plastics world June 1971

Where do we stand—ecologically?

Right now we're being squeezed between irate environmentalists and protective legislators—and it hurts!

Over the years the plastics industry has been buffeted by relatively minor problems—a few recessions, diminishing profits, plastic-bag hazards, a reputation for toys that fall apart, a poor industrial safety record and other obstacles to growth.

But the impact of the ecological movement on plastics is something else again! Never really having faced a major crisis before, the plastics industry now has its fast-graying hair full of ardent environmentalists, stern legislators, aggressive students, influential members of the press, radio and TV, and other self-styled ecologists. Unfortunately, much of the criticism leveled at plastics arises out of emotion rather than fact.

In a recent attempt to identify current industry problems, The Society of the Plastics Industry asked its members via questionnaire to single out the most serious problem facing the industry today. Those answering were requested to exclude ecology from their comments. It was a foregone conclusion that the ecological issue was far and away the most vital problem the industry faced today. In fact, as an SPI staff member commented, "The ecology issue is the most serious and potentially damaging problem that ever challenged plastics."

What are the critics saying? Here are a few samples from SPI files:

Time, in an article on disposable medical supplies: "But the PVC . . . plastics may generate lethal fumes containing hydrochloric acid and phosgene, a poisonous gas once used in chemical warfare. Other plastics melt and clog incinerators."

Sue Hoover, in the Detroit News, in an article on PVC: "Polyvinyl chloride (PVC), a minor but growing part of the plastics industry, has been found to give off hydrochloric acid and phosgenes as by-products unless it's burned under just-right conditions. The hydrochloric acid can corrode in incinerators and irritate respiratory systems . . ."

Jim Jensen, WCBS-TV (New York), in a documentary called "Don't Drink the Water and Don't Breathe the Air": "Garbage burning is a source of air pollution, largely because of plastics made by industry. Plastics do not decompose, so we are making millions and millions of containers that will be around for thousands and thousands of years unless we burn them, which we shouldn't do either because in combustion they release acids and other very harmful substances."

These and other statements compiled

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by the SPI are representative of the types of unqualified utterances that prevail at influential levels. While PVC is referred to most often as the prime polluter in these kinds of statements, polystyrene has come in for its share of lumps, too.

Pressure on polystyrene. Many supermarket managers and owners throughout the country have switched from PS meat trays and egg cartons back to pulp and cardboard as a result of pressures applied by consumer groups. For example, in Evansville, Ind., a housewife who attended a pollution seminar at Indiana State University heard a professor speak on the ill effects of burning polystyrene. Disturbed by the comments, she wrote to the owner of two supermarkets in Evansville, suggesting the use of cardboard rather than PS cartons to prevent emissions of poisonous gases when the packaging ultimately was burned. The owner agreed to use up his existing stock of PS-foam egg cartons and return to cardboard where possible.

In another incident involving PS egg cartons, the outcome was a bit different. Late last year, a Canadian environmental group, Pollution Probe, comprised of University of Toronto professors and students, called for a voluntary ban on polystyrene packaging in Ontario. Here is the way SPI reported on this happening in its Plastics and Environment newsletter, dated Dec. 18, 1970:

"Probe's argument for a ban on polystyrene packaging was familiar. Polystyrene gives off heavy black smoke when burned in the open air. To prove the point, they burned cartons made of pulp and of expanded polystyrene, and noted the white smoke given off by the pulp carton as opposed to the black smoke from the polystyrene.

"They also obtained a statement from the Air Management Branch of Ontario's Dept. of Energy and Resources Management to the effect that Toronto's incinerators are outmoded and might give off odors from burning polystyrene.

"SPI-Canada discussed the matter with officials of the Air Management Branch and received a letter with the following significant passage:

'A review of the quantities of this material presently in municipal waste and of present incinerator practices indicates that there should not be an adverse air-pollution effect. It is estimated that the volume of this type of plastic . . . can be increased several times before a cognizance of their presence in municipal wastes requires attention.

'This matter, however, should point out to all concerned that thought should be given to the impact on air quality when introducing any new product that may be incinerated. It is the intention of the Air Management Branch to keep abreast of the growth of volume of those plastics that may be incinerated.'

"SPI-Canada issued a press release

pointing out that polystyrene is not harmful to the environment when properly incinerated or used in sanitary landfill. The statement also quoted the revised opinion of the Air Management Branch.

"Subsequently, officials of Probe issued a second press release recommending that the plastics industry work toward recycling of plastics. It said, *'We congratulate The Society of the Plastics Industry for checking with the Air Management Branch of the Ontario government to see if polystyrene can be adequately disposed of in Ontario. They have set an example that we hope other industries will follow . . . We are happy to lift the voluntary halt in Ontario to polystyrene containers that we asked for.'*

These isolated examples pulled from SPI literature are only the tip of the iceberg—publicity on PVC, styrene and other polymers has been widely distributed in environmentalists' newsletters and throughout the consumer press. Not only has this publicity hurt sales of certain plastics packaging—one supplier of styrene-foam meat trays reports business off 75 percent—but it also has produced a crop of legislation designed to restrict plastics and other disposable packaging.

Legislative pressures. Bills that would ban, tax or require deposit on disposable packages have cropped up in more than 20 states during the past year. This legislation ranges from an outright ban on disposable containers (Hawaii, H.B. 89), to a deposit on plastic bottles (Nevada, $0.05 deposit per S.B. 22), to bills that require filing of a recycling plan (Colorado, S.B. 62) and taxation of disposable containers (Kansas, $0.01 tax, H.B. 1317). At the time of this writing, the plastics industry is struggling with a proposed ban on PVC containers in New York (S.B. 3326 and S.B. 3492)—the outcome of this bill will be significant. Other heavily populated states considering similar legislation include California and Illinois.

Although it's a pretty safe bet that much of this legislation will never see the light of day—some of it already has been shelved—the point has been made. Plastics could face restrictions in application that could shrink certain markets. In parts of Japan, where the percentage of plastics in the solid waste load is upward of 10 percent, bans have been imposed on certain types of packaging until municipalities update incineration systems to handle the load. On the other hand, several European countries have been effectively incinerating plastics—PVC included—for years and converting the thermal energy output to power generation.

Here are the facts. Having seen what the critics are saying about plastics as a menace in solid waste, here are the facts as they have been developed by SPI and others.

Ten years ago, an average citizen accounted for about 2 lb of refuse per day. The average has now grown to 5-1/2 lb per day per person. Industrial and agricultural waste has been increasing at an even faster rate. Livestock and poultry waste production is 11 times the amount of human waste. Refuse generation per individual is growing 4 percent a year—so by 1980 the average American will generate more than 8 lb of solid waste a day or about 1-1/2 tons per year.

In 1970, Americans threw away 8 million television sets, 7.5 million cars and trucks, 50 billion cans, 30 billion glass containers and 5 million tons of plastics. In all, 3.7 billion tons of solid waste were discarded. Eighty-five percent of this solid waste is disposed of in open dumps that total 7000 sq mi in area (more than Connecticut and Rhode Island combined). Plastics comprise only about 2 percent of the country's municipal refuse. The figure rises to as much as 5 percent in certain urban areas because of the greater quantity of convenience-packaging items used. All packaging materials constitute about 13 percent of our collected refuse.

Facts about PVC. The following several paragraphs are taken from SPI's booklet, "The Plastics Industry and Solid Waste Management", and represent authoritative data developed by universities and member companies on the controversial resin, PVC.

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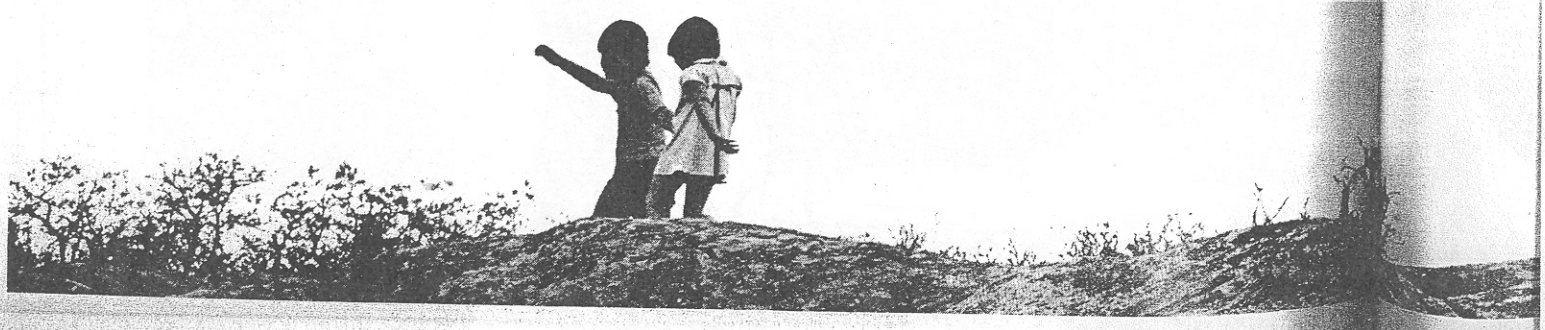


Bills that would ban, tax or require deposit on disposable packages ha cropped up in more than 20 states during the past year.

"The properties of polyvinyl chloride in incineration have been seriously misunderstood. Contrary to much erroneous comment, hydrogen chloride (HCl) as a by-product of PVC is a negligible air pollutant and its effect in incinerator corrosion has been exaggerated. In the U.S. the total production of all PVC is less than 0.6 percent of all municipal refuse, and only a fraction of this is incinerated. The overwhelming proportion of PVC is used in durable products designed for long service, such as wire insulation, floor coverings and water pipes.

"PVC also has been said to produce phosgene gas. In fact, the amount of phosgene resulting from the burning of PVC is so minute as to be virtually nonexistent. Measuring techniques refined to 1/10 ppm do not identify phosgene when PVC is burned, according to studies at the University of Michigan.

"A certain amount of internal corrosion takes place in the operation of any incinerator. Modern incinerator technology, however, has greatly minimized corrosion. Many respected European and American authorities believe that proper design and operation can almost eliminate corrosion in incinerators regardless of materials burned.

"There is in fact little known about many of the chemical processes that occur inside an incinerator. This has given rise to much misinformation about corrosion. Polyvinyl chloride, for instance, has come under attack as a major agent of corrosion and air pollution in incineration. When PVC is burned it liberates a certain amount of hydrogen chloride, an acidic gas. If moisture is present, the gas can combine with it to produce hydrochloric acid, which is highly corrosive. But nearly all components of refuse give off harmful gases, and all organic materials do. In ordinary incinerator refuse, there are many materials besides PVC that produce HCl and other chlorides, among them food wastes, grass, leaves, shrubbery, paper and salt.

"At present, there is simply insufficient evidence at hand to warrant criticism of burning PVC or other plastics as the major causes of incinerator corrosion. It is the judgment of the industry, however, that the additional quantities of PVC that will be incinerated in the next few years will not significantly increase corrosion in incinerators."

SPI has had to combat unfounded criticism from groups concerned about plastics and air pollution. Here is what SPI has to say on this important subject:

"Inefficient incineration pollutes the air. Efficient incineration produces little or no air pollution. What about plastics as a factor in air pollution? Once again, a discussion of PVC is necessary, since it has been criticized as an air pollutant because of its HCl content.

"Plastics are organic materials, and all organic materials give off toxic gases when burned, principally carbon monoxide and carbon dioxide. PVC also gives off HCl.

"According to the National Air Pollution Control Administration, the largest sources by far of HCl in the atmosphere are coal-burning and metal-treating. Yet HCl from all sources is such that a small component of air pollution that it is either not reported in standard samplings or is found only in trace amounts.

"The major U.S. air pollutants are carbon monoxide, sulfur oxides, hydrocarbons and gases containing nitrogen compounds. Government estimates assign the causes of 60 percent of our air pollution to automobiles, 17 percent to space heating, 14 percent to electric power plants and 3 percent to refuse disposal."

Polystyrene in incineration. To round out facts on incineration, it's worth while quoting SPI's booklet further to cover polystyrene:

"Polystyrene also has been criticized as an air pollutant—primarily in its use in convenience packaging like meat trays and egg cartons—because it produces black smoke and soot when burned. In fact, the gases emitted from burning polystyrene are no more toxic than those produced by burning any organic material. Soot from burning polystyrene is carbon black in particulate form. While this is unpleasant, it is not toxic. In modern incinerators carbon black remains in the furnace and is consumed along with other particulates."

Types of disposal. It is expected that incineration will be widely used for solid waste disposal in the immediate future and that open dumping will increasingly wane. More than three-quarters of all municipal refuse is discarded in open dumps presently, according to the U.S. Public Health Service. In addition to wasting valuable land, open dumps are fire and health hazards and de-

tract from natural beauty.

Sanitary landfill. "This method has a number of positive features," says SPI. It is truly sanitary if properly employed, it is economical and it often results in the upgrading of submarginal land for recreational or commercial uses. Where land is available, landfill is an excellent solution to waste-disposal problems. Only about 10 percent of the country's refuse is disposed of in this way. Plastics make a suitable component of sanitary landfill. Since they do not decompose readily, they release no odors, gases or liquids that can pollute surrounding land, air or water."

Recycling—yes or no? At the present time no plastic materials are being recovered from dumps or municipal refuse. Difficulty in sorting out the various types and cleaning them for reuse prevents formation of market opportunities at this point. With respect to the conservation of natural resources, however, it should be noted that 'all chemical products, of which plastics make up only a small portion, account for approximately 5 percent of petroleum used yearly in the U.S. The lion's share of petroleum products go to energy production.

If efficient incineration systems were now in use in this country, the high Btu output of plastics during combustion could be converted to energy for power generation. This should be thought of as a form of recycling. While it doesn't result in a tangible product, output of energy from plastics combustion can be translated readily into dollars—and that's what it's all about. Until methods of separation and reprocessing are perfected and end-use markets identified on the basis of the economics involved, incineration of random at-the-dump plastics waste for energy production offers the best solution.

Confusion over scrap. Recycling at-the-dump plastics waste and industry-generated scrap into usable end products that can be readily marketed for profit poses a strong challenge to the plastics industry. Reclaiming plastics at these levels requires development of new technology and, more significantly, a new understanding and attitude among industry members. SPI's estimate of 10-20 years for development of effective large-scale recycling of plastics waste and industry scrap seems lengthy to many in view of the super-technological era in which we live. But the plain fact of the matter is that, in addition to technological development, new attitudes toward scrap and waste plastic need to be cultivated among resin producers, designers and buyers of custom-molded products.

For many years, off-grade materials from the basic resin producer have found their way to processing machines via reprocessors, scrap brokers or by direct link to the processor himself. Similarly, scrap generated by the processor himself often is not reused and is sold off to other processors via brokers and reprocessors.

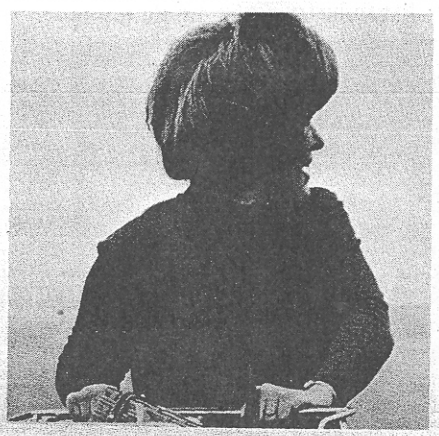
Needed: a standards program. Because there is no formal, reliable standards program for certification of the condition of scrap in certain transactions—such as from processor through broker to another processor—confusion often abounds and designers and specifiers of plastics lack confidence in the use of scrap. The lack of a program to certify that plastics scrap has a certain grade or suitability for specific types of applications has resulted in specification of 100 percent virgin materials in many instances when once-processed or off-grade material would do just as well.

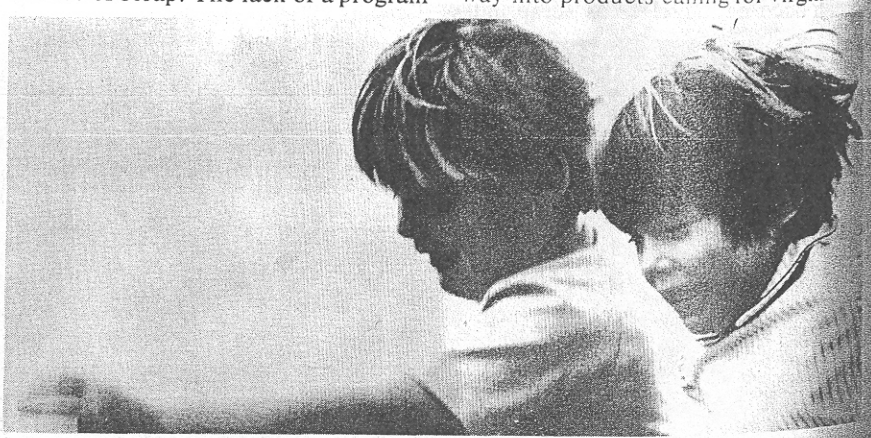
The recent polyethylene milk-bottle recycling program operated in San Diego by the Golden Arrow Dairy was stymied by a specification for 100 percent virgin material for agricultural drainage pipe. The dairy collected, ground and cleaned its own PE milk bottles and the regrind was then extruded into pipe—unfortunately, a local ordinance required that such pipe be produced from 100 percent virgin polyethylene.

Had there been a standards program in San Diego whereby the quality of the PE milk-bottle scrap could have been accurately assessed in light of specific applications, a ready market for the recycled milk bottles would have been at hand. The lack of a set of standards for scrap left those drawing up the ordinance no choice but to delineate virgin material for this application.

No standards—no ethics. Moreover, the lack of a scrap standards program has obviously had more of an effect than a few local ordinances specifying virgin materials. Throughout industry there are virgin specifications for low-priced resins that could easily be met by higher-priced scrap resins and even by scrap resin of the type designated.

Although nobody in the plastics industry talks about it openly, it is well known that scrap regularly finds its way into products calling for virgin ma-





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terial. It is recognized that the once-processed resin will do the job and meet specifications just as well, but lack of standards force some molders to look the other way and throw in a certain percentage of scrap.

A reprocessor's view. Lawrence Sheftel, executive vice president, Reed Plastics Corp., Holden, Mass., a reprocessor of off-grade and scrap plastics, offers this cogent view, "Many years ago, the field of plastics reprocessing acquired a taint because practices were inadequate and products were inferior. That situation was corrected years ago, but mistrust continues and the industry is missing an opportunity to make scrap a more valuable commodity.

"Today," explains Sheftel, "when a part is conceived and engineered by a designer, he is apt to write into the specifications, the phrase, 'No regrind allowed.' or 'No reprocessed material allowed.' These banned materials very frequently do have properties adequate for the application, but they are categorically eliminated in favor of 'Virgin material only.'

"As a result, the fabricator must dispose of the scrap through dealers. If the scrap has economic value, there is a place for it in the chain of restoration previously noted. Unfortunately, there is not always a market for the scrap. Certain virgin thermoplastics are currently priced so low that colored scrap has almost no market value. Materials that often have such limited value are the olefins, the styrenes and the polyvinyl chlorides. Even a higher-priced engineering thermoplastic like ABS can become valueless as scrap unless OEM people revise their specifications to permit its reuse.

"In some cases, a government subsidy may be required to convert low-priced scrap to end products. In other cases, the major OEM companies would do well to review and revise their plastics parts specifications to allow the use of qualified scrap and reprocessed materials. The government already has started to lead the way. The GSA (Government Services Agency) has written a specification that requires that all paper the government purchases contain a maximum percentage of reclaimed waste paper. Similar action is potentially possible in the plastics field.

"OEM companies, injection molders, reprocessors and dealers can work together to make scrap a more useful commodity," Sheftel urges.

"Specifications can be written for use of scrap or reprocessed materials. The important factor is cooperation. Major polymer producers can help their customers use scrap and reprocessed materials and help them write the required new specifications. Reprocessors and dealers can help by supplying high-quality products. Working together, the whole plastic industry can do a better job of preventing scrap from becoming a pollutant at the dump or incinerator and, therefore, responsibly protect our environment."

Although the technology may not be fully developed for separation of aggregate plastics waste at the dump and for recycling at that point, energy generation via incineration is the appropriate immediate measure while the industry cleans up its scrap problem.

The confusion in the plastics scrap field must be resolved if recycling is ever to become a reality and it must start at the most basic level. The editors of Plastics World urge formation of a Plastics Recycling Institute within SPI as the first step. The prime responsibility of such an institute would be to draw up a program for certification and standardization of industry-guaranteed scrap (see "Let's Make Recycling Honest", the subject of this month's Last Word, p. 124.)

The Recycling Institute also should focus on another vital factor in the efficient use of virgin as well as scrap resin—the gap that exists between sales and production of resins, namely inventory. Here again, because there is no established program for monitoring and reporting resin inventory levels, prices fluctuate unpredictably and resin often is dumped on the market. The net result is a poor return on investment for resin producers as well as a depressed and uncertain market for scrap.

The situation demands that a certification-standardization program for scrap go hand in hand with a program for monitoring inventory levels of both virgin and scrap materials. With these two critical factors monitored and reported, the industry could begin to mount activities that would assure both efficient first use and recycling of resins. At the recently held SPI Western Division Conference, a custom molder commented on these two concepts in an interesting way, "The crisis that the plastics industry faces within the ecological movement will bring many of the industry ills requiring resolution to

. . . We've been putting out fires instead of launching imaginative, resourceful programs that will demonstrate to environmentalists the quality and value of plastics.

the surface where they can be realistically handled." The industry's scrap problem is an obstacle to recycling that should be cleared up now.

Your help is needed. To date, the plastics industry has contributed $300,000 to SPI for research, education and legal activities involving plastics in environmental matters. Programs harking back to 1966, when SPI commissioned Battelle Memorial Institute, Cleveland, to put together a literature search of plastics' role in solid waste, have steadily grown stronger. In 1968, SPI established its Plastic Waste Management Committee, now comprised of some 270 members. Early last year, SPI formed its Committee on Environmental Policy, which sets policy on all environmental issues concerning plastics.

The $300,000 budget with which SPI has implemented these and other efforts is meager compared to the need. Certainly much of the misinformation that circulates so widely on plastics could be dispelled with additional funds and there are other effective programs that could be mounted. In addition to SPI effort, individual resin producers and processors have sought to counteract incorrect, incomplete statements about plastics as well as incorporating pollution-control devices and systems into their operations. Like companies in so many other industries, the level of investment by plastics companies in environmental control is rising.

But the reaction of SPI and the industry in general is not equal to the wave of criticism and ill will toward plastics that is now sweeping the country. For the most part, we've been putting out fires instead of launching imaginative, resourceful programs that not only will dispel rumor and ignorance, but that will demonstrate to environmentalists the quality and value of plastics.

Why haven't we done more? The reason is simple—no money and no manpower. Unfortunately, many firms not directly involved in plastics for packaging—where most of the problem for plastic lies—have not come forward or expressed interest in contributing talent or money. This is lamentable.

"It is vital that the plastics industry realize that not only packaging can be affected by legislation," says SPI in its booklet on solid waste management. "An attempt to restrict the use of plastics packages is an implied criticism of the entire industry. It makes all plastic products more vulnerable to other attacks on environmental issues. This is a problem for the entire industry, not just a segment of it."

The industry should get up off its apathy and do something positive and forceful.

(this report continues on p. 67)

plastics life cycle

An especially designed fold-out chart covers plastics' role in ecology.

Plastics World has prepared an exclusive wall chart that traces the life cycle of plastics from their raw material sources, through their role in our daily lives, to their demise as solid waste. It identifies problem areas and directs you to actions.

Additional copies are available at $1.00 per copy for 1 to 9 copies, $0.75 per copy for 10 to 99 copies, $0.50 per copy for 100 or more copies.

Write Plastics World Life Cycle Chart, 270 St. Paul St., Denver, Colo. 80206.

For additional information on the back-

The fact is that you cannot remov yourself from the circle of fire lit around the plastics industry by the environmentalists. You are involved—like it or not!

As SPI has stated, not only is it a matter of ethics that impels plastics processors to take action in the area of ecology, it also is a matter of economics. Even if you are a pipe extruder, a toy molder or an FRP boat maker and feel that you are far removed from the environmental crisis involving plastics packaging, don't think for a moment that you can afford to be unconcerned.

The fact is you cannot remove yourself from the circle of fire lit around the plastics industry by the environmentalists. Indeed, even if you are only minimally involved in plastics, there is legislation pending that will affect the total sphere of the industry—including you.

In fact, this legislation is the very big, very specific reason for every processor to take action. Because, like it or not, even though the present legislation probably will not pass, the repercussions surrounding its birth and death will ring through the consumer world. And these waves will hit you right in the pocketbook—in terms of loss of jobs, of shrinkage of market and of restraints that may hinder your use and sale of plastics products.

For example, just imagine what would happen if PVC for packaging were banned or severely taxed in New York. Such a regulation would affect PVC producers, processors, packagers—even designers of packages. It would have implications right down the line from the president of the resin company to the food manufacturer who packages with PVC. It even would affect those trying to market new products in plastics.

Therefore, heed the call to action and realize that when the SPI says, "The entire industry must become involved," that means you.

Fortunately, there are many ways you, as a processor—whether you are an extruder, an instrument maker or a food packager—can act immediately. Just follow this action plan:

1. Educate yourself about plastics and ecology.
2. Inform your community about plastics and ecology.
3. Investigate your plant's environmental effects.
4. Investigate your products' environmental effects.
5. Participate in community environmental efforts.
6. Participate in industry environmental efforts.
7. Participate in government's environmental efforts.
8. Anticipate future environmental needs.

In this section Plastics World provides information that will help you to implement this action plan. Included are:

Action Steps, p. 77, a discussion of specific ways you can carry out the plan.

Action Databank, p. 79, a description of primary sources that can provide further information and help.

Action Options, p. 81, a summary of the additional items available from Plastics World relating to plastics and ecology.

Action Literature, p. 82, a listing of some pertinent publications.

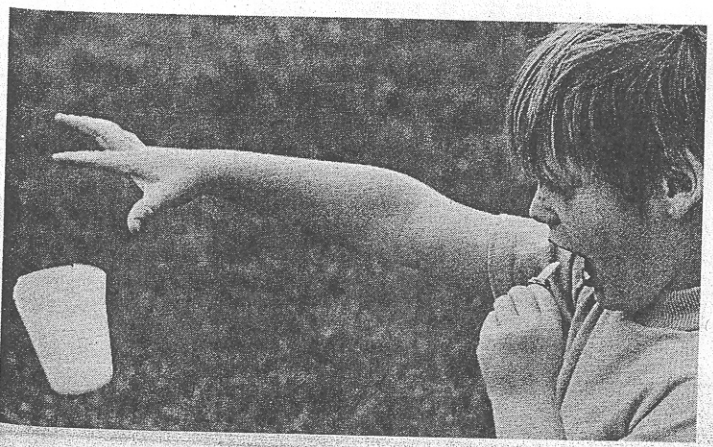
In addition, because there are so many other organizations, publications and companies and so much other information relevant to plastics and ecology, Plastics World has compiled and offers to readers a separate Action Packet. This packet expands on the information covered in this section and encompasses much more. For example, it outlines more than 50 action steps and provides complete details about more than 65 information sources. (See p. 81 for more details.)

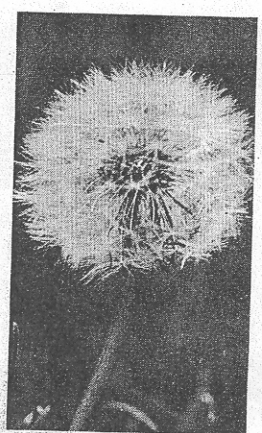
Now go to it—get involved in plastics and ecology—educate, communicate, participate!

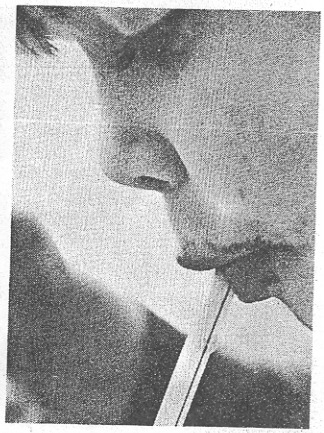
Action Steps

Plastics World has listed below a few of the many, many things you can do to promote better understanding about plastics and ecology and to improve our environment. Undoubtedly you will come up with many more—and when you do, please let us know. Then we'll spread the word to other processors via Plastics World's new updating service, a monthly newsletter called "Plastics & Ecology". In the meantime, here are some actions to consider. (Also consider the fact that other industries, such as the glass and paper industries, are far ahead of us with environmental action plans.

Educate yourself about plastics and ecology and about the overall environmental problem. Efficient ways to do this include:







- Use this report, SPI literature and other factual sources to get the real lowdown about plastics and ecology. These will prevent you from getting caught in a misleading statement simply because you are ill-informed.
- Learn the laws relating to plastics products and plastics processing so you do not break them inadvertently.
- Make this self-education program an on-going one. Keep current on what's happening through "Plastics & Ecology", and through trade, environmental, industrial and governmental publications and organizations. (See the Action Databank for a brief listing of these.)

Inform your community about plastics and ecology. Communicate, don't complain about consumer and media misinformation. You can "persuade your neighbor" in several ways:

- Speak out with an objective and practical view. Help to dispel the emotion that too often dominates discussion on the environment. Remind your community of plastics' benefits.
- Get to know your local media and environmental groups and keep them informed of the real facts.
- Promote tours of your facility for local environmental groups and students.
- Donate publications such as SPI's "The Plastics Industry and Solid Waste Management" or this report, which is available as a reprint, to local conservation groups and libraries.
- Display "Plastics – Part of the Solution – Not Pollution" emblems. (For more information, see p. 81.)
- Sponsor consumer-industry panels and forums to initiate two-way communication. For example, Plastics World is sponsoring, with the cooperation of SPI and Good Housekeeping, a panel discussion on plastics and ecology between industry spokesmen and consumer magazines.

Investigate your plant's environmental effects. Do not allow your processing to pollute your community. Ways to prevent this include:

- Plan your plant location as environmentally as possible.
- Check out your air, water, solid-waste and noise pollution carefully.
- Make environmental planning part of your corporate planning.
- Search for business opportunities to help to solve environmental problems.

Investigate your products' environmental effects. To prevent your products from getting a bad environmental name, be sure to:

- Concentrate on ease of disposal or recycling in the early stages of product or package design.
- Promote the reuse of your product.
- Spell out plainly in your advertising the durability or the disposability status of your product.

Participate in community environmental efforts. To support local activities:

- Join and participate in community efforts such as those sponsored by the Chamber of Commerce and conservation groups.
- Offer your expertise (business and technical) to local environmental groups.

Participate in industry environmental efforts. Be sure to work with other processors in these ways:

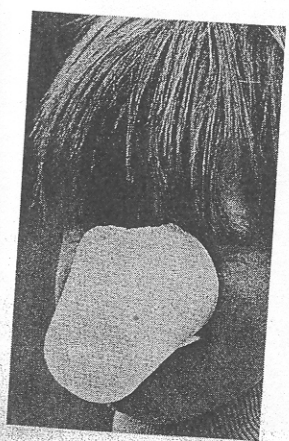
- Support SPI in its efforts to gather and to disseminate the facts about solid-waste problems and progress.
- Organize your SPE chapter into a task force that tackles local environmental problems, specifically those involving plastics waste. Consider setting up a reclamation program.
- Sponsor or cosponsor research on disposal, reuse and recycling.
- Join SPI's speakers' bureau and act as a listening post in your area. SPI provides slides and information.
- Support the formation of a Plastics Recycling Institute.

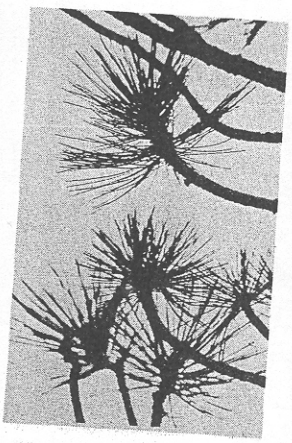
Participate in government's environmental efforts. Work for your community in these ways:

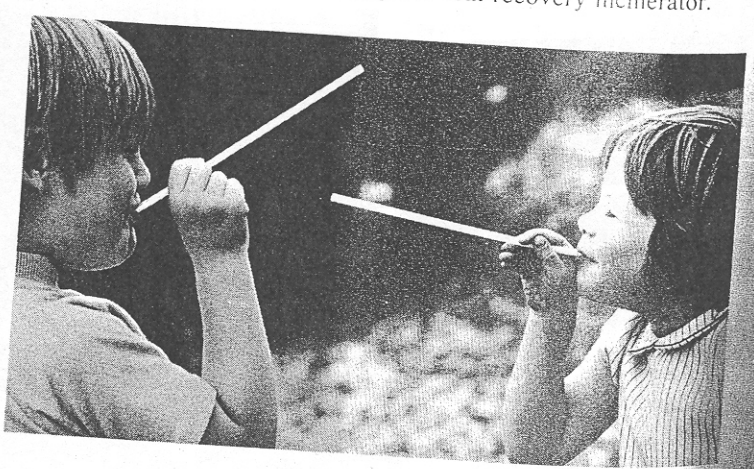
- Learn what state legislators are doing in the area of environment. Join the debate and discussion before laws are passed.
- Back legislators in their efforts to speed up governmental research in disposal and recycling.
- Work with governmental agencies, both local and federal, to solve solid-waste disposal problems.

Anticipate future environmental needs. Plan not only for today but also for years to come:

- Make sure you are aware of the many technological developments coming along that relate to the disposability of plastics.
- Look ahead to the day when pollution-control regulations will be severe and consider such possibilities as an in-plant heat-recovery incinerator.







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