area of energy labels for appliances, it seems that the Energy Guide labels were seen as a good idea and potentially useful when they were first introduced, but they have not had much impact on consumer purchases. Research suggests many possible reasons for this, including:

- The labels are relatively complex and may not be understood by some consumers, they might be much more effective if they were simpler and/or more eye-catching (like the large bright Blue Clue label)
- The labels emphasize the cost to operate the appliance, which is only one of many attributes consumers consider when making a purchase decision
- The cost to operate the appliance may be small compared to the cost to purchase the appliance.
- The cost to operate the appliance is likely to be incorrect due to regional differences, and is not updated often enough.
- The labels are much more likely to be used when combined with a program to educate and inform consumers about energy conservation; such a program was conducted several years ago, but conservation ceased to be a primary objective of the federal government when energy prices dropped and demand growth slowed.

During the period of time since the energy labels were first introduced, the average efficiencies of appliances have increased. This phenomenon is due in large part to the appliance energy efficiency standards that have been imposed at the state and national levels (California was the early leader in this area), and can also be attributed to certain electric utility incentive programs. Thus, producers have been forced to improve the efficiency of their appliances. We have not discovered research results that tie changes in producer behavior to the energy labels.

## **Automobile Fuel Economy Labeling**

### **Background of Automobile Fuel Economy Labeling**

In 1973, the oil embargo and accompanying national concern prompted EPA to begin a voluntary Federal Fuel Economy Information Program, consisting of a Gas Mileage Guide and Fuel Economy Labels. The program was intended to increase public awareness of factors that affect fuel economy, encourage manufacturers to improve the fuel economy of their products, and influence consumer purchases in the direction of improved fuel economy. EPA provided estimates of fuel economy for 1974 model year vehicles in the Gas Mileage Guide, which automobile dealers voluntarily displayed in their showrooms. The fuel economy results were based on city driving only.

By 1975, EPA had also developed estimates of highway-driving fuel economy for new automobiles. These were published, along with the city-driving estimates, in the Gas Mileage Guide and also on Fuel Economy Labels which were placed directly on

vehicles. The program was still voluntary. At this time, automobile manufacturers began using the EPA fuel economy ratings, as well as their own estimates of fuel economy in their advertising. This caused substantial confusion among consumers. December 1975, Congress passed the Energy Policy and Conservation Act (EPCA) which established corporate average fuel economy (CAFE) standards for passenger cars for 1978-80 and 1985. The Act also made mandatory the display of the Gas Mileage Guide in showrooms and the use of the Fuel Economy Label on cars, effective for the 1977 model year.

The labels used on the 1977 and 1978 model year vehicles were changed to include estimates of city, highway, and combined fuel economy values. Various other changes were also made to the format and content of the labels and the Gas Mileage Guides during this period. In 1979, EPA changed the content of the labels again, to display only an estimated fuel economy rating based on the city-driving measurements.

In 1980, EPA published an Advance Notice of Proposed Rulemaking to improve the labeling program by once again including both city and highway ratings, and adjusting them downward to better reflect actual driving conditions. This change was eventually approved and adopted for model years 1985 and later. Several other changes to the label format were also made, starting with the 1985 model year.

#### **Effectiveness of Automobile Fuel Economy Labeling**

Several surveys were conducted at various stages of the Federal Fuel Economy Information Program to assess consumer awareness and use of the Gas Mileage Guide and the Fuel Economy Labels. In February 1976, Abt Associates conducted such a study for the Federal Energy Administration. They found that 53% of the 796 owners of 1976 model vehicles had seen the fuel economy label on the vehicle they bought. However, only 7% were aware of the Gas Mileage Guide. Buyers aware of the Fuel Economy Information Program (72%) increased their gas mileage by 20% when replacing their older vehicles, while unaware buyers increased their gas mileage by an insignificant amount (less than 1%).

Later surveys found that awareness of the Guide and the Label had increased. A 1981 survey for the Department of Energy found that 80% of new car buyers saw the labels on the cars, and 30% saw the Gas Mileage Guide.

While consumers were aware of the fuel economy labels, they often did not trust the information the labels presented. EPA made many changes to the content of the labels from 1974 through 1985, partly in response to criticism from consumers, automobile manufacturers, and other government agencies. The main criticism of the Fuel Economy Information Program was that the fuel economy ratings did not reflect true driving conditions and tended to overestimate fuel economy. The EPA ratings were obtained not through road tests, but by measuring the carbon content of the exhaust from the automobiles under controlled conditions. No adjustments were made to reflect differences in type of tires, driving habits, road surfaces, or other variables. A survey by

the Department of Energy in 1981 found distrust of the EPA ratings to be the main reason why some auto buyers did not use them

Average fuel economy of cars improved and demand for fuel dropped between 1973 and 1981, which suggests that the Fuel Economy Information Program was successful in meeting its objectives. However, the program was conducted concurrently with several related energy conservation efforts. A 55-mile-per-hour speed limit was established in January 1974. The CAFE standards were enacted and enforced. In 1978, the "gas guzzler" tax was established.

Other factors also contributed to the improvement in automobile fuel economy and the drop in demand for fuel. Automobile manufacturers used fuel economy ratings heavily in their advertising, contributing further to consumer awareness of the issue. Finally, fuel prices were volatile and rose substantially between 1973 and 1981. The improvement in the fuel economy of cars produced and purchased cannot be attributed solely or primarily to the labels. As with other successful labeling programs, the success must be attributed to the information program as a whole, as well as economic conditions.

To summarize, EPA experienced some difficulties in implementing the labeling and Gas Mileage Guide components of the Federal Fuel Economy Information Program. The main difficulty, which led to the label format being revised several times, was that consumers mistrusted the fuel economy ratings and manufacturers objected to them; they did not reflect actual driving conditions and tended to overestimate gas mileage. Despite these problems (or perhaps because of them), consumers were quite aware of the Fuel Economy Labels and of the overall program. These and several other important factors led to a substantial national improvement in automobile fuel economy and in conservation. No study has been attempted (or is likely to be feasible) for separating the effects of the Fuel Economy Label from the other factors. In fact, such a study would probably be impossible.

## **Cigarette Labeling**

### **Background of Cigarette Labels**

In 1964, the Surgeon General's Report on Smoking and Health established the first official relationship between cigarette smoking and lung and heart disease. Congress responded by requiring that beginning in 1965, a mild health warning be placed on cigarette packages: "Caution: Cigarette Smoking May Be Hazardous to Your Health." In 1970, the Public Health Cigarette Smoking Act strengthened the health warning, requiring that cigarette packages carry a new warning: "Warning: The Surgeon General Has Determined that Cigarette Smoking is Dangerous to Your Health." These new labels were adopted in 1972. Also in 1972, the FTC required that the warnings appear not only on cigarette packages, but on cigarette advertisements as well.

From 1968 until 1970, anti-smoking commercials were aired on radio and television stations in a ratio of about one anti-smoking commercial for every four cigarette commercials. In 1971, cigarette commercials were banned from radio and television under the Public Health Cigarette Smoking Act.

By the early 1980's, the FTC had concluded that the cigarette warning label (for both packaging and advertising) was no longer effective. In 1984 it developed a quarterly rotating series of four new, more specific warning labels. These were put into effect under federal law in October 1985.

#### **Effectiveness of Cigarette Labels Before 1985**

Many studies assessed the effectiveness of the original cigarette label that was used prior to 1985. However, these studies typically have not been able to isolate the effects of the warning labels from the effects of the advertising warnings and other public education efforts. The NIAAA literature review describes several of these studies.

Studies conducted in 1973, 1974, and 1977 examined cigarette consumption patterns and concluded that health publicity since 1964 had significantly affected consumption. Each of these studies also concluded that the effects could be attributed to the 1968-1970 anti-smoking commercials. A 1981 study concluded that the 1964 Surgeon General's report and the anti-smoking commercials had both had a major impact on cigarette consumption.

In a 1975 report, the FTC stated that the warning label was only one of many efforts to educate the public about the dangers of smoking, and also that women's and young people's cigarette use had actually increased.

Another FTC staff report (1979) described results of a statistical analysis of a large database developed by the Centers for Disease Control (CDC). The database contained information on the smoking histories of 12,000 adults. The study confirmed previous assertions: per capita smoking by 1975 had fallen by 34% below levels that would have been projected from data collected prior to 1964. However, the response to the publicity was gradual, and the study found no evidence that the anti-smoking commercials had a significant, isolated effect.

The study also revealed that the percentage of people who smoked had declined, but the number of cigarettes consumed per smoker had not. Finally, the percentage of females aged 12-16 who began smoking each year actually increased from 1964 to 1975. Like previous studies, the study was not able to isolate the effects of the warning labels from other effects.

According to the NIAAA report, several other studies in the early 1980's examined the effectiveness of anti-smoking legislation and labeling in other countries.

including Norway, Finland, and Sweden. These studies also could not separate the effects of health warnings from the effects of the concurrent broader information campaigns. Only two studies attempted to examine the effects of cigarette warning labels in isolation from other efforts. These were a staff report published by the FTC in 1981 and a Swedish study of the impact of Sweden's rotating warning labels.

The FTC report concluded that the 1970 cigarette warnings were not effective and did not provide consumers with adequate information. This conclusion was based solely on measures of consumer awareness of the warnings and their content; according to the FTC, many smokers were still unaware of the dangers of smoking, and the warning labels were neither noticed nor read by the majority of people.

The FTC cited four factors to explain why they believed the existing warning label was ineffective:

- The label was overexposed and worn out
- The warning presented no new information
- The warning was too abstract and difficult to "visualize"
- The warning was not likely to be perceived as "personally relevant."

The FTC tested several options for replacing the warning label. It also conducted market research to test consumer recall of different sizes and shapes of warning messages. The FTC finally recommended a new rotating system of four warning labels. These were in effect as of October 1985. However, the FTC did not market-test the new labels before they went into effect.

The effects of the pre-1985 warning labels in the U.S. can be summarized as follows. While the combined effect of the warning labels, the Surgeon General's report, the anti-smoking commercials and other informational campaigns reduced the percentage of smokers, the separate effects of the cigarette package labels and the other efforts cannot be determined. Despite evidence of the success of the overall program, the FTC was not satisfied with the warning labels based on measures of their effect on consumer awareness.

The study of Swedish warning labels, which were established in 1977, involved interviews with 2,000 people before the warnings were introduced, and again one year after their introduction. The study found that there was a significant increase in the percentage of respondents who were aware of the specific health risks described in the warnings. This increase was larger among smokers than among non-smokers. Also, the overall prevalence of smoking declined, and the attitudes toward the labeling system were positive.

The Swedish study indicated that the labeling program was a success in terms of awareness, acceptance and behavior changes. However, the study probably did not completely separate the effects of the labels from the effects of other educational efforts. Also, the Swedish labeling system was quite complex, involving 16 different labels that were changed every few years. This makes it difficult to compare to the U.S. program.

### Effectiveness of Cigarette Labels since 1985

One study is available that evaluates the new system of four rotating warning labels. Beltramini (1988) measured the believability of the new labels and the traditional label by surveying 727 university students. He used ten different believability scales, each measured on a five-point interval scale, to assess the overall believability of the five labels. The traditional label scored the highest on average believability, and there were significant differences between its believability and the believability of the other four labels. However, all were perceived as fairly believable on average.

Beltramini also examined differences in believability results for different segments of the respondents. He found, among other things, that the believability ratings were essentially the same for smokers and for non-smokers. Although this study tested the potential acceptance of the new warning labels, it did not measure consumer awareness or changes in behavior.

### Drug and Chemical Labeling

In this section, we briefly describe results on effectiveness of drug and chemical labeling. Most of the information in this section is abstracted from the NIAAA report.

#### Drug Labeling

Drug labeling has been regulated since 1906 and has evolved through several stages. Drugs are now classified as either over-the-counter (OTC) or prescription. OTC drug labels must list several pieces of information, such as the names and quantities of active ingredients, directions for use, and potential risky side effects. The FDA is responsible for classifying OTC drugs, ensuring their safety and effectiveness, and reviewing the labels.

For prescription drugs, the labeling is less comprehensive. It is assumed that a physician's advice and treatment will include information on the drug. However, patient package inserts (PPI's) are required for certain types of drugs, most notably oral contraceptives. The research on drug labels addresses three issues:

- Do people read OTC drug labels and PPI's?



- Do people understand the information?
- Does the information affect their behavior with regard to the drug?

Two major studies have addressed the comprehensibility of OTC drug warning labels. Both concluded that the level of presentation of the information (detailed versus simple) had no effect on the user's comprehension of the label. This result differs from conclusions for other product areas; simple information is generally regarded as easier to understand. The authors of one of the studies concluded that consumers can infer the basic message of a drug warning label despite the presence of complex information.

Many studies have addressed the effectiveness of PPI's for prescription drugs. The first such research focused on the PPI's included with oral contraceptives. A 1977 study found high self-reported awareness and usage of the PPI. Recall of the information in the PPI was also fairly good; for example, 69 percent of respondents correctly recalled usage directions, and 50 percent recalled information on the common reactions to the drug.

Several subsequent studies focused on the effects of the length and content of the PPI's on consumers' comprehension and learning. The studies generally concluded that the majority of consumers read and understand PPI's, find them useful, and prefer that they contain explicit and detailed information.

A few studies have tried to determine whether consumers change their behavior as a result of reading PPI's. These have found no evidence to support behavior change. In particular, a study commissioned by the FDA rejected an FDA concern that if warned about possible side effects, patients would discontinue using a drug, return it to the pharmacy, or report more side effects. The authors of the NIAAA report suggest a very reasonable explanation: Patients generally trust their doctors and see no reason to change their use of a drug because of a PPI. Another explanation is that sick people want to get well, and do not have much choice as to whether to take a drug or which one to take.

### Chemical Labeling

In 1972, the Consumer Protection Safety Act was passed and the Consumer Protection Safety Commission was given the mandate to protect consumers from unreasonable risk from products, other than products covered by other regulations (such as drugs and food). The CPSC can use any of five levels of policy options to control the risks associated with a product:

- take no action
- use a voluntary industry standard

- require a mandatory design standard
- require a label or hazard warning
- ban the product

A variety of household chemicals and other products have been labeled under the fourth policy option above. In addition, the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) has responsibility for labeling workplace hazards, and the EPA has responsibility for labeling pesticides and toxic chemicals. Below we briefly summarize results on the effectiveness of labeling in these areas.

A 1986 study examined the effects of various warning labels for toilet bowl cleaners and insect sprays on consumers' perception and understanding. The researchers found that the provision of more information on the products' risks led to more awareness of the risks, but at the expense of knowledge on how to use the product. When the label was enlarged, there was a size threshold beyond which consumers did not learn more. When the label was restructured into a logical sequence of categories and subcategories of information, consumers could recall precautionary information better.

Another 1986 study investigated the effects of various formats of warning labels on products including drain cleaners. The experiments found that re-wording and re-organizing labels can have a dramatic effect on the understanding of risk, and that comprehensive, clearly presented labels are better for teaching consumers about specific safety measures.

Other studies on consumer product safety warnings have found that larger safety labels sometimes lead to increased perceptions of risk, and conversely that the size of the warning and the inclusion of words such as "Danger" or "Caution" make no difference in perceptions of risk. A slightly different category of research studies have examined consumer reactions to product warning labels and concluded that people's preconception of the risk associated with a product has a stronger impact on their perceptions than does a warning label.

These studies all investigated the ability of warning labels to deliver risk information, but did not examine whether they cause consumers to change their behavior. However, one 1984 study tested workers' responses to hypothetical changes in the risk situations in their workplace. The study concluded that when workers were given the opportunity to read a warning label for a chemical with which they would be working, they revised their assessments of the risk they would be taking on the job. The more risky the chemical, the more workers were likely to state that they would expect additional pay in compensation for the additional risk, and that they would prefer to be transferred to a job involving less hazardous chemicals.

## Seals and Certifications

Our research uncovered a large number of articles and reports on general labeling issues, in addition to specific types of product labeling. Some of this research investigates the extent to which consumers notice and use seals and certifications when they choose products. Examples of seals and certifications are the "U S D A. Choice" meat label and the Good Housekeeping Seal. These are both "third-party" seals; they are awarded by an agency other than the company that makes the product. Other seals and certifications are "self-awarded" by the manufacturer; an example is the Monsanto "Wear-Dated" label.

The consensus of the research on these seals and certifications is that consumers notice them and consider them an important source of information on the product. Third-party seals and certifications enjoy the highest recognition. However, researchers also agree that consumers frequently attribute more meaning to the seals and certifications than actually exists. Below we summarize the most relevant articles we found on the effectiveness of seals and certifications. In the second subsection we describe a new third-party seal, the American Heart Association's HeartGuide.

### Effectiveness of Seals and Certifications

Jacoby et al. (1977) examined the amount and type of information that consumers acquire about alternative products before they make a purchase decision. The study subjects were 84 female college students; they were asked to choose, one by one, the categories of information they would need in order to make a purchase decision about toothpaste. Although the main result of the study was that brand name and price were the most important attributes of toothpaste, the study also found that the presence or absence of the American Dental Association seal was the most important piece of information following brand, price, size, and flavor. Information about the presence of the Good Housekeeping Seal was also requested by many subjects.

Parkinson (1979) thoroughly studied the extent to which consumers recognize, understand, and use nine seals and certifications, including the Good Housekeeping Seal, U.S.D.A. Choice, Parents' Magazine, Monsanto Wear-Dated, and Underwriters' Laboratory. The research subjects were 198 adult women in Delaware. These five seals received the highest levels of recognition; in each case, at least 85% of the subjects indicated that they had seen the seal before. All these seals are third-party seals except Monsanto Wear-Dated. One caveat to the high levels of recognition was that a fictitious seal was included in the study, and 20% of the subjects mistakenly indicated that they had seen it before.

Parkinson also conducted a simulated shopping experiment and concluded that the presence of the third-party seals (especially Good Housekeeping, U.S.D.A. Choice, and Underwriters' Laboratory) had a positive influence on product choice. He also concluded that, while these best-known seals have an impact on perceptions of the

product, they do not convey different types of information, all the familiar seals have a positive but generic effect. Finally, Parkinson found that consumers overestimate the meaning of the seals. For example, many think the seals mean the product is "tested by Consumer Reports" or "government-approved" when it is not.

Lanc and Sarel (1981) studied consumers' misperceptions of the Good Housekeeping Seal in 1972 and again in 1980. Their research subjects were screened to include only people who were familiar with the Good Housekeeping Seal and who had read at least one Good Housekeeping Magazine in the past six months. Therefore, their results on the subjects' use of the seal cannot be extended to the general population. Their main result was that consumers misperceived the meaning of the seal in both years of the study. For example, the majority thought that the seal meant that the product meets federal safety standards, which is not necessarily true.

LaBarbera (1982) interviewed 180 college students to study various ways that companies can improve their credibility and reputation in a product category. Adhesive bandage strips were used for the study. The study found that adding a statement to the advertising saying that "the brand's effectiveness had been tested and approved by the American Medical Association" had a significant positive effect on the product's perceived credibility and the consumers' intent to purchase the product.

#### American Heart Association's HeartGuide

The American Heart Association is in the final stages of preparing a program to offer a seal of approval to foods that contribute to a "heart healthy" diet. The AHA program will use its own standards, first set in 1961, for total daily allowances of four food elements: saturated fat, total fat, sodium and cholesterol.

When a food product manufacturer applies for the program, the food product is tested for its contents of the four elements in a single serving. A product that meets AHA standards is given the right to use two HeartGuide label features:

- The HeartGuide seal of approval. The seal appears on both the packaging and advertising of the product.
- Information on how the product contributes to the total daily recommendations for the four food elements. This information appears in a defined bar chart format on the package near the FDA-required nutrition information.

The products will be tested by a network of independent contract laboratories, which will test products purchased from retail outlets serviced by each manufacturing facility producing the product. Each product sample will be tested by more than one laboratory, to reduce testing errors. The laboratories will continue to purchase and test product samples throughout the contract period to monitor compliance.

The license agreement for use of the HeartGuide seal lasts for three years and includes provisions restricting the use of the seal in packaging and advertising and giving the AHA the right to cancel the agreement in the event of noncompliance. A fee is charged to defray the costs of testing the products and conducting the total diet education program which will accompany the HeartGuide promotional effort. The fee is based on the market share a company's brand commands, this fee is the same whether one product or all products bearing the brand name are eligible to receive the HeartGuide seal. The AHA chose this fee structure for two reasons: market share information is much simpler to obtain at the brand level; and this structure encourages companies to reformulate all products in a brand to meet the HeartGuide requirements, since once a single product has been accepted and the fee paid, there are no additional program costs involved in including additional products in the brand.

AHA is integrating the HeartGuide program into its entire structure, with existing departments and committees extending their expertise to the appropriate parts of the project. Thus, the education committee will add HeartGuide education efforts to their other school, work site, and in-store education programs. AHA considers the HeartGuide program to be an extension of its existing diet education efforts rather than something dramatically new.

During the development phase of the project, AHA conducted extensive research on nutritional labeling and consumer education. This research included both a thorough survey of literature reviewing the existing FDA nutrition label requirements as well as several consumer studies. AHA also contacted other organizations that offer or have offered seals of approval, such as Good Housekeeping Magazine and the American Medical Association. AHA feels that the use of a single seal of approval, combined with the bar chart format, will overcome the problems encountered by the FDA label system.

AHA has had significant legal assistance throughout the development of the project, and does not foresee any major legal challenges to the program. They have tried to include the FDA and the USDA, the government agencies with authority to govern food labeling, in the development discussions; although those agencies were fairly helpful at first, their concerns seem to grow stronger as the time for implementation approaches. Among trade associations, some support the program and some oppose it, but, as the program is voluntary, AHA does not expect any serious problems. The major trade association objection is to the fee structure.

In recent televised interviews, the USDA expressed dislike for the HeartGuide program. One complaint about the program is that heart health stems from the right mix of foods, rather than any single food product. The food industry may start a competing labeling program.

### **Concluding Observations**

As we have seen, there are many government-mandated product labels with many different purposes. This memorandum has described the effectiveness of the

labeling programs that seem most relevant to an investigation of environmental labeling. The effectiveness of a labeling program can be described in terms of consumer awareness, acceptance, and behavioral impacts. There are four characteristics that contribute to the effectiveness of a labeling program:

- characteristics of the label
- characteristics of the product market
- characteristics of the targeted consumer segments
- characteristics of the accompanying program efforts.

Below we briefly discuss each of these four conditions and make preliminary observations on their impacts on the effectiveness of labels.

**Characteristics of the Label.** There are many attributes of labels, including their complexity, size, color, and specific content. With the possible exception of patient package inserts, simpler labels are more effective than complex ones. Well-organized, clearly written labels are more effective than labels that are harder to read. Bolder, larger, and more colorful labels are more effective than dull ones. Labels are also more effective if they do not contain a large number of attributes; for example, nutrition labels contain information on many different aspects of food and a large amount of effort is required to compare this information across several products. Labels should present new information and information of relevance to the targeted consumer. There is some evidence that labels warning of negative impacts are more effective than those that claim positive impacts; however, recent developments in labeling and the media (e.g., oat bran) seem to contradict this. Finally, labels should not force consumers to perform mathematical calculations (such as adding up percentages or computing monthly costs from annual costs.)

**Characteristics of the Product Market.** Products and product markets vary substantially in their characteristics. Two factors that determine the effectiveness of a label in a product category are the importance of the label compared to other attributes of the product, and the availability of alternatives to the labeled product. For example, attributes of refrigerators such as size and price are more important to consumers than energy efficiency, even in times of energy shortages. Also, in some product markets the effectiveness of a label cannot be measured in terms of behavior change. For example, patient package inserts communicate useful information, but are not expected to cause behavior changes, as there is usually no better substitute for a prescription drug. At the other extreme, with some products (e.g., cigarettes), the effectiveness of the label is measured in terms of how many consumers give up the product altogether.

**Characteristics of the Targeted Consumer Segments.** Research indicates that before a label is designed, thought should be given to the characteristics of the consumers who will see it. Age, income level, and education level of a consumer all have a strong

impact on the effect the label will have. To understand complex labels, consumers may need to have special skills or education. Finally, consumers must believe that the information on the label is useful and relevant to them in particular, not just to the public as a whole.

Characteristics of the Accompanying Program Efforts. It is typically difficult or impossible to separate the effects of a label from the effects of the accompanying government standards, consumer information programs and media campaigns. Government standards may have an effect on the available products. The publicity that accompanies a labeling program may have a dramatic effect on consumers; the most successful labels have been accompanied by media campaigns. Much of the research literature advises that labeling programs be market-tested before their launch. The literature also suggests that the label and the other aspects of the program be varied over time and across market segments in order to capture and hold consumers' attention.

Our findings on labeling effectiveness are mixed. Consumer awareness of labels, reported use of labels, and support for labels and seals are usually quite high. However, understanding and recall of the details and meaning of the label information is often low. Changes in consumer behavior can be small (as in the case of appliances), but can be high when combined with media coverage and other factors (as in the cases of cigarette smoking, and the current cholesterol/oat bran craze). Changes in producer behavior, where they can be identified, are associated with other influencing factors accompanying the labels, such as government standards or media publicity.

## CHAPTER 4 ANALYSIS AND RECOMMENDATIONS FOR A U.S. ENVIRONMENTAL LABELING PROGRAM

### **Introduction**

The previous two chapters summarize our findings on the current status of environmental labeling programs outside the U.S., and the effectiveness of past and present U.S. labeling programs. In this chapter, we draw upon the previous chapters, as well as discussions with experts and interested individuals from a variety of backgrounds, to answer the following questions:

- **Goals:** What should the key goals of a U.S. environmental labeling program be?
- **Functions:** What functions must the program perform to meet its goals, and how should they be performed?
- **Structure:** What are the possible institutional structures for performing these functions, and which should be adopted?
- **Next steps:** What actions should be taken?

Much has been written about the various reasons for implementing an environmental labeling program in other countries, and many individuals have strong opinions about the feasibility, costs, and benefits of implementing such a program in the U.S. The purpose of this chapter is not to argue in favor of such a program, or to justify it in terms of costs and benefits. Instead, our objective is to develop the best possible preliminary design for this entirely new program.

First, we describe the goals of the program. These are derived largely from examining other countries' programs.

Second, the goals of the program suggest several key aspects of the program's operation. These include selection of product categories and criteria, testing and monitoring of products, publicity, financing, legal support, and label design. We discuss these issues and recommend guidelines for operating the program. Our recommendations are intended to provide a starting point for the design of the program.



but not to provide definitive answers to the many detailed questions that should be addressed by the program's management and/or decisionmakers

Third, we describe the organizational structure that should be adopted to perform the program functions, and the reasons for selecting this structure over others

Fourth, we conclude by identifying the next steps that should be taken if environmental labeling is to be pursued. These steps include both "action items" and further research. The immediate actions could be taken in parallel with the additional research in order to expedite setting up the program.

### **Program Goals**

In this section, we describe the basic goals of the environmental labeling program. In addition, we suggest four performance criteria that should be given priority in the design and operation of the program.

The goal of environmental programs in general is to reduce pollution and protect the environment. The basic goal of the environmental labeling programs in other countries is to contribute to environmental protection by creating a nationally recognized label that:

- allows consumers to choose environmentally compatible products, and reject environmentally damaging ones
- encourages producers to reformulate their products and processes to meet demand for environmentally compatible products
- promotes general awareness of environmental issues in both consumers and producers.

Thus the label is intended to become a national market mechanism that provides useful information to consumers who are already environmentally conscious, and encourages producers to respond accordingly. It is also intended to be an educational tool that will raise consumers' and producers' environmental awareness. The U.S. program should have the same basic goals.

In addition to these basic goals, the U.S. environmental labeling program should be structured so as to meet several important performance criteria. These criteria are listed below:

- The program's goals and operations must be clearly and successfully communicated to consumers, producers, and interest groups.

- The program must be scientifically credible in the eyes of consumers, producers, and interest groups, thus ensuring that participation levels and support will be as high as possible
- Administrative delays and legal difficulties, which could damage the image of the program substantially, should be avoided or at least minimized
- Conflicts with other labeling and/or pollution prevention programs, which would damage the program's image and could slow its implementation, should also be avoided.

These performance criteria address issues that are not unique to the U.S., but may be more important in the U.S. than in many other countries because of consumer skepticism, weakness of government and large businesses, the U.S. legal system, and the large number of related labeling, recycling, and other programs already underway. Failure to consider these criteria could seriously jeopardize the success of the program, due either to lack of interest or to criticism and distrust of the program.

### **Program Functions**

With these goals in mind, this section suggests guidelines for several important functional aspects of the U.S. environmental labeling program. Our discussion assumes that the U.S. program would be a voluntary, positive-labeling program, similar in some ways to the programs operated in other countries. A mandatory program or a warning-label program could not meet the goals discussed above in the same way, and would be a fundamentally different type of program with different legal and regulatory implications.

The major functions of the program should include the following:

- nomination and selection of product categories,
- development of product criteria,
- testing, certification, and monitoring of products,
- label design, education, and promotion,
- finances,
- legal support, and
- program evaluation.

### **Nomination and Selection of Product Categories**

The developers of the program will put in place a process for identifying and choosing categories of products to be labeled. Candidate product categories must be identified, screened in a logical manner, and eventually either rejected or selected for development of specific criteria. This process should be carried out within a management structure that will provide for the participation of a broad range of organizations and individuals.

In other countries, suggestions for product categories are solicited from the general public. Suggestions are received from consumer and environmental organizations, manufacturers, government organizations, and other interested groups. The suggestions are then subjected to an initial screening and prioritization, after which a higher authority (the government or advisory panel) decides which categories to target for criteria development. This system seems practical and well suited to the U.S. labeling program.

We also suggest that a comprehensive mailing list be developed with names of interested individuals and organizations. Members of this list would receive requests for suggested categories, and periodic mailings explaining the status of the suggestions.

Product categories that might be considered initially would include those that have been selected in several other countries. Examples include:

- recycled paper products
- recycled and recyclable plastic products
- other recycled and recyclable containers
- re-treaded tires
- re-refined oil products
- insulation materials
- water-based paints
- recycled rubber.

as well as many others. There are several advantages to considering products in these categories initially:

- the experience of other countries can be applied
- in some cases (e.g., recycled paper), much research on criteria already exists in the U.S.
- in some cases, EPA Procurement Guidelines exist and could be applied as a starting point for the criteria
- these categories represent products that are thought to have a high impact; for example, the solid waste stream in the U.S. is about 40% paper by weight, representing a clear opportunity for reducing waste by recycling paper.

The first three points imply that labeling of products in these categories could be implemented quickly, helping the program achieve quick recognition and awareness. Several other countries have taken a similar approach, labeling recycled products and other "clear environmental winners" initially and saving more difficult product categories for later.

It should be noted that products made from recycled and recyclable paper and plastics have already been targets of much controversy in this country. Industry groups and state and local governments use different definitions of "recycled" and "recyclable." This controversy could cause difficulties for the labeling program. On the other hand, the labeling program could be seen as an opportunity to resolve debates about definitions.

In addition to consumer products, other countries' programs label, or plan to label, services and/or packaging. The U.S. program should consider this also, although initially it should focus on products. In many cases, product packaging could be considered part of the overall product for the purpose of assessing impacts.

Because toxic chemicals, some pesticides, some drugs, and dangerous products are already subject to warning labeling regulations, the possibility of disqualifying them from receiving the environmental label should be considered. This rule, which will be used in Norway's program, would reduce consumer confusion and avoid conflicts with existing laws. However, some interest groups will likely argue in favor of allowing these products to be labeled, so this is an open issue.

When decisions are made whether to include a product category in the program, input from a variety of disciplines and interests should be considered. The Environmental Choice Board (in Canada) and the Environmental Label Jury (in West Germany) both consist of individuals from a variety of organizations and backgrounds. These individuals are committed to the goals of the program, and many have technical or product knowledge in addition to medium- or high-level managerial and public-contact experience.

#### Development of Product Criteria

Perhaps the most difficult and controversial aspect of environmental labeling is the development of the criteria that determine whether products receive the label. Other countries have spent a great deal of effort working with experts from scientific and other fields to try to decide how criteria should be developed. Despite this, and despite more than ten years of experience with the West German program, most countries are still grappling with their product criteria. No country has developed a formal methodology for developing product criteria; the process is typically somewhat ad hoc.

A formal process, perhaps using quantitative methodology such as multiattribute utility analysis, could in theory be used to develop product criteria. However, there are many different product criteria to compare for any one class of products, and many product classes to consider. A formal process would have to be fairly streamlined to succeed.

Whatever the process for defining product criteria - formal or informal, simple or complex, quantitative or qualitative - the process should involve as broad a group of interested parties and scientific experts as possible. Well-qualified experts and

researchers, including individuals from the EPA and other agencies, should contribute to criteria development

The process of drafting the criteria should utilize the best technical information currently available. Such information should include the range of environmental impacts caused by products in the product category, various measures of the costs (or benefits) of these impacts, and the likely effect that alternative product criteria would have on the marketplace (consumers and producers.) The criteria should be defined so that some manufacturers are rewarded for their efforts, and others are encouraged to improve. This implies that the label should not be awarded to all the products in a category (a rule that is informally used in some other countries).

Also, the process for changing the criteria over time should be considered in advance, and perhaps discussed with manufacturers in advance. Several questions can be posed that illustrate the reason for this. For example:

- Are the criteria intended to help drive the development of new production technology? If so, then perhaps only the very best product in a class should be labeled, so that other manufacturers are encouraged to improve.
- If most other manufacturers improve their technology to the point that they qualify to receive the label, then should all their products receive the label? If so, then there will be no remaining incentive for the manufacturers to improve still further. If not, then the manufacturers will be denied their "reward" for improvement, which could lead to understandable frustration and possibly legal action.

We also recommend that the final decision on the product criteria be made by the same group of individuals, representing varied interests, who decide on the product categories. This approach is consistent with other countries' systems and seems to be sound.

The development of product criteria (and the screening of product categories to include) should use a cradle-to-grave approach that considers all the possible environmental effects. All phases of the product's life cycle - production, distribution, use, and disposal - should be considered, as well as the use of raw materials, and possibly energy consumption during production and use. The impacts considered should include air and water emissions, solid waste, hazardous waste, toxic effects, and health and safety risks. Such an approach, while obviously difficult to implement, is crucial to the success of the program. Among other countries, only Great Britain favors a simpler approach, and its government is being severely criticized for this position.

One obvious difficulty with the cradle-to-grave, multi-effect approach is that of quantifying the environmental impacts. Questions that arise include the time horizon of the impacts, and how to compare and trade off different impacts. Often, data are not available on some types of environmental impacts, in which case a decision must be

made whether to disqualify the product category until data are available. A related problem is how to draw the boundaries of the product's impacts, especially at the beginning and end of its life cycle. Considering raw materials that make up the product could be extended to include considering the processing of the materials, which would add additional complexity. Likewise, the product's impacts upon disposal may depend on the disposal method and on the other characteristics of the waste stream. All these difficulties have been addressed in other countries and should be discussed starting in the early stages of the U.S. program.

While the development of the product criteria should consider all impacts of the product, the final criteria may in fact be quite simple. Often, within a product category, all the products will have similar impacts or no relevant impacts along several dimensions. Along a few dimensions, their impacts may be quite different. Only the dimensions that differentiate among products need to be considered in the final product criteria.

There are many other issues related to the development of product criteria, and as mentioned above, other countries have addressed them as well. Much additional research could be conducted on the topic. In particular, quantitative methods and formal processes could be designed for both selecting product categories and determining product criteria.

#### Testing, Certification, and Monitoring of Products

Once product categories and criteria are in place, the program will require a system for testing certain products, certifying those that meet the criteria (for example, verifying that a lubricant truly contains 50% re-refined oil, or that a plastic bottle is recyclable) and monitoring continued compliance. These requirements could be met in a number of different ways. For example, a single large laboratory could be selected to carry out the testing processes for all products. At the other extreme, product manufacturers could be required to submit their own test results from the laboratory or testing organization of their choice.

In terms of meeting program goals, the testing, certification, and monitoring process has a significant effect on the technical credibility of the program. Therefore, in cases where the product requires formal testing, the testing process should involve laboratories that are highly qualified to test the particular product. It is unlikely that any single large laboratory will have sufficient experience with all the product categories that might be labeled. Instead, the program should rely on the use of a portfolio of different laboratories, universities, and independent experts to help design the testing process and carry out the testing. This also minimizes start-up time, since laboratories with the specific necessary experience already in-house can be used.

As in other countries, manufacturers should pay a fee to use the label on their products, and should pay for any testing that is required. Possible fee structures are discussed in the Finances section. Once a product has been tested and qualifies for the

label, a contract should be drawn stipulating the manufacturer's rights to use the label. The size and placement of the label on the product should be specified, as well as the allowed uses of the label in advertising, and the length of time for which the contract is valid.

Many other countries have designed their contracts so that the label may be used for three years, after which the product category may be re-visited and the criteria changed. However, product markets and technologies change at different rates; three years may be too frequent or infrequent depending on the particular product category. We recommend that in the U.S. program, the length of time for which the contract is valid should depend on the characteristics of the product category, and should be determined as the product criteria are developed.

One feature of West Germany's testing and certification process should be adopted in the U.S. program. Before a product is given final approval for the environmental label, the local authorities in the area of the product manufacturer's headquarters and/or manufacturing plant should be contacted to determine whether the manufacturer complies with local pollution regulations and is in general a good "environmental citizen." If the manufacturer's record on environmental matters is questionable, its right to use the label on its product should be denied or delayed until the manufacturer complies with regulations.

The product testing process must include a system for monitoring products over time to verify that they meet the criteria for the environmental label. Other countries have had little difficulty with non-compliance, although some have taken companies to court for using a label very similar to the program's label.

Product manufacturers can probably be relied upon to monitor their competitors' claims about the environmental compatibility of their products. In case this fails, the labeling program should be prepared to re-test products if there is any suspicion. The program should also have the authority and resources to take offenders to court and revoke the right to use the label (see Legal Support below).

### Label Design, Education, and Promotion

There are three main efforts that contribute to the successful launch and marketing of the program: design of the label, education of consumers, and promotion of the program.

Research in the area of labeling effectiveness (see Chapter 3) indicates that complex, wordy, technical labels are less successful than simple, attractive, non-technical labels. Eye-catching logos or seals of approval do the best job of communicating a concept (such as "environmentally compatible") to consumers without requiring much effort on the part of the consumer. While these simple labels should be backed up with more detailed information, not all consumers who notice and use the simple labels will absorb the details. The environmental label should indicate simply

that this is a product that has been identified as environmentally compatible by an objective, credible organization.

There are several alternatives for choosing a label design:

- hire a well-qualified graphic artist/company logo designer
- conduct a public contest (as was done in Canada), which has the additional benefit of generating publicity for the program
- use an existing logo, such as a government agency's logo or a modified recycling logo.

The third option clearly depends upon the degree to which government agencies will be directly involved in the program, an issue that is addressed in the next section. In any case, the final design should be evaluated by a well-qualified graphic design expert, and should be market-tested if possible.

An alternative to the labels used in other countries, which only indicate one level of environmental compatibility (the product either is compatible, or it is not), would be to use a series of different labels to indicate different levels of compatibility. For example, paper products made from 100% recycled paper would receive a gold label; products made from 80-99% recycled paper would receive a silver label; and products made from 60-79% recycled paper would receive a bronze label. Another such system would allow products to be rated on a numeric scale to indicate their level of environmental compatibility. Such a labeling system obviously has implications for the design of the product container, and would be more difficult to implement than a simpler system. However, it might be better received by industry and consumers than a "compatible/not compatible" system. Further research, including market-testing, would be required to evaluate such a system.

A good label design is just the beginning. Based on a large amount of research on consumer behavior, the effectiveness of labeling, and the effectiveness of recycling and other waste-reduction programs in the U.S., we believe that it is imperative that the environmental labeling program include both an educational and a program-promotion effort. The purposes of the two efforts would be slightly different.

The educational effort would aim to communicate to consumers the goals of the program, the environmental issues it addresses, and the meaning of the environmental label. The program-promotion effort would be directed mainly at manufacturers, and would aim to encourage their participation in the program by promoting it as a marketing and public relations tool in addition to its other merits. Although these two efforts could possibly be combined into one comprehensive publicity effort, we believe that the perspective that consumers and producers would bring to the program would be so different as to merit separate communication efforts.



The timing of the launch of the education and promotion programs is an open question. Some countries have decided to postpone publicity until the first set of products are labeled. Others begin promoting the program immediately (e.g., through public contests to design the label) but postpone the educational effort until products are labeled. For the U.S. program, the best strategy will depend on a variety of factors, including the nominal schedule for implementing the program, the possibility of competing programs, and the public mood. The public mood at the moment is one of high interest in environmental issues; it would be best to try to take advantage of this.

### Finances

As in other countries, the U.S. program should require product manufacturers to pay a fee in order to use the label. This could generate a substantial amount of revenue for the program, although investment from some source would be required initially. Once operating, the program would require a simple financial structure and one or more financial officers.

The financial structure of the U.S. program would depend on the organizational structure, and the interest level and number of successful applications from manufacturers. We recommend that, as in other countries, manufacturers pay a fee to use the label, and bear the costs of testing and verification. In other countries, the fee structure is based on the sales of the product (e.g., 0.5% of annual sales). In some cases the one-time and testing fees are paid once upon the establishment of the contract; in others it is levied annually. The fee is paid again when the product is re-tested and the contract renewed (e.g., after three years.)

A similar fee structure should be set up for the U.S. program. Annual fees could generate more revenue than one-time fees, but would also generate more paperwork. If the fee is based on percentage of sales, it should not exceed a specified maximum, perhaps \$5000 annually (in addition to testing costs.) The costs associated with certifying the product will be virtually all fixed and will not vary with the product's sales volume. The purpose of the fee structure should be to recover costs without charging a fee high enough to prevent manufacturers from applying for the label.

For small companies trying to launch new, environmentally compatible products, program financial officers should consider a special fee structure allowing the companies to "borrow" the fee and pay the program back later. This would help encourage entrepreneuring of environmentally compatible products and development of new technologies. However, caution would obviously be warranted in such cases, as the program's purpose is not to finance start-up companies.

Programs in other countries are expected to become self-supporting after a few years. However, each has required initial investments on the order of several hundred thousand dollars per year - enough capital to fund several full-time staff members, pay overhead expenses, retain legal counsel, hire experts on a part-time basis, and obtain publicity. This is considered a small investment to prevent pollution at the source, and

raise awareness of environmental issues, compared to the expense of pollution cleanup

Most other countries have attempted to reduce costs by using existing government agencies for a substantial part of the program management and some of the technical expertise. Under the organizational structure we propose in the next section, it is difficult to forecast how quickly the program could become self-supporting. It is safe to predict that it would operate at a loss for the first few years. However, once it is operating smoothly and a substantial number of products are labeled, manufacturer fees could easily cover the operating costs.

### Legal Support

In the early stages of the program, there will be important legal issues to resolve. Program developers must hire a legal team to conduct research on the potential liability of the program staff, advisory panel, and other participants, in the case of a lawsuit. The legal staff should investigate the possibility of the federal government's indemnifying the program participants. Also, the staff should explore precedents for avoiding lawsuits by manufacturers who stand to lose revenues or bear costs because of the environmental label. Finally, the legal staff should take action to copyright the label, the name of the program, and any slogans to be used to promote the program.

Depending on the organizational structure of the program, there may be many other legal issues. The program may have to retain full-time legal counsel during its initial stages, and a part-time or small legal staff thereafter. Legal problems have been fairly insignificant in other countries, but such luck cannot be assumed in the U.S.

### Program Evaluation

The final recommended program function is to monitor the effectiveness of the program and identify opportunities for technical improvement. To date, no other countries have conducted formal assessments of the effectiveness of their labeling programs. West Germany is the only country with enough experience to do so, and has no plans to. The design of the U.S. program should include plans for assessing the program's impacts on product markets in the medium- and long-term. Such assessments are valuable for evaluating the program's effectiveness in meeting its goals, and politically useful if the program continues to operate at a loss after several years.

The criteria used to label products should take into account the best technical information now available. However, the program will not necessarily address the improvement of current technical knowledge. If there is insufficient data on the environmental impacts of a product category, the category should probably be set aside.

For this reason, the labeling program represents an excellent opportunity for identifying technical questions that should be answered, through government-funded

research or other means. There should be a mechanism for the program staff to communicate recommended research issues to government program offices, universities, and other organizations. Presumably, the program would benefit from technical advances that enabled new categories of products to be tested and labeled.

### **Program Structure**

In this section, we recommend an organizational structure for the environmental labeling program, and discuss some of the implications of the recommended structure.

#### **Recommended Structure**

In order to best meet the goals of the U.S. environmental labeling program, and conduct the functions described above, we recommend that a new, independent, non-profit organization should be created. An organizational chart of the structure we recommend is shown in Figure 2.

The ultimate authority for the design of the program, the setting of policy, and the staffing of the program would reside with the Board of Directors. The Board would be composed of about eight to twelve individuals with high public visibility, credibility on environmental and other issues, and very high-level management experience. Examples of such individuals would be CEOs or presidents of large corporations with good environmental records, directors of well-known consumer and environmental groups, presidents of universities, and possibly (depending on the legal implications) administrators or directors of government agencies. Other possibilities include former politicians, retired EPA officials, and possibly a top-level official from West Germany who was involved in setting up the program there.

The role of the Board would be to set policy, represent and support the program, amend the charter if necessary, and appoint (and if necessary, remove) the Technical Panel and the program Executive Director. The Board would not participate directly in decisionmaking about product categories or criteria. It would exert its influence through its policymaking and hiring powers.

The Board of Directors would be appointed by the Administrator of EPA, with the participation of the President of the United States and other Executive officers. The Board would meet twice a year, would serve a term of three years, and would receive a stipend and reimbursement for expenses. Overall, the Board would operate similarly to Boards of Directors and Boards of Trustees in other for-profit and non-profit organizations.

The Technical Panel would consist of sixteen to twenty-four individuals who would be charged with the responsibilities of deciding on product categories, product criteria, and labeling. It would meet four times per year to review recommendations made by the Executive Director and Product Panels. Like the advisory boards in other

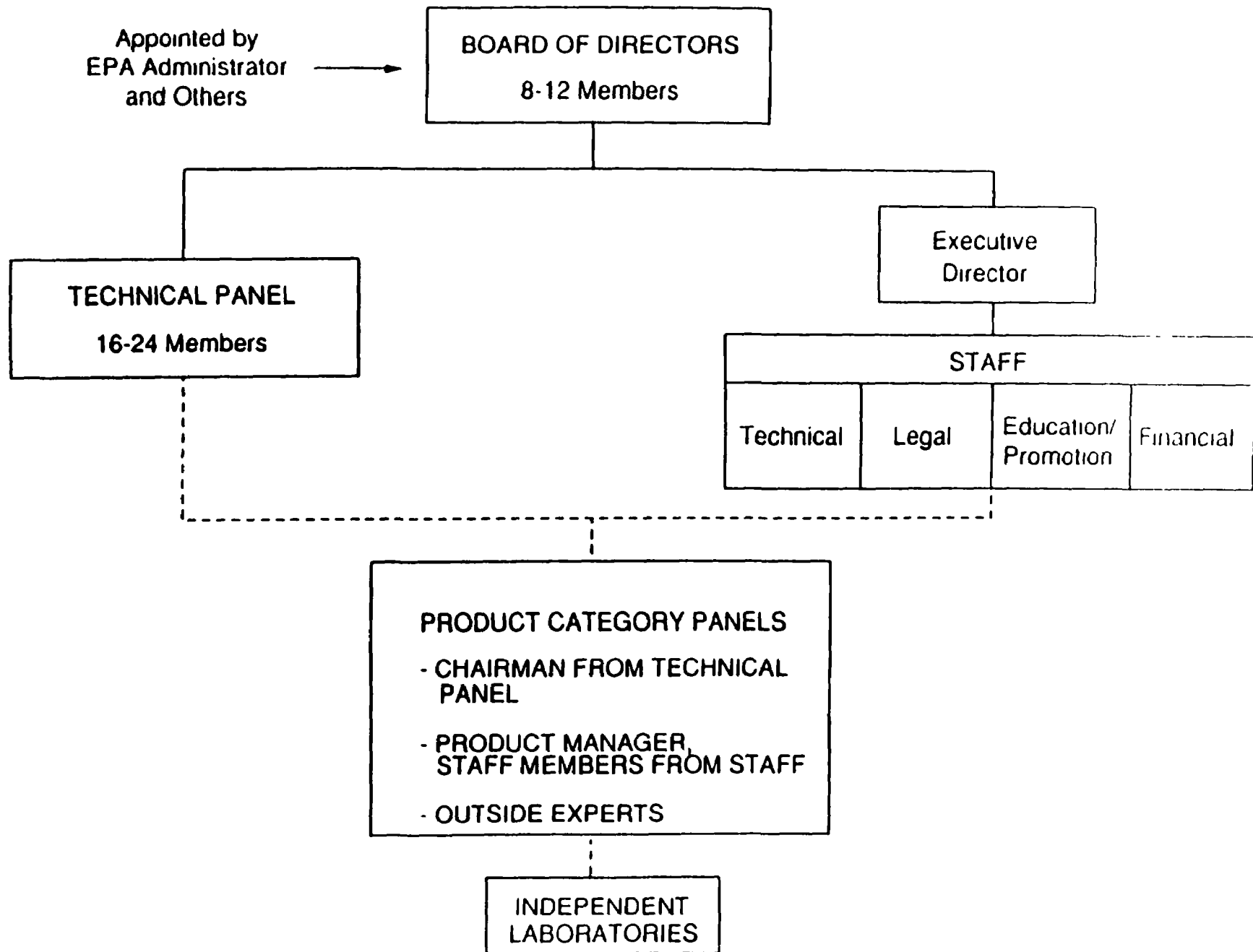


FIGURE 2. MANAGEMENT STRUCTURE FOR ENVIRONMENTAL LABELING PROGRAM

countries' programs, the Technical Panel would be made up of individuals from diverse backgrounds including commercial firms, industry groups, consumer groups, environmental groups, academia, scientific fields, and health fields. In addition, one or more staff from EPA and other government organizations would serve on the panel, if legally possible.

The Technical Panel members, as the name implies, should be technically competent. Several members, such as those from environmental groups, certain industry groups, academia, science, and EPA, should be quite proficient in evaluating the environmental impacts of particular classes of products. While the role of the Board of Directors would be to represent the program at a high level, the Technical Panel would be involved directly in setting product criteria and should be qualified to do so. The Technical Panel would receive a stipend and would be reimbursed for expenses.

The Executive Director would be a full-time manager, proficient in environmental issues and experienced in managing a diverse staff. He or she would supervise full-time staff members on a day-to-day basis. In addition, the Executive Director would be ultimately responsible for making recommendations to the Technical Panel for their review. Also, he or she would be ultimately responsible for the program's budget and for supervising outside subcontractors (such as experts hired on a temporary basis.)

Under the supervision of the Executive Director would be a staff with at least four components: technical, educational/promotional, financial, and legal. The Technical Staff would consist of at least five people, whose responsibility would be to coordinate all research and investigation with regard to product categories and criteria. Technical Staff members would also serve as product managers and staff members for Product Panels. Also under the Executive Director would be the educational/promotional staff, financial staff, and legal staff (although these functions could, in theory, be contracted to other companies). The Executive Director would also manage administrative (support) staff members. The total number of staff members would be at least ten, unless some functions (e.g., legal) are subcontracted.

The process for selecting product categories and criteria is depicted in Figure 3. Product categories would be solicited from the general public. The Technical Staff (under the supervision of the Executive Director) would screen these suggestions and reject inappropriate ones. Suitable categories would be put in order of priority. The highest-priority categories would be identified and each would be assigned to a team of Technical Staff members for further research.

The Technical Staff team would investigate what is known about the product category, drawing upon the resources of the EPA and other agencies. They would identify the likely major environmental impacts, summarize the issues, and develop a set of recommendations. These recommendations would be presented to the Technical Panel at the earliest possible meeting date. For products that seem suited for labeling, the Technical Panel would discuss the issues and vote on whether to reject the category, accept it, or conduct further research.

**TABLE 3. PROPOSED PROCESS: SELECTING PRODUCT CATEGORIES FOR THE ENVIRONMENTAL LABEL**

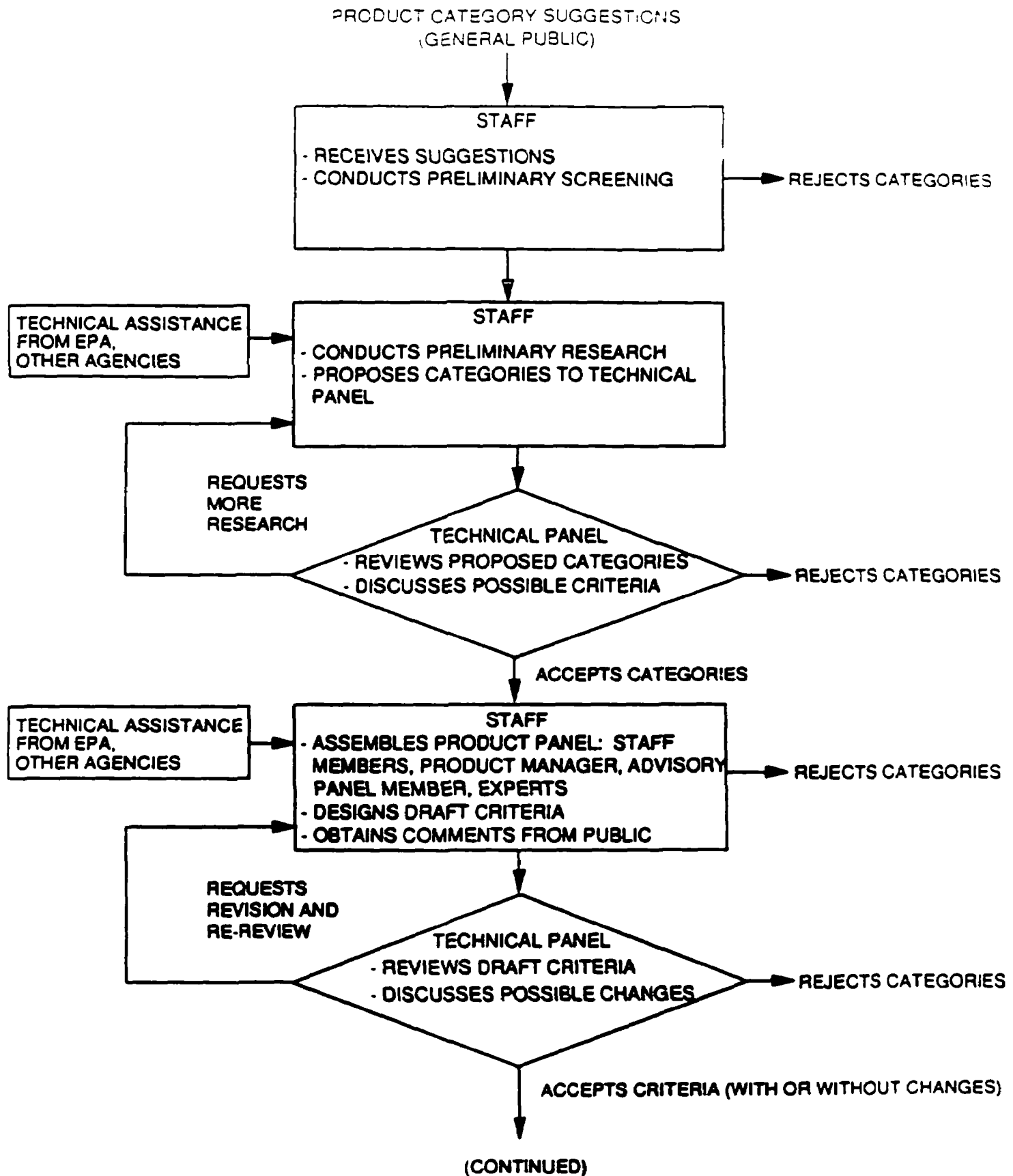
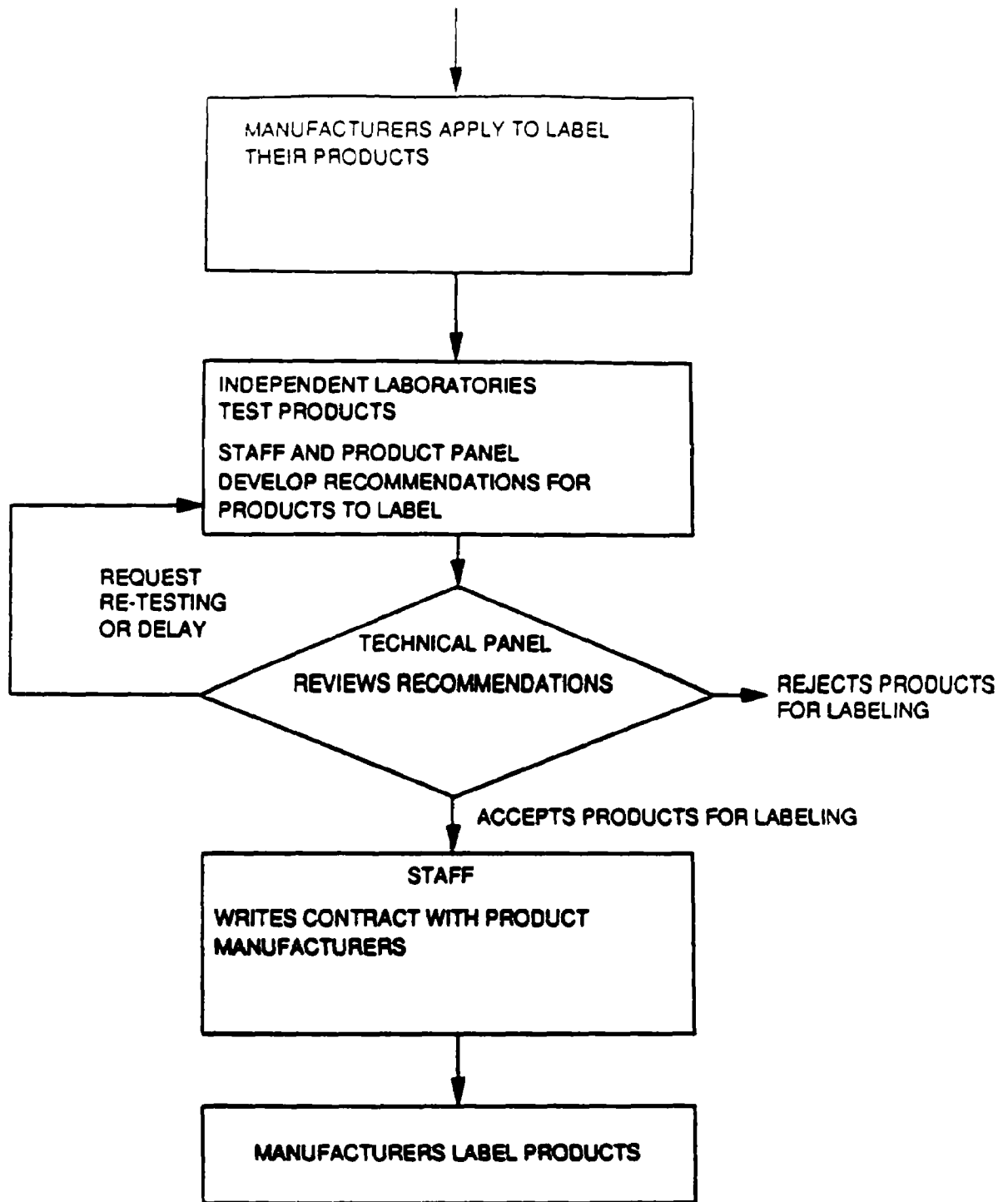


TABLE 3 (CONTINUED)



For each accepted product category, the Executive Director would appoint a Technical Staff member to be the Product Manager. Additional members of the Technical Staff would also be assigned to the Product Panel, along with one member of the Technical Panel. The Product Panel would then identify areas for further research and assemble experts in the environmental impacts of the product category. The Product Manager would be responsible for ensuring that:

- draft Product Criteria are developed
- the draft Criteria are made available to the public for a review period lasting about 45 days
- the draft Criteria and the public comments are summarized and communicated to the Technical Panel at the earliest possible meeting, along with recommendations.

At that meeting, the Technical Panel could vote to accept the proposed criteria (possibly with modifications), reject the category (e.g., because of new technical evidence), or ask for further work, such as revisions and another public review.

Once the product criteria are in place, the Product Panel would remain intact long enough to specify completely the testing, certification, and monitoring process and make sure that the testing system is put into place. Following that, the Product Panel would disband. The Product Manager and the Executive Director, however, would have the joint responsibility for monitoring approval/rejection of products, continued compliance, and starting the process of re-evaluating the product category after the appropriate period of time.

Final decisions on the labeling or rejection of independent products would be recommended to the Technical Panel by the Product Manager and the Executive Director. Individual products would not receive the label until approved by the Technical Panel.

The testing of products could be conducted by one or several independent laboratories, and/or manufacturers could submit their own proof of testing from an approved laboratory. Manufacturers should pay a small (but not insignificant) fee for the use of the label, and should also pay for the testing of their products, as discussed in the previous section.

#### Implications of the Recommended Structure

Several federal government agencies would be involved in the labeling program in some capacity, but none would actually operate the system as it is proposed here. Clearly, the EPA will play an important role in the design and setup of the program. In addition, EPA staff might serve on the Technical Panel, and would provide technical



expertise to the Product Panels. There are a large number of other agencies that should probably be involved, including the Council on Environmental Quality, the Department of Commerce, the Federal Trade Commission, the Consumer Product Safety Commission, the Occupational Safety and Health Administration, the National Institute of Standards and Technology, and others. However, the program would be run by a legally independent organization.

There could be several benefits to EPA's administering the program, instead of the independent model we recommend. The existing administrative structure and technical expertise within EPA would make the program less expensive to set up and run initially. A labeling program seems to fit with EPA's goals and would likely generate much interest and enthusiastic participation within the organization.

In Canada, Environment Canada is managing the EcoLogo program, and promulgates the final decisions through the authority of the Minister of the Environment. In Germany, the Federal Environment Agency is similarly responsible for many aspects of the program. A program structure similar to these could be adopted in the U.S.

There are, however, disadvantages to EPA's operating the program. In our opinion, the most compelling disadvantage is the requirement that EPA's decisions be subject to legal requirements such as due process and the Administrative Procedures Act. The regulatory process could make it very difficult to launch the program and put labeled products on store shelves in a timely manner. As mentioned in the previous section, such delays could damage the image of the program. Also, EPA is subject to changes in the Administration. In the medium or short term, such changes could result in the erosion or disbanding of the program. To the extent possible, the program should be insulated from the political process.

The program design we recommend ensures that EPA and other federal agencies are involved, but are not responsible legally for the overall operation of the program. A similar model is the labeling program in Norway, which will be run separately from the government, through an independent organization, although many of the Board and Council members will be government officials. Sweden also proposed a similar program, although the government is now planning to contract it out to a large standards institute.

We do not recommend contracting the program to an existing organization because we have not identified an organization that could meet all the program goals. In particular, existing organizations do not have the credibility, public visibility, and high-level management combined with the technical expertise that would be required. We considered the possibility of involving an organization such as Consumers Union, which enjoys high recognition and public credibility, but their policies prevent their taking on such a task.

There are several variations to the program that we also considered. None seemed to meet our goals as well as the one we recommend. However, one possible

variation would be to combine the Board of Directors and the Technical Panel into a single Board that would both manage the program and make product decisions. The disadvantage of this approach is that the Board of Directors would not be as high-level as we would like to ensure credibility and visibility with the public.

### **Proposed Next Steps**

The previous sections outline the goals, functions, and structure we recommend for an environmental labeling program. This section describes the immediate next steps that should be taken to pursue an environmental labeling program. These next steps fall into two categories: action and research. The process of setting up the program would be greatly expedited by conducting these in parallel.

#### **Action**

*The first and most important activity is for the EPA to assemble a small task force with two primary responsibilities:*

- Conduct background research on the legal feasibility of the program, and draft appropriate legislation
- Conduct background research on the market feasibility of the program, and generate public and government support.

The legal background research will serve to resolve important issues that were mentioned in the previous sections. They include:

- The possible role of government officials on the program's Board of Directors or Technical Panel
- The corporate structure appropriate for the program
- The possibility of consumer and manufacturer lawsuits, and of indemnifying the program against liability.

The task force may identify other legal issues as well. One of its two major objectives would be to resolve these issues to the extent possible, and then draft the corresponding legislation.

The importance of public and government support was discussed at some length in earlier sections. To obtain this support, an assessment of enthusiasm for the program concept is required using surveys, interviews, or other measurement techniques. This research will serve as a feasibility check of the program, determining whether it has the potential to succeed in meeting its goals. It will also help to suggest changes to the program. The second major objective of the task force would be to

assess public interest, and then generate support for the program from the government, relevant organizations, and individual citizens. Much of the support generation will be informal; we are not recommending substantial publicity during the program design stage. For example, support could be generated from government agencies and interested organizations through telephone calls and newsletters.

### Research

Earlier in this chapter, we recommended the functions and structure of the U.S. environmental labeling program. Several of the functional and structural issues suggest research that should be conducted before the specifics of the program are determined. For example, it may be important to conduct surveys on consumer reaction to alternative label designs (as discussed below) before actually deciding on the final version.

The additional research falls into two categories: technical and marketing. Recommendations are given below for research in these two categories.

There are many unresolved technical issues associated with the program. Many of these could be delayed until the program is underway. However, initial technical research should consist of three main tasks:

- Identify high-priority product categories
- Survey existing information on the environmental impacts of high-priority products
- Investigate ways to structure the product criteria selection process; for example, investigate the use of multiattribute utility analysis and compare it to the more informal processes that are used in other countries.

The first task will help ensure that the program gets off to a quick and impressive start. The second task will involve research within government agencies and universities, and will save much time and effort compared to trying to evaluate all products from scratch. The third task will answer the question of whether the process of designing product criteria should be formally structured, and if so, how.

The initial marketing research also involves three main tasks:

- Determine how to promote the program among manufacturers
- Determine how to educate consumers about the program
- Select the best label design.

Promotional and educational research should focus on how best to communicate the labeling program to producers and consumers. Public relations and/or marketing experts should be consulted, and past promotion programs examined to determine what the themes of the campaign should be and what the communication media should be. For example, should the program be described through brochures? Press releases? News articles? A combination of these? In which publications or at what locations should the program be publicized? Our research on labeling effectiveness shows that the media campaign accompanying a labeling program can help make or break the program; therefore, we recommend that publicity be considered an important part of the program, deserving of background research.

Research should also be conducted on possible label designs. This should include not only what the label should look like, but whether there should be different levels of the label (e.g., gold/silver/bronze), and whether the label should include some sort of scale rating. At a minimum, the semi-final label should be tested on consumers in an interview or other research setting. Consumers should be asked what the label suggests, how appealing it is, and whether alternative labels would be better. More advanced studies could include simulated shopping experiments, in which the label is affixed to some products and shopping behavior is measured to see whether shoppers are more likely to choose products with the label. A variety of other study designs could also be used. Quantitative techniques could be used to analyze the results.

To summarize the recommended next steps, EPA should immediately assemble a task force with responsibility for investigating legal issues, drafting legislation, and measuring and generating support for the program. Concurrently, technical and marketing research should be conducted. At a minimum, the technical research should identify initial product categories, survey existing information, and better define the product criteria selection process. The marketing research should determine communication strategies for manufacturers and consumers, and should design and market-test the environmental label.

## **APPENDIX A REFERENCES FOR CHAPTERS II-IV**

In conducting the research for this report, we assembled a wide range of reports, articles, and other reference materials. We also contacted about 50 individuals to discuss issues related to environmental labeling and gather more information. This Appendix lists the source materials and individuals that had a direct influence on the content of this report. Many other individuals, who are not listed here, also contributed helpful comments and insights. They include staff from EPA, other federal agencies, and state agencies, as well as environmental groups and consultants in various environmental fields.

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