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SOME ECONOMIC IMPACTS OF PROPOSED
PACKAGING BANS IN WISCONSIN

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Foreword and Update

This is a report on a survey of Wisconsin plastics manufacturers, seeking to estimate the number of jobs that might be at risk if the manufacture and sale of specific types of plastic packaging were to be banned. The present Foreword summarizes findings, and updates the Report to include the action taken after publication by the State Senate.

Managers of some 80 companies -- nearly the universe of such companies in Wisconsin -- were interviewed by telephone. Each was asked to estimate how many workers are currently employed making the types of packaging that would be banned under bills introduced in 1989, and then of those, how many could remain employed by shifting them to the making of alternative packaging materials.

One critical question is whether Wisconsin would be unique -- an island, requiring packaging that might be different from that used for the same products in other states. The advocates of product bans think not; they predict that if Wisconsin adopts such bans, most other states will follow. Individual companies vary; some serve mostly a Wisconsin market, and would be heavily affected by a one-state product ban. Others serve a national market, in which Wisconsin is no more important than it is in the national population--about 2%.

For this study, each manager was asked to estimate the importance of the out-of-state market, by product lines. Where it made a big difference, the Survey reports the results for the stronger scenario -- the one with bans applied in most other states as well as Wisconsin, by 1995.

The conclusion is that some 2732 existing production jobs are at risk, plus about 100 planned new jobs that would not materialize, and some 200 engineering positions that would be moved out of state. These figures are net of the new jobs that would be created in the making of substitute materials. The jobs at risk cover the industry, from the making and servicing of machines to make packaging, to the raw resins, to the making of packaging material, and printing on films or sheet plastics.

In two-thirds of the companies surveyed, management expects to be able to shift workers to other products, and avoid layoffs. Six companies would close, laying off some 528 workers, and 21 others would lay off 2,200 workers (out of some 10,014 presently employed).

The impact would fall on newer, smaller companies, and mainly in towns under 20,000 population (13 firms and 1,052 workers, more than half of the present work force in the affected firms). Relatively few firms in cities over 100,000 (6 companies, 231 jobs at risk out of 1,850 in those companies) expect layoffs.

The recycling bills before the Legislature will themselves create many jobs in recycling, which will be mandatory for every municipality in the state by 1993, unless a county assumes the task. However, these jobs will be created with or without product bans, so they are a constant.

The Report also discusses a mandatory "buy back" scheme which would ban plastic packaging materials indirectly. Sale of a given type of material would be banned in Wisconsin if for two consecutive years, municipalities were unable to sell specified percentages of what they collect, for a multiple of the estimated 1990 price, regardless of what happens in the marketplace for recycled materials.

The bills did not specify who was required to buy the material at the above-market price, though advocates suggested that the plastics resin makers should do it, in self-defense. The objective, in part, is to force packaging makers to choose materials and packaging that are easily and profitably recycled. The bills are silent as to any compensation or assistance for companies and workers who would be affected adversely by the direct or indirect product bans. Some assistance might be available from existing programs for the unemployed and for business.

After the Report was published (March 5, 1990), the State Senate acted on the bill. The mandatory buy-back at above-market prices was dropped, as was a mandatory deposit on containers. Subsidies to recycling programs were raised to \$30 million a year; by 1992, business would pay half of this from a gross receipts tax on firms selling more than \$1 million in a year. The amendments require makers of plastic containers to use recycled materials in a rising per cent; food and beverage packaging are exempt.

The Senate also defeated an amendment to tax disposable diapers at a penny apiece, and another that would allow local governments to impose their own packaging bans. However, the Senate adopted an amendment to allow out-of-state waste to go to Wisconsin landfills only if the state of origin has similar recycling programs, and with payment of a small user fee.

The measure will next be reviewed by the Assembly, with any differences being resolved by a Conference Committee and floor votes in both houses. Legislators are optimistic that the bill will be enacted before the Legislature adjourns at the end of March.

If the final law closely resembles the version unanimously approved by the Senate on March 7, 1990, there will be no major direct or indirect product bans and hence no reason for concern about job losses. Wisconsin will have statewide recycling programs by 1993, and plastics manufacturers will have a new and vast source of raw materials.

SOME ECONOMIC IMPACTS OF PROPOSED PACKAGING BANS IN WISCONSIN

Prof. John Strasma¹

Summary

According to Wisconsin manufacturers polled in a recent survey, between 2,732 and 3,032 jobs in Wisconsin would be eliminated by 1995, if bans on certain types of plastic packaging were adopted as proposed in Senate Bill 300 and Assembly Bill 707. In addition, there would be indirect job losses among persons who sell goods and services to those directly at risk. Using the conservative ratio of 0.8 jobs lost indirectly for each productive job lost directly,² the total jobs at risk become 5,117 to 5,457, by 1995, when the proposed bans would come into full effect.

Six companies said they would have to close or move out of state, leaving 528 workers jobless. Another 21 companies would not be able to move all their workers to making substitute packaging or onto other jobs. They stated that there would be net reductions in force amounting to layoffs for 2,204 production and support workers. In addition, 100 new jobs now projected for 1990-1991 would not be created, while some 200 engineers and researchers could be relocated to other states.

¹ Professor of Agricultural Economics, University of Wisconsin-Madison.

DISCLOSURE NOTE: The author has served as a consultant to the Wisconsin Consumer Packaging Council, which favors recycling but opposes product bans, and to the City of Madison and Neighbors Opposing a Dump, Inc. (NOD), both of which favor recycling and oppose a proposed new landfill at the Vondron site. He testified for the Council at a Senate hearing on SB 300 last year, and for the City and NOD at a Contested Case Hearing on the Vondron site early this year. None of these organizations funded or took part in the research reported here, and they may or may not share the conclusions and policy implications reached by the author, here or in more recent public hearings.

This survey was carried out with U. S. Department of Agriculture funds under a grant from the North Central Research Center for Rural Development, at Iowa State University, Ames, Iowa. The interviewing was done by the author and by Mr. Charles Heyneman, a graduate student in the Department of Agricultural Economics, between December 1989 and February 1990.

The author wants to thank the industry for their time and thoughtful responses. He also is grateful to Mr. Heyneman, to colleagues, and to friends in industry and in the environmental movement, for valuable comments on an earlier draft. None of them are responsible for any remaining errors, nor for the views expressed, which are solely those of the author.

Comments and suggestions for future research are welcome, and may be directed to the author at the Department of Agricultural Economics, University of Wisconsin, Madison, WI 53706, 608-262-6974 (FAX 608-262-4376.)

² Shafer, Ron. Community Economics: Economic Structure and Change in Smaller Communities. Ames, Iowa: The Iowa State University Press, 1988.

Other companies would be affected, but could shift workers from the banned materials to various substitutes. Various companies said their research and development money and engineers would be shifted away from product innovation to the redesign and production of special packaging just for Wisconsin. These firms stated that this could reduce their ability to compete in national or world markets, putting other jobs at risk.

The bans appear to fall heavily on small business. Many larger companies still have the machinery or ability to return to heavier packaging methods formerly used. Some smaller, newer companies only know the packaging materials that would be banned, and say they would have to close.

The jobs at risk are largely in small and medium-sized cities. Thirteen companies located in cities under 20,000 would lay off 1,052 workers, more than half of the 1,992 they now employ. (See Table 2, p. 10, below.) Some are the largest local employers, so the impact could be significant. Eight companies in cities between 20,000 and 100,000 population would be affected, with 1,451 jobs at risk there (22% of the 6,700 now employed).

In contrast, only six companies in cities over 100,000 expect to lay off workers, and only 231 jobs there (out of 1,850) are in real danger, as other workers in those companies would be shifted to making substitutes or to other productive jobs. All other respondents in the large cities said that they thought they would probably be able to move all their workers to other jobs.

When this survey was nearly completed, an amendment replaced the direct product bans with an indirect ban or "buyback" version intended to force the plastics industry to increase the revenues of recycling programs. Under it, the sale of a plastic packaging material will be banned if recycling programs are unable to sell specified percentages of that type of plastic collected, at a price which the legislature and a state agency deem satisfactory.

A few days before this writing, AB 707 was amended to add a mandatory deposit for glass, plastic and metal beverage containers under one gallon. Recycling buyback centers would be created to give refunds to consumers and facilitate the recycling of used containers. Similar programs in other states have successfully reduced litter and increased the percentage of containers recycled.

The principal policy recommendations emerging from the study are, in the author's opinion:

- 1) The economic impact of direct and indirect packaging product bans should be studied thoroughly before they are enacted;
- 2) Workers who are displaced as a result of product bans should receive retraining or other adjustment assistance; companies should receive state assistance in conversion to other packaging deemed more acceptable;

Related policy recommendations emerging are as follows:

3) Some of the packaging which would be banned is in fact recyclable, and the economic feasibility of collecting, processing and marketing it should be evaluated carefully before banning and before fixing prices for mandatory buy-back programs.

4) Recycling could most appropriately be financed with a statewide user fee on waste going to landfills; this would discourage out-of-state waste without constitutional problems. It would make recycling more profitable and disposal in landfills less attractive.

5) Refundable container deposits, and grants and subsidies to encourage integral recycling programs, are probably a more workable approach than product bans or programs that demand that an industry buy recyclables at multiples of prevailing market prices.

6) Some possible substitutes for polystyrene, such as paper and foil sandwich wrappers, are not normally recycled. They should be scrutinized carefully before banning polystyrene, lest packaging bans on plastics merely increase the flow of paper and foil waste to landfills.

7) Efforts to raise the revenues of recycling programs should stress locating and developing new local markets for materials, including plastics.³

8) Efforts to raise prices by administrative rule may be unfeasible. Increasing consumer prices in order to subsidize buyback prices above prevailing market levels could make it necessary to create mechanisms to prevent unintended large inflows of waste from other states.

9) Since the proposed bans and buybacks are not to take full effect for several years, their consideration could be postponed until more data is available. They should be considered together with state-funded programs to compensate workers and companies whose jobs or revenues are cut by laws or rules intended to increase the revenues of other entities engaged in recycling.

10) The debate has served to inform and arouse the public and industry that recyclability is an important element in product and packaging design. This has already led to better packaging, more reusable containers, and wider use of those materials that are most easily and profitably recycled.

11) Twenty years ago, aluminum beverage cans were opposed by most environmentalists, and there were many proposals to ban them because of littering, and because they were not bio-degradable. Now they are the very centerpiece of recycling programs, though there is still some littering, especially in states without mandatory deposits on beverage containers. If research and community recycling programs are equally successful in incorporating the various types of plastic, we may later look back and wonder why anyone ever wanted to ban polystyrene.

³ The author, students, and a group of farm and recycling leaders are about to launch a modest research and outreach program for this purpose, in a joint project with Prof. Michael Kaltenberg, at the University of Wisconsin - River Falls.

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Introduction

Wisconsin legislators, like those of many other states, seek to reduce the volume of waste being generated and hauled to landfills. The best method is to reduce waste at the source, as when consumers take reusable sacks to a grocery store, or refill glass refrigerator bottles.

When sanitation, food safety or convenience make reusable packaging difficult or impossible, industry can practice source reduction by developing thinner, lighter and more effective packaging. In many cases, this involves the use of co-polymers or multi-laminates, replacing a single thicker material. One layer keeps moisture in, another keeps oxygen and bacteria out, and a third holds it all together.

Until recently, it was thought that multilayer plastics could not be recycled. Bottles made of glass or high-density polyethylene (HDPD) or polyethylene terephthalate (PET) plastic are heavier and recyclers can sell them profitably. Until recently, lighter products, such as expanded (foam) polystyrene coffee cups, sandwich "clamshells" and appliance packing were not recycled at all.

In response to environmental concerns and to the rising cost of some virgin plastic materials, the plastics industry has now begun recycling both expanded polystyrene and multilayer materials. Polystyrene is now collected and recycled on both coasts, in Massachusetts, New York, Vermont and Oregon. In the Midwest, used coffee cups and sandwich containers are already being collected and recycled successfully in St. Cloud, Minnesota and Iowa Falls, Iowa. The Iowa company has also successfully pioneered in

converting commingled plastics, including multilayer packaging, into weatherproof park benches and similar useful, durable items.

Similar efforts will begin in several Wisconsin communities this year and next, creating new jobs in recycling and reducing the volume of waste going to incinerators and landfills. Recycling legislation now before the Wisconsin Legislature mandates comprehensive recycling programs, and provides significant funding for them and for research to expand recycling.

The Proposed Plastic Packaging Bans

At the same time that some environmentalists and industry were working to recycle new kinds of products, others sought to increase recycling by banning the sale or use of certain packaging products not already being recycled. Bills were introduced to ban the sale of plastic catsup bottles and multilayer packaging, as well as food and food service containers made of polyvinyl chloride and polystyrene. In Wisconsin, such provisions were proposed in Senate Bill 300 and Assembly Bill 707.

Under provisions of the original versions of these bills, no one would be allowed to sell within the state containers made from polyvinyl chloride, multilayer plastic, plastic and aluminum, or aluminum and steel. The use of plastic grocery bags would be banned (the status of thin bags used to sack fruit in grocery stores was unclear). Other packaging could be banned from sale by rules adopted by the Department of Agriculture, Trade and Consumer Protection (DATCP), if it found the packaging to be non-recyclable. Ironically, this might well include the foil and plasticized paper sandwich wrap that is replacing polystyrene at some fast food outlets.

The bills would also make it illegal to dispose of a variety of products by burning, converting into fuel, or landfilling: aluminum containers, corrugated paper and boxes, foam polystyrene packaging; glass containers, magazines, newspapers, office paper, plastic packages, steel containers, waste tires and batteries. In addition, the Department of Natural Resources would be authorized to ban, by rule, the landfilling or burning of any type of paper not already banned.

Since the sale of many types of plastic packaging would already be banned, the net effect could be that landfill operators would have to screen incoming waste to make sure no "out-of-state" packaging made with prohibited substances had been discarded with local garbage.

Alternatives to Packaging Bans

During the legislative process, alternatives to bans, and indirect or alternative forms of bans such as "buybacks," have been proposed.

For example, the major author of the recycling bill proposed that manufacturers be required to use at least 35% recycled material in all plastic containers. This did not prosper, in part because Federal rules require that all containers of food and beverages not have reused materials in contact with food or beverages.

Multilayer bottles could solve that problem, if the FDA approved, by using virgin materials next to the food with an outer layer of lower-cost recycled materials.⁴ However, some participants in the debate wanted to ban

⁴ FDA approval will be contingent on extractive testing, to see whether unacceptable substances migrate from the packaging materials into the food. See "FDA Hints at Recycled Food Packaging," Packaging Digest, Jan. 1990,

all multilayer containers, because their market price as commingled plastics is lower than the market price for bottles made solely of HDPE or PET plastic. Thus the goal of increased profitability of recycling collided with the goal of mandated increased use of recycled plastic. Instead, the authors of SB 300 then amended the bill to increase the profitability of recycling by state mandate, under the threat of packaging product bans.

Measures to Increase The Profitability of Recycling

While the Legislature's Joint Finance Committee considered SB 300, it adopted a major amendment to the original Senate Bill. This would replace direct product bans with a mandatory Buy-Back program that could generate product bans in the future. The Department of Agriculture, Trade and Consumer Protection would impose future selective bans on specific types of plastics, when and if community recycling programs as a group did not receive a specified price for a specified percentage of their waste collected. The initial required price was to be set by DATCP at prevailing market levels for each type of plastic, clean and baled or ground, but in no case less than 3 cents per lb. Thereafter, the law would require a price increase each year, regardless of what happened in the market. The second year, the required price would double. The third year, it would triple. At the latest, in the seventh year (1997) it would reach a ceiling of 20 cents per lb. of clean plastic, baled or ground and ready to ship.

To enforce the requirement that some unspecified party buy each type of plastic at a multiple of market prices (up to 20 cents per lb.), the bill would require the Department of Agriculture, Trade and Consumer

Protection to ban by rule further sale of any type of plastic for which a stated percentage of the plastic collected was not in fact sold at the required price, during two consecutive years. The required percentage would start at 10% in 1991, rising to 70% in 1997.

The 20-cent ceiling is not out of line with present market levels for high density polyethylene (HDPE) and for polyethylene terephthalate (PET), which Wisconsin recycling companies are currently selling for around 14-18 cents a pound. They are similar to the current prices for ground PET (free of labels, caps and base cups), and much higher than the prevailing prices for commingled plastics and polystyrene, for which markets are just beginning to appear at 1-2 cents per lb. when cleaned and baled.⁵

Some supporters of required buybacks as an indirect form of ban have suggested that consumer prices could be raised a few cents, to pay for subsidies that would enable recycling programs to receive prices well above prevailing market prices for these materials. Recycling dealers in Illinois, Iowa, Minnesota and Michigan could find it profitable to ship large amounts of cheap, used post-consumer plastic into Wisconsin, to sell through Wisconsin recycling programs at above-market prices. Wisconsin consumers would be paying more, but out-of-state dealers might be reaping some of the profits.

Critics also commented that the bill does not contain similar mandatory buybacks for mixed paper, corrugated cardboard, tin cans, and other products that can be recycled but whose market prices are too low to be

⁵ See Nathan Seppa, "Plastics aren't all the same," in the Wisconsin State Journal, March 4, 1990, p. 8F, for a list of the major types, their most common uses, and the current market prices.

profitable to recyclers. Advocates responded that plastics are singled out in part because the plastics industry could more easily restructure itself and modify its products to facilitate recycling. The advocates believe that many plastic packages could be manufactured in several different ways. Industry should therefore be given strong economic reasons to choose a formula that would be easy and profitable to recycle, over one which might be slightly cheaper to make but much less profitable to recycle.

For example, advocates argue that plastic bottles could be made of clear plastic with a shrink wrap color overlay, instead of colored plastic. They assert that clear plastic is much more resalable, and that the container looks just as attractive to the consumer.

The final form of the legislation is still uncertain. The present survey is based on manufacturer responses to questions based on the bans as proposed in the original bills, SB 300 and AB 707. To the extent that the buyback program is just an indirect version of the same bans,⁶ the economic impact over time could be much the same, though stretched out to 1997 instead of the 1995 date in the original bans.

The Survey

The recycling bills contain extensive and significant measures to promote recycling, including changes in the way the state buys supplies, and substantial funding for research and to subsidize new recycling programs and

⁶ Rep. Spencer Black stated on Feb. 26, in a letter to persons attending hearings on Assembly Bill 707, that the Joint Finance Committee, in adopting the mandated buy-back amendment, has "reinstated a modified version of the product bans."

integral solid waste management at the community level. However, no study was made of the economic impact of the specific product bans also included in the bills. The present survey attempts to estimate one direct impact, the loss of production jobs, as a contribution to the public debate on this subject.

Universe. It is known that some 22,000 Wisconsin workers are employed in industries that are classified as plastics makers in the Census. In seeking to estimate the direct impact of proposed product bans, we began with some 257 plastics companies listed in the 1989 Directory of the Wisconsin Association of Manufacturers and Commerce. That Directory indicates the number of employees, location, and principal product lines of each company.

Of the initial group, some 50 were selected because their listed product lines seemed likely to be affected. In addition, several dozen other companies were identified by the first respondents and by industry groups such as the Wisconsin Consumer Packaging Council. These firms are listed in the WMC Directory under other industries but are substantial producers of the products that would be banned. For example, meat, cheese and other food packers often make their own packaging, as do major appliance and machinery companies.

In each case, a responsible executive was contacted by telephone and asked a series of questions concerning the company's knowledge of the proposed bans, and of what it would have to do if the bans were to be enacted. Care was taken to minimize the probability that respondents would exaggerate the problems for effect.

The interviews were usually rather long, including separate discussion of probable short-run and longer-run responses. After a pledge that no specific company responses would be published, respondents were asked to discuss the feasibility of shifting workers from making packaging products that would be banned, to making substitutes for them. Respondents were also asked to analyze, by type of product, the number of layoffs that would be needed if only Wisconsin banned these items, and the jobs that would be at risk if other states banned them too.

Findings

Overall, a response rate of about 90% was obtained. In some cases, the respondent promised to study the matter and reply at a later time, or the responsible executive was not available. These replies are still coming in.

Based on the replies to date, it appears that enactment of the plastic product bans in the original version of the bills would eliminate some 2,732 jobs in Wisconsin companies. The geographic impact would be wide, from Janesville and Racine to Green Bay and Chippewa Falls. Jobs would be lost in large cities, such as Milwaukee or Racine, and small towns and rural areas, such as Portage, Watertown or Nichols.

The indirect loss of jobs, for persons who make products and provide services to those who lose jobs directly, is estimated to be about 0.8 jobs lost indirectly for each job lost directly (Shafer, 1989). Thus the proposed bans could end a total of some 5,117 jobs in Wisconsin. In addition, the respondents said some 100 new jobs now planned would not be created after all. Three companies predicted that a total of 200 support

jobs for engineers in research and development would be transferred to locations in other states. Counting these, the total would rise to 5,417 at risk.

Geographic Impact:

The geographic impact would be wide, from Janesville and Racine to Green Bay and Chippewa Falls. Jobs would be lost in large cities, such as Milwaukee or Racine, and small towns and rural areas, such as Portage, Watertown or Nichols.

Table 1 and Chart 1 indicate the distribution by broad regions (individual locations are not identified, to maintain the promised confidentiality of individual company business plans).

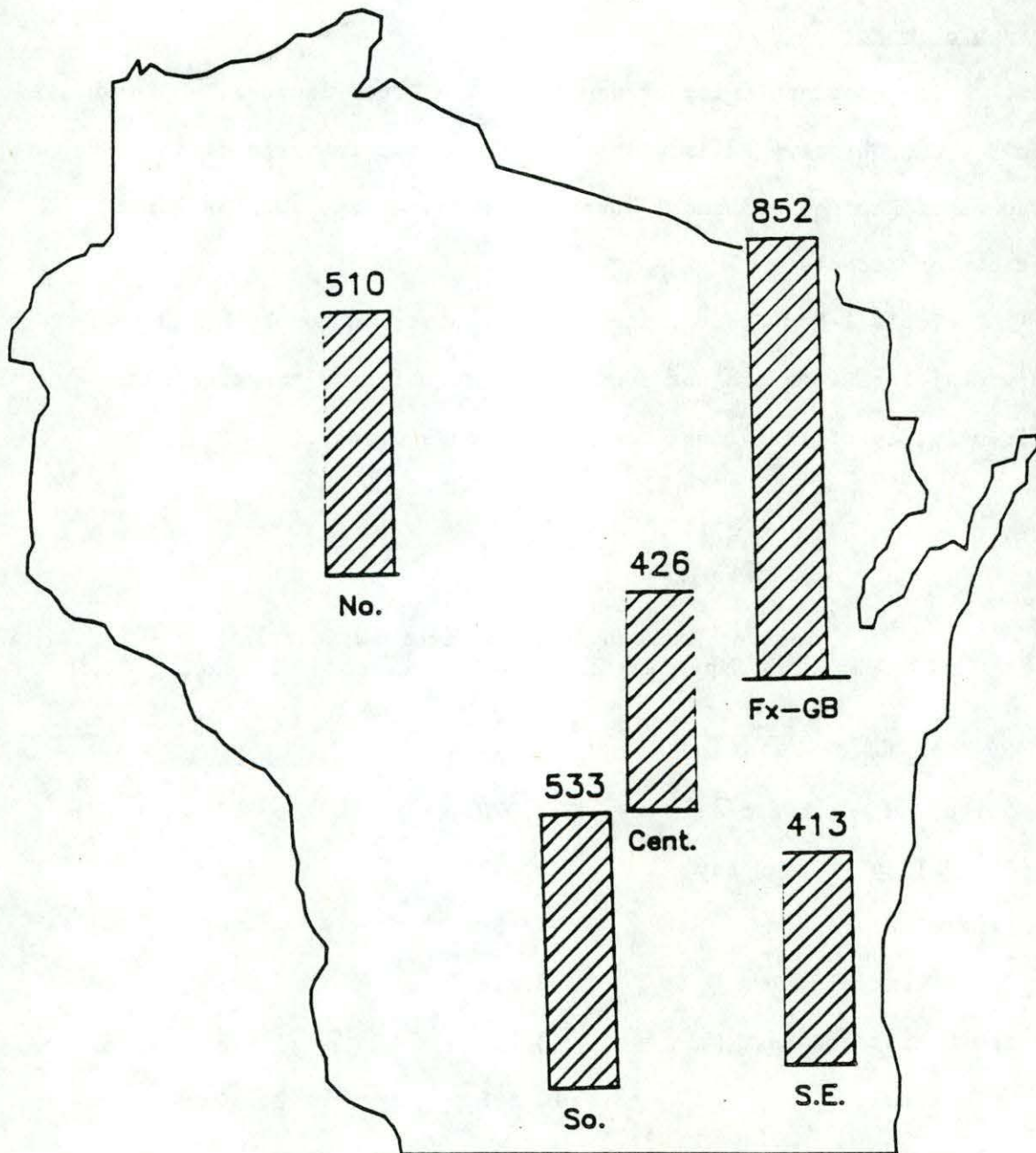
Table 1

Jobs at Risk, by Region within Wisconsin
in 27 Companies Expecting Impacts from Proposed Packaging Bans

<u>Region</u>	<u>Present Employment</u>	<u>Jobs at Risk</u>	<u>Percent</u>
North and Northwest	1,070	510	48%
Fox Valley - Green Bay	3,243	852	26
Central Wisconsin	886	426	48
South Central	2,216	533	24
South East and East	<u>3,127</u>	<u>413</u>	<u>13</u>
Totals	10,542	2,734	26%

Source: Strasma, Survey of Economic Impact of Packaging Bans. Madison: Univ. of Wisconsin Dept. of Agricultural Economics, 1990.

CHART 1. JOBS AT RISK WITH PRODUCT BANS



Source: J. Strasma, "Some Economic Impacts of Proposed Packaging Bans in Wisconsin," Staff Paper 314, 1990.

Impact by Size of Firm:

Small firms would be affected the most; five companies with fewer than 100 employees said they would be forced to close completely, while most of the larger firms have broader product lines and would only lay off part of their work force. Three large companies stated that it is company policy to keep unneeded workers on the payroll, relying only on attrition to adjust the payroll. In those cases, the job loss by 1977 could still be significant, but more gradual in percentage terms than at other employers without such policies.

Impact by Size of City:

Small towns and cities will also be hit more severely than large cities (See Table 2 and Charts 2 and 3). The Survey found only six companies in cities over 100,000 population (1980 Census) that would expect to have to

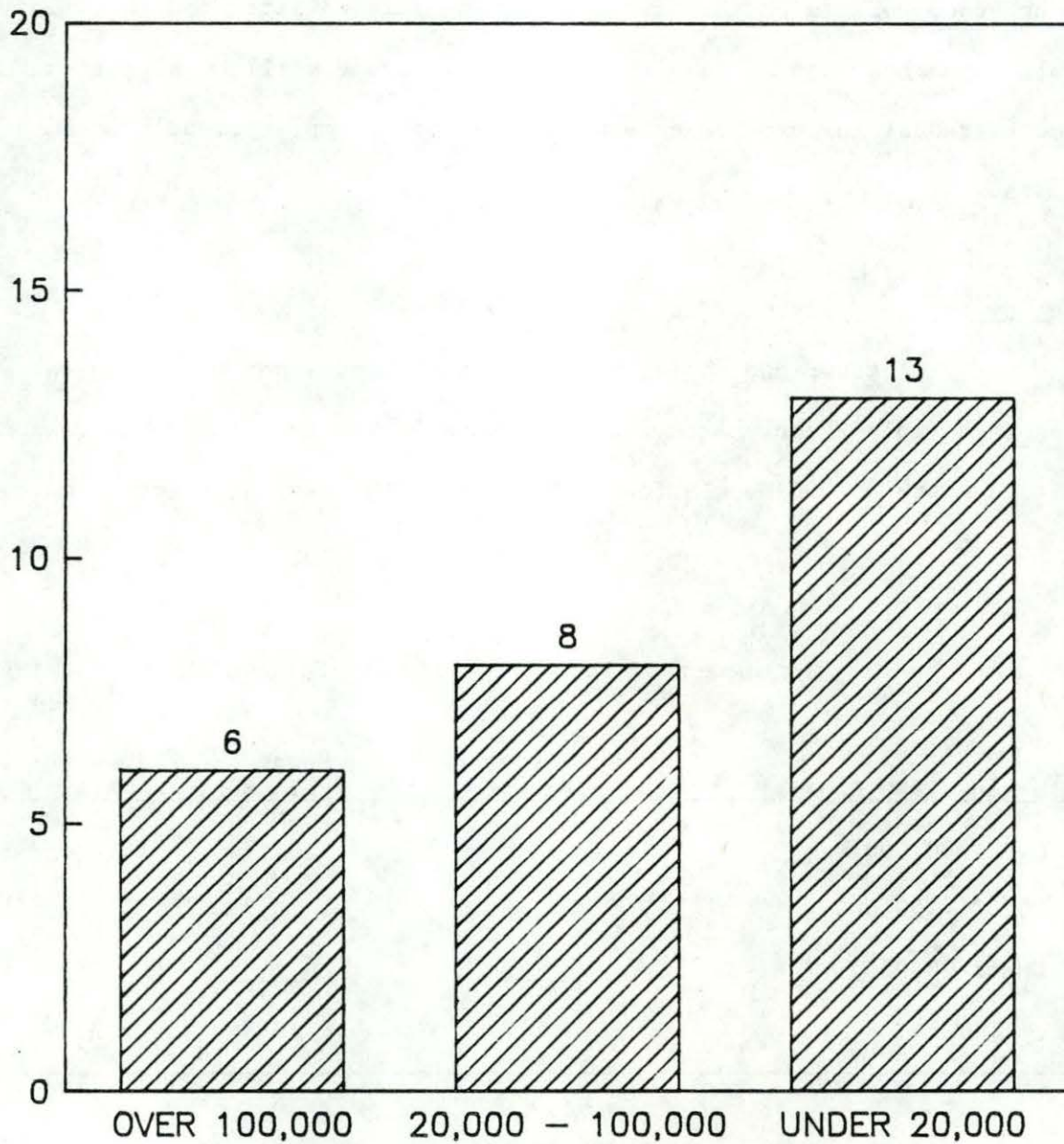
Table 2

Employment Impact of Packaging Bans, by Size of City

<u>Population (1980 Census)</u>	<u>Number of Companies Affected</u>	<u>Present Employment</u>	<u>Jobs at Risk</u>	<u>Per cent</u>
Over 100,000	6	1,850	231	12
20,000-100,000	8	6,700	1,451	22
Under 20,000	<u>13</u>	<u>1,992</u>	<u>1,052</u>	<u>53</u>
Totals	27	10,542	2,734	26

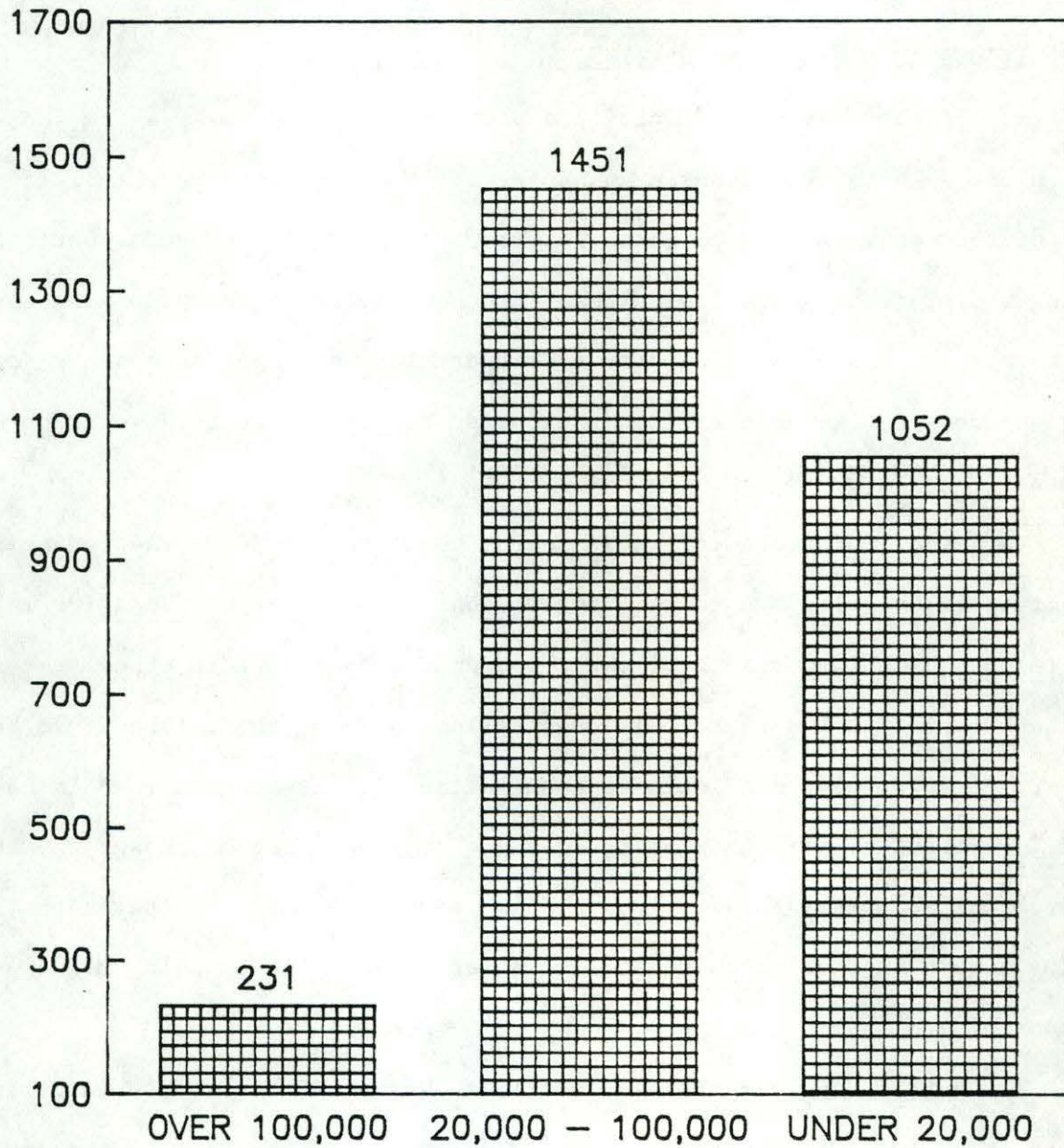
Source: Strasma, Survey of Economic Impact of Packaging Bans. Madison: Univ. of Wisconsin Dept. of Agricultural Economics, 1990.

CHART 2.
COMPANIES AFFECTED BY PRODUCT BANS
BY SIZE OF CITY



Source: J. Strasma, "Some Economic Impacts of Proposed Packaging Bans in Wisconsin," Staff Paper 314, 1990.

CHART 3.
JOBS AT RISK FROM PRODUCT BANS
BY SIZE OF CITY



Source: J. Strasma, "Some Economic Impacts of Proposed Packaging Bans in Wisconsin," Staff Paper 314, 1990.

lay off workers, and they would only lay off 261 workers (12% of the 1,850 now employed at those six plants). In towns under 20,000, thirteen companies would lay off 1,052, 53% of their 1,992 employees. In some cases, the company is the largest employer in the area; the local impact could be highly painful.

Initial Impact vs. Full Impact (1995):

In many cases, the initial impact could be modest -- a few jobs in each plant -- because Wisconsin companies sell to a national market. If the prohibitions only applied to sales in Wisconsin, the plants could continue making the products and shipping them to other states for a while. However, the authors of the product bans have stated that they hope Wisconsin's action would be copied elsewhere. If that happens, the total job loss would be much greater.

Even if the product bans are not enacted elsewhere, the longer-run impact could be quite substantial for Wisconsin. Some major packaging makers may respond by shifting much of their production to plants in other states. To the extent that its personnel were willing to move, their jobs would be preserved, so we have not included them in the list of jobs that would be lost. Particularly if other states did not copy any Wisconsin bans, by 1995 several companies say they would probably leave only skeletal operations, making a much shorter product line of packages deemed acceptable in Wisconsin.

A Precedent. Years ago, a similar Wisconsin ban forced margarine companies to sell white margarine in Wisconsin, while the rest of the country consumed yellow margarine. Since Wisconsin consumers preferred the yellow

product, the ban favored producers in Illinois, Iowa, Minnesota and Michigan. Many Wisconsin consumers picked up their needs at the borders, sometimes buying other merchandise as well. The production and sales jobs were in the neighboring states.

New Jobs in Making Substitute Packaging

It is likely that at least a few new jobs would be created in the making of substitute packaging, mainly of paper and foil, in addition to the jobs given workers who stayed with their present employers but were reassigned. Production facilities for the substitutes already exist, although they are inactive because some of those products have been replaced by advances in plastic packaging. However, it appears that many of the jobs making substitutes will be in the same large companies now making plastic packages. They intend to continue servicing their customers, moving workers to the older production equipment that will make the substitutes.⁷

It is for that reason that the jobs impact of the proposed bans falls mainly on smaller companies, that are not former makers of paper or foil substitutes, and therefore cannot switch back quickly or easily.

New Jobs in Waste Disposal

In some cases, the banned products will be replaced by paper and foil substitutes, such as those already being used at some fast food outlets.

⁷ In other cases, the substitute may be plasticized paper; it is not yet clear whether and how that could be recycled.

No one expects meat wrapping paper or foil sandwich wraps to be collected and recycled, so these products will increase the flow of waste into landfills.

The present trend, notable in half a dozen Wisconsin counties, is toward more recycling of plastics. Polystyrene trimmings and manufacturing rejects have long been recycled in Wisconsin, but the recycling of post-consumer polystyrene waste is just beginning. If not banned, this will create some new jobs in the recycling industry.⁸

In addition, recyclers in some communities have discovered markets for commingled plastics. The commingled plastics sell for very little when compared to the highest-value items, such as high-density and PET bottles. Nonetheless, consumers drop off other plastics in recycling boxes, together with HDPE and PET, so recyclers need markets for them.

In Iowa, a small private company is successfully making such commingled waste into useful products such as plastic "lumber." In one imaginative program, the Iowa company contracted to collect sandwich containers and coffee cups discarded at concessions in a city park, returning the used plastic to the park district in the form of park benches, at a cost far below the previous cost of taking the waste to a landfill.

The choice before the public is interesting. To some extent, the debate appears to be more about symbolism than economics. Many people are concerned about what appears to be excessive packaging, or roadside littering, or both. However, the symbolism may be lost on workers who find their employment ended by a symbolic political decision. The recycling industry, like the packaging industry, is dynamic and ever-changing.

⁸ The number of new jobs created, as well as the economic feasibility of collecting, processing and marketing used polystyrene, will be established in research and experiments planned for the remainder of 1990.

Direct or indirect bans may even be counter-productive. If they are enacted, preventing the collection and recycling of polystyrene and commingled plastics, the bans could decrease the number of jobs in the recycling industry, quite apart from the impact of the jobs lost in the packaging and processing industries that are the main focus of this study.

On the other hand, some jobs will presumably be created in the paper and foil industry, making substitute packaging.⁹ And a few new jobs will probably be created in collecting and hauling waste to landfills, since some of the substitutes will not be recycled.¹⁰

Reprisals

Two respondents suggested that if Wisconsin bans these items, other states may respond by banning Wisconsin products. We were not able to estimate the extent of the job loss, if any, that might ensue.

In any case, Wisconsin companies are among the national leaders in plastic packaging, and Wisconsin workers produce far more of this material than is used in Wisconsin alone. Thus it appears that most of the jobs lost from the proposed bans would be the result of a Wisconsin decision, rather than the result of retaliation by other states.

⁹ We expect most of the substitute packaging materials will be made by workers in existing plants who are moved over from making the banned items. Also, there appears to be excess capacity in some paper and foil plants, so that production could be increased with relatively little increase in employment.

¹⁰ If the product bans lead to a need for additional landfills, there will even be employment for attorneys and others involved in the conflictive process of locating and authorizing the new landfills.

Compensation and Adjustment Funding

In evaluating any drastic policy change, it is appropriate to ask "Who gains, who loses, and how much?" Economists generally suggest that when the gains exceed the losses substantially, the change is in order, but those who gain should compensate the losers.

In this case, the purpose of the proposed packaging bans is not mainly to protect the public health and safety. Advocates state that it is mainly intended to increase the profitability of municipal and private recycling programs, and to reduce the volume of waste going to landfills and incinerators. The principal losers appear to be workers now producing the packaging materials to be banned, in those companies that will lay them off because the companies cannot readily move them onto other work. While companies go bankrupt and workers get laid off all the time in a dynamic society, it is unusual that they do so because of a political decision aimed directly at the product they are making.¹¹

Governments usually pay compensation to owners of property they condemn for public purposes. They also frequently provide subsidized credit, plus funds for retraining displaced workers and contributions toward the needed research to get that productive capacity back into production. The recycling bills are a comprehensive package, with significant provisions to help finance municipalities' recycling programs. It would seem

¹¹ One advocate of the mandatory buy-back program points out that the Federal Reserve System, by setting monetary policy, affects far more jobs each year than the proposed direct or indirect bans would. However, it doesn't "target" a specific industry or product, as the Wisconsin bills do.

appropriate that the bills, if they contain direct or indirect bans, also contain compensation for companies and workers who suffer adverse impacts from the law or from administrative rules.

The Parallel to Aluminum Beverage Cans

Historians may note a parallel with aluminum beverage cans. Just twenty years ago, many environmentalists sought to ban these cans, which are not biodegradable, and which replaced reusable glass bottles. Now aluminum is welcomed, because it is profitable to collect and recycle the cans.

The published market price for "off-specifications" plastic resins, which I assume to be roughly similar in quality to the end product of polystyrene recycling was, in late 1989, over 50 cents. That was almost as much as the then current market price for recycled aluminum scrap. If polystyrene plastics recycling follows the path already traced by aluminum beverage containers, it may turn out that more than half of the plastic packaging sold each year will also be recycled by the end of the decade. This would be even more likely if mandatory container deposits made littering more expensive, and created strong incentives for picking up litter.

Conclusions

The proposed bans were drafted after enormous and painstaking study of many aspects of the solid waste problem, but without a thorough study of the economic impact of such bans. As a modest contribution to that study, this project surveyed Wisconsin manufacturers of plastic containers,

discussing in some depth how they would respond if certain packaging materials were banned. According to respondents, the proposed bans would lead to the direct loss of 2,732 to 3,032 jobs in Wisconsin, net of jobs created by increased production of alternative packaging materials.

With a multiplier of 0.8, the indirect loss was estimated at another 2,186 to 2,426 jobs in service and related industries. The total unemployment resulting from packaging product bans, when fully implemented in 1995 and assuming that they were largely copied by other states, would be approximately 4,918 to 5,458.

This loss would have been greater except for the creation of new jobs making substitute packaging materials. There could also be a few more jobs hauling waste to landfills, since some of the substitutes for the packages to be banned are not themselves recycled. It would also be necessary over time to find and build a few additional landfills.

Thus, as an alternative to direct or indirect bans, policymakers may consider promoting research to accelerate recycling of those products thus far considered unlikely to be recycled. The recycling bills contain such provisions, which might be strengthened and given more permanent funding (for example, with a statewide user fee on waste sent to landfills, with the proceeds remitted directly to the responsible municipalities).

Policy Implications and Recommendations

The principal policy implications emerging from the study are, in the author's opinion, these:

1) The economic impact of direct and indirect packaging product bans should be studied thoroughly before they are enacted; it goes far beyond possible increased prices to consumers. It includes the impact on companies and workers manufacturing or using the materials to be banned, and on others in the community who sell goods and services to those companies and workers.

2) Workers who are displaced as a result of product bans should receive retraining or other adjustment assistance; companies should receive state assistance in conversion to other packaging deemed more acceptable.

3) Some of the packaging which would be banned is in fact recyclable. The economic feasibility of collecting, processing and marketing it should be evaluated carefully. One working hypothesis is that expanded (foam) plastic container and packing material will follow the path already traced by aluminum beverage cans. Twenty years ago, environmentalists sought to ban such cans. Now aluminum cans are the centerpiece of recycling programs.

4) Recycling could most appropriately be financed with a statewide user fee on waste going to landfills; this would discourage out-of-state waste without constitutional problems. It would make recycling more profitable and

disposal in landfills less attractive. If most proceeds are channeled right back to the counties in which they are generated, there would be no net burden on those counties, even in cases in which residents welcome garbage from out of state. For municipal waste collection and municipal landfills, it would be essentially a bookkeeping entry; for commercial and industrial waste and for waste from out of state, it would raise the cost of landfills and thus make recycling more attractive.

5) Refundable container deposits, and grants and subsidies to encourage integral recycling programs, are probably a more workable approach than product bans or programs that demand that an industry buy recyclables at multiples of market prices.

6) Some possible substitutes are paper and foil wrappings that are not normally recycled. They should be scrutinized with the same care given to plastics, lest packaging bans increase the flow of waste to landfills. If a mandatory buy-back program is instituted for plastics, it should perhaps be expanded to include paper and foil food packaging.

7) Efforts to raise the revenues of recycling programs should stress locating and developing new local markets for materials, including plastics. This can be the basis for new local industry, and for new local jobs.

8) Efforts to raise prices by administrative rule may be unfeasible. Increasing consumer prices in order to subsidize buyback prices above

prevailing market levels could make it necessary to create mechanisms to prevent unintended large inflows of waste from other states.

In addition, if prices paid for recycled plastics are to be fixed by law and administrative rule, perhaps the program should be extended to include old newspapers, magazines, and other items that are bulky in landfills and for which present market prices do not cover the cost of collecting and handling. Much more study is needed on the proper allocation of joint costs among the various materials collected in recycling programs.

The history of efforts to set prices by government mandates at prices above and below market levels does not inspire great confidence among economists. Such programs tend to be expensive and hard to administer. They often induce shortages, surpluses, and under-the-counter dealing. Some U. S. farm programs, and the economies of Eastern Europe come readily to mind.

9) Since the proposed bans and buybacks won't take full effect for years, their consideration could be postponed until more data is available. They should be considered together with state-funded programs to compensate workers and companies whose jobs or revenues are cut by laws or rules intended to increase the revenues of other entities engaged in recycling.

10) The debate has already sent a powerful message to the public and industry; recyclability is an important element in product and packaging design. Some firms have already introduced better packages, and experiments now beginning will determine the cost and economic feasibility of collecting more types of plastic.

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