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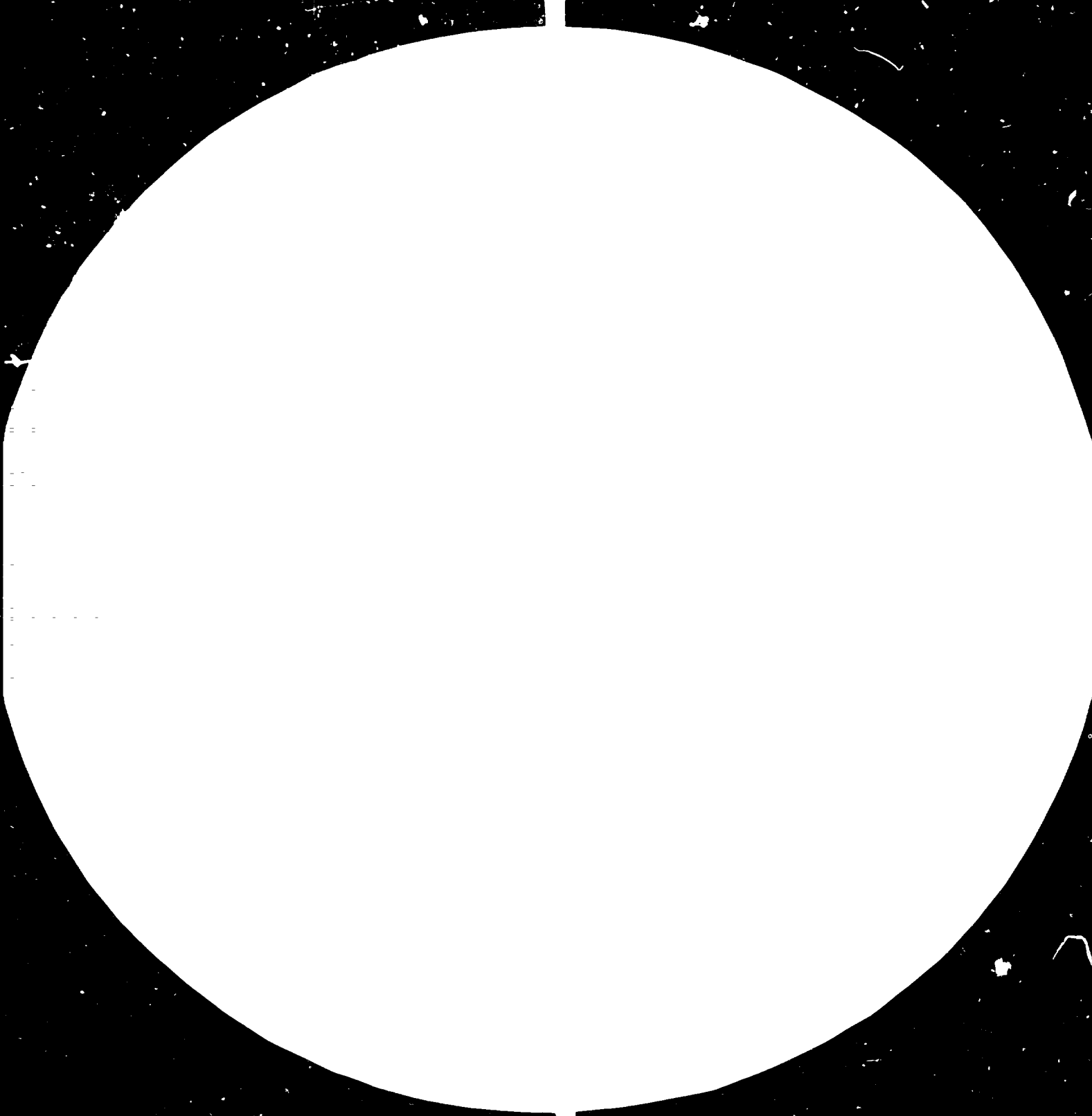

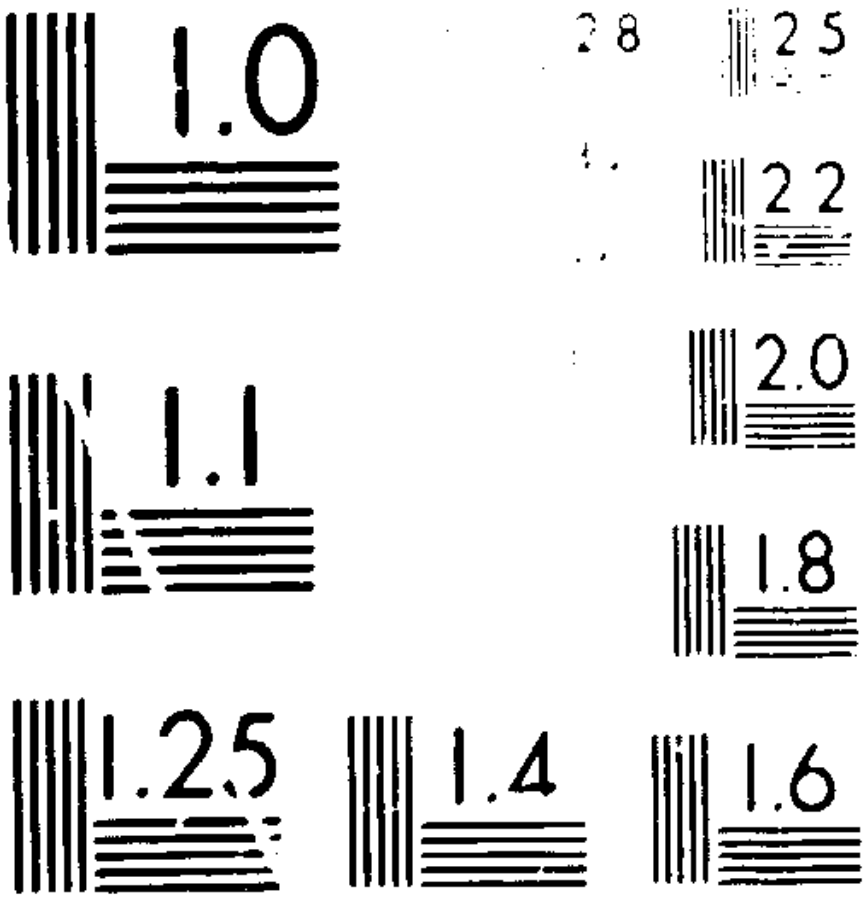
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DP/MEX/78/011
MEXICO

Technical report: Packaging training*

Prepared for the Government of Mexico
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of W.C. Simms, Consultant in Packaging Training

United Nations Industrial Development Organization
Vienna

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CONTENTS

I. INTRODUCTION

Two principal areas were designated for emphasis in this three-months project. These were:

1. Training, with major emphasis on packaging machinery and packaging production line operations. The work here was carried out in cooperation with personnel of the Pilot Plant. This work involved a series of lectures and discussion sessions as well as preparation of training lessons to be used in LANFI courses for industry.

2. Communications programs and guidelines for both internal and industry implementation. The objective was to provide a systematic approach to the problem of building awareness on the part of industry, regarding LANFI facilities, services and objectives. This work was done under the direction of LANFI.

II SUMMARY - FINDINGS AND RECOMMENDATIONS

An analysis of the UNIDO/LANFI program shows that many projects have been completed. Excellent facilities and equipment have been assembled. The laboratories and the pilot plant are outstanding. These are staffed with highly qualified and dedicated personnel. The program is augmented with support facilities including a professionally staffed library and well-rounded public relations department.

It would appear that LANFI has the opportunity to be a very important and powerful force in enabling Mexico's packaging to grow and improve. It will do this by:

1. Serving as a "School of Packaging" providing some of the technical and academic leadership now provided by universities such as Michigan State and Rutgers in the U.S. and by professional institutes such as PIRA in England and the French Packaging Institute in France.

2. Serving as an "industry packaging center", providing leadership and technical services similar to those provided by packaging institutes now found in many countries for example: Canada, Japan, USA and in Europe.

3. Providing laboratory and testing services to meet present and future needs of industry.

4. Providing communications - bulletins, a newsletter and similar publications, plus reprints of outstanding and pertinent articles published in various packaging periodicals.

5. Sponsorship of exhibitions, seminars, symposiums and similar activities that will "educate" and also help Mexican packagers develop cooperative relationship and a forum for exchange of ideas.

To help promote and institute these five goals, projects described in the material that follows were undertaken. As indicated in the annexes numerous training lessons, advisory sessions and memoranda were prepared. These are patterned after procedures and models that have proved useful in other countries. They will need to be modified from time to time and all have been prepared with the thought in mind that they will need to be expanded and supplemented with additional material. LANFI personnel are very competent to do that.

III OBJECTIVES OF THE PROJECT

Original goals for this project called for 1) The preparation of programs for packaging training, 2) courses in packaging management and techniques and 3) for the training of instructors. Following a review of current needs with Luis Madi and Francisco Muñoz, a revised set of objectives was submitted. As finally approved by the Division of Industrial Operations, Unido, these objectives were to:

1. Prepare and introduce training courses on fundamentals of packaging administration, organization and packaging line operations.

2. Develop a program of selected training courses for industry, with emphasis on practical individual projects and assignments.

3. Develop program for involving industry - both suppliers and users - in LANFI activities.

4. Develop program for packaging communications regarding LANFI activities and services... training, standards, design, applied research, testing, quality control, packaging education; also news briefs - trends, international events, etc.

5. Prepare specialized courses on packaging production oriented toward problems of equipment, machinery selection and effective line operations.

6. Develop program for producing guides and training manuals for industry use.

7. Develop program for seminars, panel discussions, conferences.

8. Make an analysis of the courses and seminars organized by ONUDI and LANFI in 1981.

9. Orient the LANFI Public Relations Department regarding publication of manuals, pamphlets, technical bulletins.

IV ACCOMPLISHMENTS

OBJECTIVES 1 AND 2

Training courses on fundamentals of packaging and administration, organization and packaging line operations were prepared and presented to LANFI personnel in a series of lectures and discussion sessions. These were supplemented with demonstrations of actual packages and packaging problems. Written outlines supplemented with illustrations and reading references were included. Copies of all teaching outlines will be found in the annexes section, Part V of this report.

OBJECTIVE 3

Programs for involving package suppliers and users in LANFI activities were developed through a series of discussions with LANFI personnel. Written memorandums of findings and conclusions were prepared. These are included in Part V. Many of the steps recommended were implemented in carrying out the provisions of the objective that follows.

OBJECTIVE 4

Programs for packaging communications include recommendations and outlines for:

1. Development of a mailing list of people in industry concerned with packaging - training, standards, design, applied research, testing quality control, and packaging education. A model list Packaging Institute/USA's "Who's Who in Packaging" was supplied.

2. A guidelines memorandum on publications including a newsletter was prepared.

3. A memorandum regarding library services was prepared.

Various periodicals and references, from the writer's personal, collection were donated to the library.

1. A two-day seminar was organized; and LANFI personnel were guided and heldped in conducting the seminar. It was held November 16 and 17 in the new, 112-seat auditorium in the Administration building. The auditorium incidentally, is an excellent, modern facility

with fine acoustics and provision for motion pictures, slides, overhead projection, flip charts and simultaneous translation. This facility offers excellent opportunities for future seminar and conference programs.

OBJECTIVES 5 AND 6

A complete set of training courses and manuals was obtained from the Packaging Machinery Manufacturers Institute. The executive director of PMMI and several packaging machinery builders were personally contacted at the Western Packaging Show (Anaheim, Calif. Oct. 25-27). A promise of additional equipment for the pilot plant resulted. Wiring diagrams needed for the Wright Bag former were promised. Audrey King vice president of Marsh Stencil Company came to Mexico to participate in the seminar. She demonstrated a new type of no-contact ink jet printing equipment and reviewed the important new developments in package marking. She toured the pilot plant and discussed LANFI projects as seen from her viewpoint of a packaging manufacturer who is a widely traveled lecturer on packaging machinery manufacturing and whose company operates in many international markets.

Another visitor specially invited to LANFI was Harlow Lichtwardt of the Bartelt Company. As a machinery builder and designer he contributed valuable expertise to the packaging engineers at the pilot plant. He spent two days helping personnel set up equipment in the new pilot plant and getting machines to operate. He provided practical suggestions for developing needed training courses to be used by industry.

A list of training manuals and guides procured for the pilot plant appears in Section V.

OBJECTIVE 7

Programs for seminars, panel discussions, conferences and symposiums were outlined and reviewed with LANFI personnel. A memorandum summarizing some of the suggestions and recommendations appears in the annexes.

OBJECTIVE 8

A review and analysis of ONUDI courses and seminars was made. It is the opinion ofthe reviewer that:

1. The projects are on schedule
2. That the projects have been expertly guided and administered

The accomplishments of the program can be summarized as follows:

1. Basic needs in food supply, distribution and packaging have been identified and goals established for coping with three

major problems: a) malnutrition, b) bad food habits, c) increasing urganization that is distorting the balance between population resources and economic activity.

2. A plan of organization has been prepared and is being implemented to solve these problems with special emphasis on agriculture, food and food distribution as the areas of major concern.

3. Studies of the basic supplier industries, including paper and paperboard, can manufacture, plastics and support industries have been made to determine adequacy to meet present and future needs. Forecasts of future consumption have been made and recommendations prepared regarding future needs, regarding capacity, demand, quality and long-range planning.

4. Cadres have been trained in various aspects of testing, quality control, materials evaluation, machine operation and maintenance, package development, designs and marketing considerations.

5. Programs have been established to develop and enlarge working relationships with suppliers and package users. In this connection LANFI is prepared to perform some of the functions of a Packaging Institution and the educational activities provided at a university level.

6. LANFI to date has "imported" the know-how of some twenty-three experts from nine countries. They have spent a total of more than sixty man-months working on various projects. The knowledge exchange they have provided represents literally hundreds of years of specialized experience and achievement in the packaging field.

7. Overseas fellowship studies in organization, standardization, transport and design have been arranged and awarded to selected personnel.

8. A continuing program of conferences and seminars has been created. Already these are averaging one seminar a month In April of 1982, LANFI will sponsor ALIM-EN-TEC, Mexico's first national food processing and packaging exhibition and conference.

9. A program of communications to industry has been prepared including a newsletter, bulletins, booklets and seminars.

10. LANFI sponsored the creation of the Mexican Packaging Institute (Asociación Mexicana de Envase y Embalaje -

AMEE, which groups individual (profesional) and corporate (producers and users) members and its General Director is now the first chairman of the Institute's board of directors.

11. LANFI personnel are Chairmen of the National Consulting Committee for Packaging Standards and National Committee for the Accreditation of Packaging Testing Laboratories.

Additional projects that are being developed will include in-plant training for Mexican and Latin American technicians.

A pamphlet prepared under the guidance of LANFI's executive director and project directors, describes the over-all scope of the UNIDO/LANFI activities. This pamphlet will be printed and issued at an early date.

OBJECTIVE 9

A memorandum was prepared for LANFI Public Relations. This concerned the publication of manuals, pamphlets, technical bulletins. A copy appears in the annexes. Much of the material developed for implementation of objectives 3, 4 is intended also for use by the Public Relations Department.

V ANNEXES

OBJECTIVES 1 AND 2

Training lesson outlines - General Industry

1. Some packaging basics
2. How LANFI can use its training facilities
3. Recommendations for self-training
4. Checklist to package planning
5. Information sheet for packaging system identification
6. Fifteen course outline for package training

OBJECTIVE 3

Programs for involving industry

1. Memorandum: A Potentially Useful Packaging Project.

OBJECTIVE 4

Program for publications and communication

1. Memorandum: Packaging Communications

OBJECTIVES 5 AND 6

Training lesson outlines - Machinery and packaging line operations.

1. List of courses obtained from the Packaging Machinery Manufacturers Institute, PMMI, Washington, D.C. and turned over to the Pilot Plant for its permanent library of training manuals.

2. Check list for choosing equipment

3. Training lesson outlines

   a. Handling and filling pre- formed bags
   b. Equipment and methods for Form-Fill-Seal pouches
   c. Equipment and methods for producing wraps, over-wraps, bundles and pallet wrap
   d. Equipment and methods for cartoning
   e. Introduction to filling machinery
   f. Equipment and methods for thermoforming
   g. Packaging systems
   h. Equipment and methods for case handling, filling and closing

OBJECTIVE 7

Seminar Programs

1. Memorandum: Planning and Developing Seminars
2. Papers give at a seminar, October 16 and 17
   a. A Packaging Decision Can Change the Course of your Business.
   b. Do we need Standardization in Packaging of Food Products?
   c. Choosing the Right Package for your Product.

OBJECTIVE 8

1. Analysis and evaluation of ONUDI/LANFI programs

OBJECTIVE 9

1. See memoranda for objectives 3, 4, 5, 7 and 8.
2. Memorandum: Packaging LANFI Seminars
3. List of packaging magazines

TRAINING LESSON OUTLINES

OBJECTIVES 1 AND 2

SOME PACKAGING BASICS

I. There are three general classifications of packages.

1. Rigid - Boxes, cans, bottles, drums, trays

2. Semi-rigid - blister packs, collapsible tubes

Both have definite shape and form for better handling, stacking, display

3. Flexible packages - bags, sacks, envelopes, pouches, wraps.

Flexible packages often use boards or are combined with rigid packages to provide stacking, handling, display.

II. The basic elements of package design and construction are geometric:

1. Lines, curves, angles

A. Cubes, rectangles, cylinders, spheres, tetrahedrons

- Boxes, trays, flat boards.

- Bottles, tubes, capsules.

- Cans, cannisters, drums, pails

2. Some packages take the shape of the product.

- Wrapped packages - loaf of bread, tray - wrapped produce, butter, cheese

- Blister and skin packs - unlimited shape (Materials with "muscles").

3. Some packages that have flexible shape may need additional support.

III. Basic Materials

1. Paper and paperboard - fabrication, cutting, creasing, scoring, folding, adhesion, flexible and rigid.

2. Metal sheet - iron, steel, aluminium, tin - rigid or semi-rigid (aluminium or steel foil - flexible - folding, creasing, laminating).

3. Glass - rigid - blow molding

4. Plastics - rigid, semirigid, flexible - injection, molding, blow molding or resin.

5. Film and sheeting produced by blowing, extrusion, calendaring and coextrusion.

6. Wood - rigid containers

7. Textiles - burlap, cotton

All of the above become more versatile as the result of surface treatments, impregnation and combination with each other or other materials - waxes, adhesives, varnishes, etc. etc.

Some of the mayor properties sought or wanted in packages are:

1. Strength, durability, wood, metal, glass

2. Rigidity - wood, metal, glass, paperboard, corrugated, plastics

3. Chemical inertness - glass

4. Formability - plastics

5. See - through - glass, some plastics - windows

6. Light weight - paper, corrugated, film, plastic bottles

7. Machinability - paper, paperboard, folding cartons, corrugated

8. Ease of fabrication - paper, paperboard, plastics.

9. Printability - paper, flexo, off-set gravure, letterpress

10. Availability of raw materials - glass, paperboard, sand, fibers

11. Consumption of energy

12. Recycling - disposability

13. Low cost - paper, paperboard, polyethylene film

14. Working features - shrink, stretch, memory, living hinge, residual energy, heat seal- plastics

15. Barrier properties - glass, metal, plastics

16. Resistance to temperature extremes - metal, glass, plastics

17. Resistance to sunlight, outdoor storage - metal, colored glass.

Lesson Outline - How LANFI
Can Use Its Training Facilities

A PROGRAM FOR HELPING THE MEXICAN PACKAGING INDUSTRY

Mexico is experiencing a period of growth and great change where food processing, distribution and packaging are concerned.

There are many reasons - higher incomes; more two-workers in the family, more products, more widely available; higher standards of living. Modern products and methods of distribution could not exist without packages and packaging.

The trend to a packaging distribution economy is world wide - but at different stages. In all developed countries it is quite advanced. It can be expected that in Mexico there will be growth and change.

It will be your challenge and your contribution to help direct and help advance that growth - to make it serve better the real needs of the Mexican people.

You have excellent facilities and equipment. Now you must plan how to use them to best advantage for:

1. Service - testing, standards, quality control
2. Training
3. Communication and education

The training lessons that you are developing must be aimed at the practical needs of industry.

In this connection you need to develop a mailing list of individuals in various companies who are concerned with and interested in packaging. Communication with these individuals should be established through bulletins, newsletters and correspondence. The latter should have the objective of establishing anawareness of LANFI facilities and services. It should also serve to invite and encourage the participation of industry personnel in Seminars, conferences, and symposiums. Eventually packagers should be invited to designate which subjects they would like to see treated in seminars and what training courses they need most. A mailing for the purpose of determining interest in seminars and training courses should be made at an early date.

Among the activites that can be employed to establish industry liason are these:

Training courses
Seminars

Conferences
Organized plant visits
Panel discussions
Organization of special industry groups
Preparation and dissemination of packaging news, bulletins, pamphlets and especially a newsletter.
Research services provided by the library.

These and other projects are discussed in separate memorandums.

A SUGGESTION FOR SELF - TRAINING

One of the proven methods for developing packaging professionalism is the reading of pertinent magazines, journals, bulletins and reports.

In many organizations this self-learning is encouraged by a central library facility in this way.

1. A list of periodicals in the packaging and related fields, received in the organization, is prepared and circulated to departments.

2. Individuals are asked to designate which periodicals are must reading - and are asked to suggest the names of periodicals not received that are vital to their projects.

3. Then, a routing slip is attached to each periodical.

4. The routing slip must contain a time schedule for date received and date released to be initialed by the reader.

5. All magazines should be required to move on in three days. If a reader cannot read in that time the magazine must move on. (The reader can request return of the magazine at the end of routing).

6. In some instances individual or multiple subscriptions may be needed.

7. It is desirable that one person, preferably a librarian or a secretary be given responsibility for managing this program.

8. In some companies, a first reader is designated and is asked to either mark or report on items of greatest interest.

9. Some libraries have seminars describing the facilities of the library - with special emphasis on references, directories and services obtainable from other libraries or information sources.

This information can also be disseminated by bulletin, but the personal presentation in the library is best.

In conclusion, the circulation of periodicals is a vital means of education. It is important in training. It is one of the best ways to keep people up to date. It is one of the best routes to professionalism. A significant aspect of LANFI activities is "the knowledge business". Therefore the library and its facilities needs to be an active partner.

INVOLVING INDUSTRY

OBJECTIVE 3

A POTENTIALLY USEFUL PACKAGING PROJECT

LANFI might consider establishing a display of new and interesting packages with a description of components and any special features.

Eventually this might develop into a museum of packages that would serve to record the progress of packaging in Mexico and give recognition to the contributions of LANFI to improve packages.

In this connection LANFI might want to consider the establishment of:

1. A Mexican Packaging Hall of Fame - for past, present and future achievements.

2. Mexican "Oscar" awards each year for several categories.

3. Student awards for projects carried out under the auspices of LANFI.

4. Selection of projects completed by LANFI

IMPLEMENTATION

Development of any of these projects should be relatively easy and might best be accomplished by establishing a committee (or committees) to organize and sponsor the awards and to appoint a "jury" of expert judges.

SOME ADVANTAGES

1. Exhibits resulting from this project would have intrinsic interest and would be excellent teaching media.

2. The awards would enlist the natural interests of companies and individuals in achievement and in earning recognition.

3. The awards and the exhibits would provide an excellent source for publicity, improved public relations (especially with industry) and would provide photographs and slides for a variety of purposes. Announcement of any phases of this project, of course, should be incorporated in LANFI bulletins and releases.

PROGRAM FOR PUBLICATIONS AND COMMUNICATIONS

OBJECTIVE 4

PACKAGING COMMUNICATIONS

In order to promote wider and more effective use of LANFI services and facilities it is desirable that a continuing and systematic program of communications be established between LANFI and 1) packagers; 2) materials and container suppliers; 3) packaging machinery and equipment suppliers and 4) suppliers of packaging services.

This program should be originated and produced by LANFI packaging personnel in cooperation with the Public Relations Department. In order to carry on this program, a mailing list or series of mailing lists for companies and selected personnel in the four categories listed above should be compiled and provision should be made to enlarge and refine this list on a continuing basic.

A list of desirable publications and audio and visual aids should be considered. Among these might be the following:

1. A Monthly Newsletter called "LANFI-PAC", "Mejor Envasado", or some similar name. It would contain:

   A News of activities at LANFI
   B Announcements of coming events-seminars, meetings, new equipment, etc.
   C Introduction of LANFI personnel. Short biographies of personnel and descriptions of their departments and services.
   D Guest column - contributions from leading packagers on accomplishments or problems.
   E Idea exchange - a column on tips for better packaging improved methods, training, maintenance, etc.
   F Digest of significant articles in foreign packaging magazines. (This might eventually become a separate newsletter).

2. Special bulletins and announcements - opening of new facilities or inauguration of new programs.

3. Published proceedings of seminars. The seminars also could be [illegible] and the tapes could be sold or rented to interested companies.

4. Training manuals, perhaps supplemented by tapes, slides or films. These could be sold and/or rented.

5. Permanent industry committees - Industry segments should be encouraged to establish packaging committees under the auspices of LANFI. Their purpose would be to promote idea exchange; deal with common problems such as training, standards, regulations, safety and the like. These committees would hold meetings or seminars from time to time. They would arrange plant visits, including a tour of LANFI facilities. Committee reports and publications would be disseminated by LANFI.

6. Releases and press conferences. From time to time and as appropriate, Public Relations would prepare and send releases to the various media. For major events, press conferences and interviews would be sponsored by LANFI, for internal affairs as well as for special events or accomplishments of Mexican packagers or suppliers.

7. "Careers in Packaging". Public Relations might send a questionnaire to industry (both users and suppliers) and follow this up with some personnel interviews. The subject would be what career opportunities exist in packaging? In what areas? What are the major needs - package development, packaging line operation, design, graphic arts, maintenance, sales, administration? What qualifications and training are most desired? What salary and promotion opportunities exist? The purpose of this pamphlet would be to enlist interest of young people and aid in recruitment. It might will be subsidized by materials, container and machinery suppliers. It could be distributed to schools, guidance counsellors and certain youth organizations. It should be publicized in newspapers, magazines, radio and television - the latter with perhaps a two - part visual of a packaging line and the machinery facilities at LANFI, including an interview with a leading packager.

8. Training pamphlets. Know your materials, know your containers, know your machinery, a series of small booklets on packaging papers, packaging films, folding cartons, glass containers cans, plastic bottles, corrugated and the like could be prepared and offered for sale. The basic material and the pattern for these exists in publications of various packaging associations, trade groups and the like. In some instances, permission to reprint or quote from these might be obtained.

9. Packaging Standards. Lists of standards and tests sponsored by LANFI could be offered for sale.

10. Property Charts. Charts for packaging papers, packaging films, laminations, adhesives, plastics bottles and the like could be prepared. These could be patterned after existing charts in the Packaging Encyclopedia, Modern Plastics Encyclopedia and the like. Industry authorities could review, and both suppliers and users could supply figures, thus making these, in effect, charts "hecho en México", for use in Mexico.

11. Spanish - English Packaging Dictionary. It has been prepared and is available for distribution. It could be offe ' for sale or as a premium to those attending seminars, ans ng questionnaires, or in other ways supporting LANFI activiti

12. Reference services. This especially includes services of the library. It should be publicized in the newsletters, special bulletins, seminars and the like. Industry should be encourage to use this service - either on a fee or a free basis, defending on the nature of the service.

13. Special reports. Reports from packaging shows as well as copies of talks gathered at foreign shows should be collected. These can then be distributed or held as reference for industry. This can then be publicized as a special communications service offered by LANFI.

MACHINERY TRAINING LESSON OUTLINES

OBJECTIVES 5 AND 6

MANUALS AND TRAINING COURSES FOR PACKAGING MACHINERY AND OPERATIONS

I. PMMI - Packaging Converting Machinery Components.

Training Course for Self Instruction

Volume 1	Training Manual - Basic mechanical components.
Volume 2	Training Manual - Basic hydraulic and pneumatic components.
Volume 3	Training Manual - Basic electrical components.
Volume 4	Instructor's Handbook

II. PMMI - Packaging Machinery Operations

Volume 1	Product filling
Volume 2	Wrapping overwrapping and bundling
Volume 3	Coding, marking and imprinting
Volume 4	Cartoning
Volume 5	Case packing
Volume 6	Bottle closing

III. PMMI - Special Manuals

1. Blueprint reading - Industrial machinery
2. Lubricating industrial machinery
3. Packaging/Converting machinery components (English and Spanish editions)
4. Troubleshooting industrial machinery

5. Handbook for writing operation and maintenance manuals.

6. Recommended practices - Care and maintenance of Automatic Packaging Machinery and on storage and handling of empty corrugated fibreboard boxes. (PMMI and Fibre Box Assn.)

7. Recommended practices - General notes on anti-skid treatments for fibreboard shipping containers (PMMI / Fibre box Assn.)

8. American National Standards(AINSI) - Safety requirements for the construction, care and use of packaging and packaging - related converting machinery.

9. Voluntary standard - Tolerances for end-loading 145 lb. 200 lb. B Flute and C Flute regular slotted corrugated fibreboard containers (PMMI - Fibre Box Assn.)

10. Voluntary standard - tolerances for scored and slotted corrugated fibreboard sheets used with automatic packaging equipment (PMMI - Fibre Box Assn.)

11. The 1980 - 81 PMMI Packaging Machinery Directory.

TRAINING COURSE OUTLINE - BAG - HANDLING AND FILLING EQUIPMENT
CONSUMER SIZES

Major factors in the selection of this equipment are:

1. Product
2. Type of bag and material
3. Size or capacity
4. Volume to be produced
5. Type of closure

There are two major bag categories:

1. Consumer sizes - generally under two kilos
2. Heavy - duty or shipping bags - generally 12 kilos and up.

There are four major styles of consumer bags

1. Flat or envelope. Envelopes are produced in a very wide range of shapes and sizes.
2. Square
3. Automatic - self opening style SOS
4. Satchel bottom

These are pre-formed bags. (They have many advantages and uses. However, when volume and other factors permit, the choice may be the form-fill-seal pouch).

Variations available in pre-formed bags include: windows, multiple plys wide choice of closures, padded cushioning bags, insulated bags. Many shapes-contoured, round, long; and many sizes are available.

Materials include: various papers, including glassine, cellophane, aluminium foil, polyethylene, vinyl, polyester,nylon, laminations, mesh and textiles.

All of the above factors are important in choosing and using equipment.

Because bags are pre-formed they must be fed and opened for filling and closure.

A major category of bag handling machines has been designed for dry products. Bags are fed from a magazine or wicket. They are opened by a jet of air, by vacumm or mechanical devices and are presented to the filling head. This is determined by the type of product and its flow characteristics. Pre-formed bags are used for products such as flour, beans, rice, sugar, coffee, pet food and hardware parts. The portioning or dosing equipment can be weighing, volumetric or count.

Numerous standard machine models are offered for this type of bag filling.

A second major category of bag handling and filling machines employs a funnel or stuffing horn. There are a number of manufacturers and many models and variations. But essentially, the equipment is very simple and easy to operate and it is low in cost. This equipment is widely used for shirts, socks, sheets, baked goods, poultry, hot dogs, produce and hardware items.

In the simplest type of equipment an operator presents a bag to the filling funnel and feeds the item to be bagged. Refinements can include portioning, automatic feed of product, wicket loading and automatic opening and feeding of bags and automatic heat sealing and discharge.

Good speed (but not high speed) can be obtained and excellent versatility. Sanitary, rugged construction; easy operation, cleaning and maintenance are readily obtained.

For reference:

Sections on bags in Modern Packaging, Encyclopedia - 1970, 1972, 1981.

Sections on bag - Handling Equipment in MPE, 1970, 1972, 1981.

Sections on weighing, filling and counting, MPE, 1970-1972, 1981.

Directory listings for bag handling equipment in PMMI Directory, Package Engineering, Interpack and Emballage directories.

Selected articles in periodicals such as Package Engineering, Packaging Review and Embalaje.

TRAINING COURSE OUTLINE - POUCH FORM-FILL-SEAL MACHINERY

Major factors in the selection of form-fill-seal machines are:

1. Type of product
2. Style and size of pouch
3. Volume and speed
4. Special features: gussets, stand-up, strip, compartmented, opening, etc.

As shown in the accompanying diagrams, form-fill-seal pouches can be produced vertically, horizontally or on a slant. The latter is used sometimes for heavier products in larger sized bags.

These machines will produce pouches from one web, with seals on three sides or with a back seal and seals at top and bottom - the well-known pillow pack. Or machines can be specified that form pouches from two webs, with seals on four edges or two sides and top and bottom. Special shapes include mandrel formed tetrahedon, contoured. A special pouch type is the tea bag, and machines are especially designed for tea bags.

Usually pouch paper, cellophane or polyethylene is used, but almost every type of flexible material or lamination is a candidate depending on product and marketing needs.

In 1932 R.W. Zwoyer of the Henry Heide candy company invented a vertical form-fill-seal machine that later became known as the transwrap. Today there are probably more manufacturers and more different types of pouch machines than for any other type of packaging machine. Products ranging from salt to peanuts to socks to liquids and lotions are packaged in pouches - and in sizes from less than an ounce up to five pounds or more.

Speeds, generally are in the 60 to 120 a minute are obtained, but some machines have outputs of from 300 to 1000 units a minute. These usually operate with multi-channels. Two special and very important types of form-fill-seal involve retortable pouches and vacuum or gas packages. Foods, drugs, hardware and industrial products are major users of form-fill-seal.

The big reason for the wide use of form-fill-seal is the fact that these machines represent a complete packaging system. A roll of printed paper or film becomes the inventory of package supply.

Portioning or dosing depends on the type of product. Methods include volumetric weighing or counting.

SOME BASIC CONSIDERATIONS.

1. Type of product to be packaged, solid, liquid, paste, powder, granule, mixture, tablets, parts, etc. Also the relative production requirements if more than one type of product is to be handled.

2. Packaging materials used.

3. Pouch style - three - side or four-side seal; one web or two.

4. Any special operations such as hole punch, gussets, imprinting.

5. Package size; contents, weight count, etc.

6. Tolerances and/or accuracies for each product and package size.

7. Speeds required for each product and package size

8. An analysis of any existing system. How much of the layout has to be changed?

9. Any special mechanical electrical or electronic specifications.

10. Anything peculiar about packaging room, dust conditions, ceiling height, space limitations.

11. Versatility required for future product or package changes.

12. Cost and economic justification

13. A thorough analysis of specific labor and maintenance requirements

14. Availability of parts, service and the stability of the machinery manufacturer.

15. Delivery and installation of equipment.

READING REFERENCES

1. Modern Packaging Encyclopedia - sections on pouches and form-fill-seal equipment issues for 1970, 1971 and 1981, especially pages 448 to 456 in 1971.

2. Directories of packaging machinery - PMMI, Package Engineering, Interpack and Emballage.

Lesson Outline - Machinery

EQUIPMENT FOR PRODUCING WRAPPED PACKAGES

Wrappings for producing packages are one of the oldest forms of packaging. They are also very widely used because they tend to be practical, economical, light in weight and adaptable to many shapes and types of products.

Along with preformed bags and form-fill-seal pouches (previously discussed) They comprise the large andgrowing and very important field known as flexible packaging.

Wraps are frequently an element of a packaging system. The material, usually pre-printed in roll form is the complete package inventory. The wrapping machine applies the wrapper or wrapper and seals it, thus producing a completely labeled package. Candy, butter, cheese, cigarettes, bread and other baked goods, produce, meats and textiles are important users of wraps.

Wraps can employ a full range of flexible materials: kraft, glassine, parchment, tissue, cellophane, polyethylene, polypropylene, vinyl, polyester, aluminium foil, textiles, plus laminations, coextrusions and special treatments. Thus very wide choiced of functional, barrier and decorative treatments are available.

There are three basic types of wraps:

1. Intimate or primary wraps - example the inner wrap for a stick or bar of butter or the wrap for a package of crackers.

2. Secondary or overwraps. Example, the sleeve wraps used on bars of candy, the outer wrap for sticks of chewing gum.

3. The shipping wrap or bundle wrap. Example, the dealer or distributor wrap for 12 cartons of toothpaste or four consumer bags of sugar.
   The bundle wrap is an option that competes with corrugated shipping cases.

Wraps can be given form and shape to facilitate wrapping, handling, stacking and display of products such as stockings that are limp and soft. by using a variety of board constructions. These flat boards, U. boards, collars and trays (see diagrams attached) also provide protection for fragile items such as cup cakes, cookies, produce and the like.

There are a dozen or more basic styles of wraps that have been divised to meet product needs and adapt to the basic operations of wrapping equipment. Diagrams and characteristics are presented in the attached presentation. A study of these is essential to the understanding of wrapping machines and why some wrapping mechanisms and methods are practical for some products and not for others.

The first wrapping machines were designed to use relatively stiff materials like paper that can be pushed. The machines used a series of mechanical fingers and grippers to apply the wrap, produce folds and tucks and seal the wrap. Some materials such as foil could provide a dead fold and did not require a seal.

Many standard type wrapping machines have been developed for wrapping bread, chewing gum, roll candies, cigarettes, butter, paper products and the like.

Because of the mechanical operations involved, wrapping machines tend not to be high speed. A general range will be found to be between 30 and 120 units a minute. There are some notable exceptions such as cigarettes and chewing gum.

In recent years machines have been developed and/or modified to produce wraps from polyethylene and polypropylene. These had to be specially developed to employ principles (pulling) for these less - stiff materials. Such machines have made major gains in wrapping equipment markets for paper goods, cigarettes, textiles.

Also in recent years, shrink wrapping and stretch wrapping have become very popular. They take advantage of the inherent properties of certain films to provide tension when shrunk or stretched. Thus they can provide tight, neat product - conforming transparent wraps without requiring the tucks and folds needed with paper, cellophane and foil. Thus the machinery tends to be simpler in operation. Shrink and stretch wrapping have proved extremely practical for bundle and pallet wrapping.

Operating principles and discussion of the types of machines available will be found in the attached manuals and exhibits:

1. Wrapping, overwrapping and bundling, volume 2, PMMI training manual.

2. Articles from Modern Packaging Encyclopedia - Fold Patterns for Wrapped Packages - Wrapping Equipment Shrink and Stretch Wrapping.

REFERENCES.

Modern Packaging Encyclopedia, 1971 and 1981 issues.

Package Engineering, Directory Issue, 1981.

PMMI Directory, 1981.

Interpack Directory, 1981.

Emballage Directory, 1980.

Lesson Outline-
Training Program

CARTONING EQUIPMENT

In terms of units or numbers the folding carton is probably the most widely used of all types of containers. It is a mass-produced, precision - made low cost rigid container made from paperboard.

It is shipped flat or knock - down thus being very economical when it comes to shipping, storage and handling. Printed in the flat, it provides almost unlimited opportunities for graphics and display features.

There are two basic constructions: the tube and the tray and these provide a vary wide choice of basic or standard styles that in turn permit a very large number of variations, based on arrangement of score lines, manufacturer 's seam, flaps, windows, partitions, pouring spouts and the like.

Major users of folding cargons are food products, including butter, candy, cake mix, cereals, crackers, cookies; also detergents, cosmetics and the like. Cartons are also used as an outer package for tubes of toothpaste, bottled toiletries, cigarettes and candies. In fact there are few products that have not used folding cargons. Cartons are widely used as dealer packs or multipacks. And with a proper liner, cartons are used for liquids and hard-to-hold products such as cake mixes. In some instances the liner ismandril formed inside the carton. Other times, the liner or pouch is filled separately and then inserted into the carton.

Normal carton styles include: tuck end and reverse or straight tuck (airplane tuck). Glued ends include butt flaps, economy or full flaps. Some styles combine tuck end and glue end. Some employ trays and sleeves.

Cartoning involves: 1. Set up or erection of the carton. 2. Loading of the product. 3. Often insertion of a folder. 4. Closure. These may be performed by separate pieces of equipment or all steps can be performed by a single machine.

Cartoning machines are categorized as:

1. Semi-automatic or fully automatic; and

2. Vertical or horizontal; and

3. Continuous or intermittent motion.

By definition a semi-automatic machine has the operator placing the product in the carton.

In vertical loading the product is loaded into the top of the carton. In horizontal loading the product in horizontal position is loaded into an end of the carton, also in horizontal position.

Semi-automatics are used when many different carton sizes are handled and where frequent changeover is required. Speed is 30 to 150 cartons a minute. Portability can be a useful feature. Design often employs Ushaped layout to accommodate operators loading from both sides of U. Automatic cartoners usually offer higher speed ranges, but less size range. Leaflet feed can be die cut or roll feed. Various automatic feeds can be employed.

Trends are dynamic and include:

1. Automatic overpack cartoners (multipacks)
2. More efficient machines easier to clear
3. Greater magazine capacity
4. Side-seam gluing on line
5. Automatic lubrication systems
6. High-speed line shaft drive systems
7. Drive gears located in oil
8. More rugged basic design

(4–8) } Easier, better maintenance

9. More built in features for adjustability
10. More sophisticated electronic control systems, solid state logic; programmable controllers; solid state relays.
11. Complete product handling systems

READING REFERENCES

1. Cartoning - a self - instructional course, PMMI Training Manual, Number 4.

2. Modern Packaging Encyclopedia - 1972 and 1981 issues. Sections on Folding Cartons and Cartoning Machinery

3. PMMI Directory, 1980-81

4. Package Engineering Directory, 1981.

Training lesson
Outline

CASE FORMING, PACKING, CLOSING

The corrugated case is the most widely used type of shipping container. It is mass-produced, precision - made and is shipped flat or knock down. Characteristically it is tube shaped with a manufacturer's joint (glued, taped or stapled); and with top and bottom flaps or end flaps. It resembles the folding carton in construction. Many variations are available including tray and two-piece, lid and base, styles. It is usually a corrugated structure, but solid fiber is also used. Basic constructions are highly standardized and so are performance requirements for shipping by rail and truck. The best known style is called 'The regular slotted container, generally referred to as R S C.

There are machines that erect the carton, that load it, that close the flaps and seal them and there are machines that perform two or all three of these operations.

The loading machines can be horizontal, vertical, continuous motion and wrap-around.

Horizontal machines form the product into the desired load pattern land push the load horizontally into the case. The motion is intermittent and speed is generally less than 30 cases a minute.

Vertical loading lowers or drops the load into the case. These machines are usually intermittent, multiple cases can be packed simultaneously. Speeds in the 60 per minute range can be achieved.

Continuous motion loading is used for high speed can and bottle lines where little or no change over is required. Speed is in the 75 per minute range.

Wrap-around casers form the load, feed a blank and wrap it around the load and close the flaps.

Typically erection equipment uses vacuum cups to remove a blank from the magazine. Then folding arms, squaring guides, breaker bars, tuckers and ploughs set up the carton.

Horizontal case loaders typically use a loader plate to accumulate and pattern the load. Then, a pushing device moves the load into the case.

In vertical loading, the load is patterned by line feeders or guides. The load is then lowered or dropped into the case.

CLOSURE. Case flaps are closed by mechanical means involving tuckers and ploughs. Sealing can employ cold glue, hot melt, tape, staples, strap or shrink wrap.

SPECIFYING MACHINERY.

1. Visualize the production line as a system and study the inter-dependence of each machine to all others in the line.

2. Before making equipment decisions have a thorough understanding of your plant and its equipment. Be sure you understand the marketing objectives for the package that is to be produced. Known the maximum per-package cost permiss ble. Explore all options available to meet production requirements. And be sure that everyone concerned knows the trade-offs.

FACTORS TO CONSIDER:

1. Speed - units per minute and future speed requirements.

2. Will product be received intermittently or continuously?

3. Nature and characteristic of product to be packed. Evaluate product in terms of size, shape, stability, compressibility, fragility, weight.

4. Changeover requirements. Will all products received at the machine be in the same position?

5. Case load pattern

6. Accumulation requirement, how much? Space requirement

7. What space is available for the line?

8. What is product flow through the plant? Can packing line flow coincide with this flow?

9. What will be the position of the operator or line attendant in relation to the equipment?

10. What are the labor objectives for the packing operation? Can these be met with alternate floor plans?

11. What options or variations are required for the line?

12. An special manufacturing procedures required to comply with company standards, legal requirements?

13. What utilities are available and in what amounts? Electricity in volts and ampere service? Air in pressure and volume? Water, pressure, volume, temperature? (See also "checklist for choosing equipment")

REFERENCES:

1. Case Packing, volume 5 in the PMMI Training Manual Series.

2. Modern Packaging Encyclopedia, "Sections on Corrugated Containers and Case Forming, Packing and Closing Machinery. Issues for 1972 and 1981.

3. PMMI Directory of Machinery Manufacturers, 1980-81 issue.

4. Package Engineering, Directory of Suppliers, 1981 issue.

Training lesson

THERMOFORMING EQUIPMENT

Thermoformed packages and package components are produced from plastic sheet. There are three principal categories:

1. Blister packs
2. Skin packs
3. Thin-wall containers, platforms, closures

The general thickness range of extruded plastic sheet is from 0.003 to 0.02 inches. The most widely used plastic for blisters is vinyl; the most widely used plastic for skin packs is polyethylene; and the most widely used sheet for thin walls and components is polystyrene, both oriented and foamed. Other plastics used include cellulose acetate, ionomer and polyester.

Thermoforming is one of the most significant packaging developments of the past 40 years. There are many reasons. Plastic sheet is like a transparent formable paperboard. It is readily formed into almost any concervable shape, using low cost dies. For many applications such as blisters and skinpacks, the machinery can be relatively simple and low in cost. The equipment and the process lend themselves to use in the packager's plant. In the case of blisters and thin-wall containers, the packager has an option to buy thermoforms from a specialist supplier, or if volume and other factors are favorable, the packager can install equipment in his plant.

Thermoforming machines are of two main types: Those that use vacuum pressure (approx. 15 lb/sg in) and those that use hydraulic, compressed air or mechanical pressure to form the sheet. The greater pressures provide greater speed, better detail and in the case of a material like oriented polystyrene are necessary to form the sheet.

Basically the sheet is exposed to heat until it softens. Then the sheet is draped over a male mold or is drawn into a female mold. Characteristically a thermoformed item has a flange resulting from the fact that the sheet must be held at its edges by clamps. The material can be sheet fed or can be fed from roll stock. Multi-cavity dies held in a platen can be used resulting in a potential for high speed. The individual items are then cut from the sheet by cutting dies, clicker presses. This can be a separate operation; or it can be integral with the former.

When blister packs are being produced equipment is needed to heat seal the blister to the card. Some fully-automatic equipment feeds

sheet from a roll, forms the blister, loads the product into it, applies the card, heat seals the card and blister and cuts the individual packages apart. Such machines are used for razor blades and spools of thread. Speeds of up to 200 a minute or faster are achieved.

There are many much simpler machines.

Important factors in determing machinery needs are:

Platen size, type of heater, method of indexing; need for changover and method of cutting blisters after forming.

There are numerous way of heat sealing blisters to cards. (See diagrams attached). This determines the heat sealing method used and the type of equipment needed. Heat-sealing is the preferred method, but there are options including the use of labels to lock the blister in place.

Skinpacking is relatively simple, because the product is used as the mold. The process lends itself to use in the packagers plant. It is a very popular method for hardware and industrial parts. Also, it is a very important method for producing shipping packages for china, lamps and other fragile items. The plastic skin immobilizes the product. The factors mentioned above regarding blister equipment also are factors when specifying skin packaging machines, except that the heat sealing takes place during the forming operation.

In the case of both blisters and skinpacks special board is required to allow for sealing. And, in the case of skinpacks, the board may have to be perforated, grooved or porous so that a vacuum can be drawn.

The type of plastic used, of course is a vital, critical factor in selecting and operating thermoforming machines. Vinyl and polyethylene are relatively easy to thermoform. Polystyrene, especially oriented or foamed, is more difficult.

Thermoforming equipment is used to produce egg cargons; trays for meat, poultry and bakery items; cups for dairy products and various kinds of lids or closures. Depending on volume and other factors such as precise distribution of materials, injection molding may be the method of choice for these containers.

When thermoforming is used, platen size, pre-heating, heating indexing of sheet and method of die cutting are critical. Also these machines must be rugged for they must handle tons of material.

Some of these machines are capable of working from an extruder so that the molten sheet can be formed without separate heating. Some containers

can be formed as halves and then be spin-bonded to join the two parts, but this approach has been slow to fullfill its potential.

In summary, there are many types of machines for thermoforming. Selection and operation is governed by the type of container to be produced the type of plastic sheet; by the volume to be produced per shift, month and year and by the degree of automation needed. If vacuum or atmospheric pressure can be used that makes for simplicity. If simple, shallow draws can be used that makes the operation easier. However, if precise details, undercuts, and high speeds are required these can be provided. Thermoforming lends itself to systems approaches and engineering, because there are successful operations that go all the way from resin to finished loaded containers. One example is vacuum packed frankfurters. The sheet is co-extruded and formed into a tray; the product is loaded; a lid is sealed to the tray. Economies are achieved as well as unique packaging advantages including longer shelf-life and a better product as a result.

REFERENCES.

1. Articles and diagrams on thermoforms in Modern Packaging Encyclopedia, 1972 to 1981 issues.

2. Articles on thermoforming equipment in Modern Packaging Encyclopedia, 1972 and 1981 issues.

3. Thermoforming machinery chart, Modern Packaging Encyclopedia, 1972.

4. PMMI Directory 1989-81 edition

5. Package Engineering 1981 issue

6. Interpack Directory 1981 issue

7. Emballage Directory 1980 issue.

Training Lesson

AN INTRODUCTION TO PACKAGING SYSTEMS

In the packaging machinery field the term "Packaging System" has taken on new meaning and become quite popular in recent years.

Actually, packaging systems have been around for a long time and most packaging lines employ sub-systems or small systems.

For purposes of this discussion, a system can be described where the material, container, handling, filling, closing and distribution requirements have all been considered in relation to each other to optimize the efficiences, functional characteristics and performance that can be attained.

The wrapping materials and wrapping operations for chewing gum are a good example of a packaging system. The same is true for cigarrette packages.

Packaging systems represent a customized approach to the packaging of individual products. Materials and machinery are specially developed for "marriage" to each other to provide features that would not result if standard, off-the-shelf machines were assembled to produce a packaging line.

An example is the example, previously cited in the thermoforming lesson where Oscar Meyer developed a line that coextrudes a plastic sheet, forms a tray, loads it with franfurters, seals a lid and draws a vacuum to remove oxygen.

Johnson and Johnson developed a sterile wrap system for its Band-Aid strip packages.

Cryovac developed its Cryovac system for packaging poultry and latter developed a system for vacuum packaging prismal cuts of meat.

There are, for example, various systems for packaging milk include Excello's Pure-Pak and Akerlund and Rousing's Tetra Pak and Brik Pak.

Klik-Lok developed a system for cartons that are set up automatically.

Many packages - the aerosol is a good example - are themselves a system - but systems have been devised for complete line operations - loading propellant and active ingredient; inserting valves and valve sterns, hot water baths to test for leakers; automatic valve test, check-weighing and insert of overcap.

In an effort to be sure that elements of line equipment are propely designed and matched for efficient integration, many packagers

ask the builder of one major unit in the line to take responsibility for analyzing the problem and coordination. This is one way to develop the systems approach.

Firms like Oscar Mayer and Johson & Johnson that engineer their own systems enjoy many competitive advantages resulting from the uniqueness and cost efficiencies that their systems produce. Johnson & Johnson, for example, innovated systems for sterlizing sutures and other hospital supplies with gamma and later with cobalt radiation.

Because of dynamic advances related to micro-processors, electronics fluidics, lasers, sonics, computers, Universal Product Codes and similar symbol technologies, automatic warehouses and automatic merchandising and checkout the field of packaging systems is growing and very challenging.

FOR FURTHER STUDY

1. Make a list of packaging systems, using articles in packaging magazines. Do you think they are good systems? Are they complete systems? Ask yourself as many questions as you can. Pick one system and be prepared to analyze it.

2. Pick an imaginary product and outline a packaging system that might be developed for it.

READING REFERENCES

Package Engineering 1981 issues
Packaging Digest 1981 issues
Modern Packaging Encyclopedia Case examples in introductory section, 1972.

SEMINAR PROGRAMS

OBJECTIVE 7

PLANNING AND DEVELOPING SEMINARS

Seminars and conferences are and should be an important contributor to the LANFI packaging program.

Experience on the part of those who conduct successful, well-attended seminars indicates there are three key factors:

1. Adequate planning
2. Observance of a well-defined timetable
3. Proper promotion

These factors should be the responsibility of one person (manager of seminars) who will be in charge of them for all seminars. Otherwise if a different person handles them for each seminar, that person will not have the necessary experience; and the learning process of success and failure will have to be repeated over and over. On the other hand, if one person and one department specializes in handling seminars, a valuable experience and expertise is developed and shortcomings discovered in one seminar can be avoided in those that follow.

THE IMPORTANCE OF A GOOD MAILING LIST

Those who conduct seminars that are well-attended know that a key factor is an adequate and up-to-date mailing list. Successful promotors of seminars like the American Management Association (and they are very successful) have found that as many as 200 mailings must be made to obtain one acceptance. Suffice it to say there is a definite ratioe between the number of invitations (mailings) and the number of acceptances.

The content of a seminar has a strong influence on attendance, but even a weak or specialized topic can obtain an adequate audience if a larger-than-usual mailing and extra promotion are employed.

Mailing lists can be developed by 1.- Working with directories such as directory of manufactures; 2.- Obtaining customer lists from supplier companies; 3.- Lists from associations; 4.- Lists of attendees at shows.

INCIDENTALLY, ALIM-EN-TEC SHOULD BE LOOKED UPON AS A GOLDEN OPPORTUNITY FOR OBTAINING A MAILING LIST.

Finally, the best mailing lists include the name of an individual and his title.

The names can be obtained by writing to the president of each company listed in the Directory of Manufactures. The letter would state: LANFI is correcting and updating its mailing list. Can you please have someone supply the names of the individuals handling packaging? marketing? advertising? purchasing? design?, etc. Usually a secretary or someone in P.R. will fill out the form.

The maintenance of a proper mailing list is a continuing battle. However, it is literally worth its weight in gold for seminars, announcements, newsletters and special promotions. It can also be a source of revenue, for it can be "rented" to companies wanting to reach the list.

A good secretary (or the library) once instructed in the procedures (if she does not already know them) can produce and maintain the mailing list.

Obviously it should be translated into one of the automatic labeling systems so that it can be used with minimum cost,effort and loss of time. Often a mailing house or letter shop handles this detail.

ADEQUATE PLANNING

When a seminar is planned the topic should be determined and a coordinater, moderater or chairman designated. Responsibility should then be assigned for determining topics and speakers. Often this is assigned to the seminar chairman, or at least he shares the preparation.

Next, dates and location must be determined - usually at least two months in advance to allow time for mailings and promotions.

At this point the seminar manager must take over to initiate promotion and control schedule. It is not necessary (although desirable) to have a full program and list of speakers, especially if these would delay the first mailing. The topic, the importance of the topic, a description of the intended audience and benefits are sufficient. A return form for pre-registration and acceptance should be included.

This mailing sent to the entire mailing list (or portion thereof) should probably be mailed two months and at least five weeks in advance.

A second or even a third mailing should be sent as a follow-up (and containing more details and more "benefits") to arrive not later than one week preferably two) in advance of the seminar date.

Few days before the seminar, if the registration is not sufficient, telephone solicition can be used.

One week before the seminar, if acceptances are below a minimum the seminar should be postponed and any registrants should be so notified by telephone.

THE TIMETABLE

Weeks 10 to 8 before seminar	First promotional piece is prepared and printed.
Week 8	First mailing is sent
Weeks 7 to 4	All arrangements made for speakers, auditorium, copies of talks, etc.
Week 4	Second mailing is sent
Week 3	Optional.- Third mailing is sent
Week 2	Optional.- Telephone solicition
Week 1 before seminar	Cancel seminar if registration is below minimum
Week 1	Make sure all arrangements are or will be complete.

PROMOTION

Copy sufficient for the mailing piece should be obtained from the program chairman. This should then be given to the art department or the person designing the folder. The style already establihsed by LANFI is very good. The major objective is:

1. To announce the topic, time and place.
2. Suggest who will be interested (marketing people, technicians, production line people, management, purchasing agents, etc.)
3. Tell why the seminar is important and what benefits will be derived from attending.
4. Ask for return of a pre-registration form reservation.

SUMMARY

Insofar as practical, the above steps should be the responsibility of one person, assisted by a secretary. And insofar as possible these steps should be handled as a repeatable routine for each seminar. Thus failure to meet anyone of the requirements according to the timetable becomes an early warning and eventually a danger signal calling for correction action.

These procedures of course, are only suggestive and must be modified and amplified to meet the real and often changing needs of any actual project.

However, they are basically the procedures employed by the American Management Association, New York University Packaging Courses, Rutgers and the Packaging Institute/USA. With modification and refinements they quite possibly could be very useful to LANFI.

A manual of procedures for seminars would be well worth developing. Also a guide sheet for speakers dealing with biography, synopsis of paper, advance copy of paper, listing of visual aids, need for projectors, etc. The get-together breakfasts put on by LANFI serve this purpose very well but a guide sheet could also be helpful.

Finally it would be good to prepare a tentative schedule of seminars for a year to facilitate forward planning and the maintenance of schedules.

December 4, 1981

Here are some additional seminar subjects. To develop most of these you would need a good chairman from industry or one of the experts from UNIDO, or a guest chairman from the list of experts I am giving you. These subjects have all proven to be good audience producers.

1. What's happening in plastic bottles - with emphasis on packaging line considerations. State of art report

2. Shrink versus stretch —state of art report

3. Thermoforming - blister, skin, thin-wall-state of art report.

4. Flexible materials and packages state of art report

5. New equipment and methods - microprocessors, lasers, minicomputers, electronics, fluidics, robots.

6. Labeling and labeling methods - state of art report

7. Buy or make - What containers can be made in - plant - When should you make or buy?

8. The war against rising costs in packaging - what packagers are doing to save money

9. Standardize package sizes to save costs

10. Versatility versus speed in packaging - what factors influence choice.

11. Problems and challenges in package design

12. Despensers, convenience closures and aerosols - state of art report

13. Report from Pack Expo- PMMI Oct. Chicago show

14. Report from Emballage - Nov. Paris show

These, of course, are in addition to your training seminars on machinery and maintenance.

PRESENTATION AT LANFI
Seminar November 17, 1981

CHOOSING THE RIGHT PACKAGE FOR YOUR PRODUCT

If you do you can change the course of your business.

But you must have the right organization.

You must have the right communications.

(Examples given in the talk on the 16th were reviewed and discussed).

The four basic functions of a package are to contain, protect, identify and sell. But to these must be added these functions:

1. To work:

   Measure, facilitate use, give instructions, warnings, provide conveniences.

2. Be a good "citizen"

   Conserve energy and resources; help discourage litter and waste; comply with laws and regulations; meet ecological requirements.

There are six major factors:

1. Marketing
2. Product considerations
3. Managing the program
4. Choosing the container
5. Package copy and design
6. Production and handling

These are covered in the checklist, a copy of which has been given to you. (The checklist was discussed in detail and various examples of actual problems and solutions were discussed).

PRESENTATION AT LANFI SEMINAR
November 1981

A PACKAGING DECISION CAN CHANGE THE COURSE OF YOUR BUSINESS

Almost everything is packaged or can be packaged - energy in a battery; sound on a tape; ideas, knowledge or pictures in a book.

However, we are concerned today with more conventional types of packages - the types you use for your products. And the point I would like to stress is that packaging is subject to skills and disciplines that make it a profession.

Companies that employ professional packaging methods have greater success and can market better products and more products better than companies that leave their packaging to chance.

Some examples include the packaging of Life Savers, Hershey bars, Johnson and Johnson Band - Aid Bandages.

Now first I would like to touch on a few fundamentals.

1. There should always be a purpose for packaging. Nature is a master packager. Nature's packages use materials and constructions that fulfil nature's needs. (Series of slides were shown).

2. Nature's packages illustrate many of the basic functions of a package.

   a. To contain
   b. To protect and preserve
   c. To identify
   d. To attract (motivate)

In order to make good packaging decisions it is desirable to have an adequate packaging organization.

Here are three actors that determine the type of packaging organization needed:

1. The type of product or products.

2. The number of different products marketed - one or an entire line.

3. The volume produced daily, monthly, yearly.

There are two kinds of packaging organizations:

1. One-man-minimum cost, concentrated communications, but several disadvantages, including limits on skill and time.

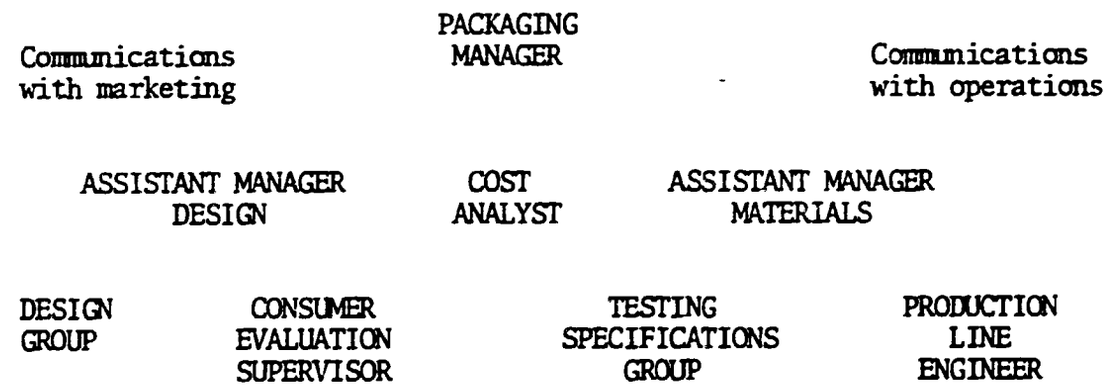
2. Packaging section or department can handle bigger workload; provide more skills, used more efficiently.

If packaging has much importance to a company it should establish an organization broad enough and skilled enough to eliminate the serious risk of non-performance.

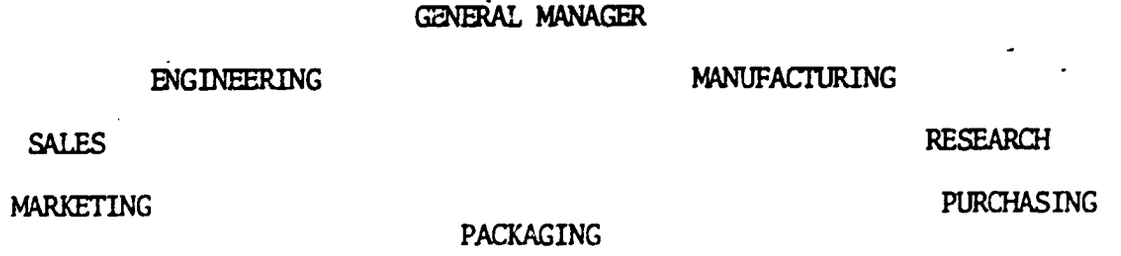
Pattern for growth of a packaging section.

Steps.

1. Packaging manager
2. Assistant manager, materials
3. Testings and specifications group
4. Cost analyst
5. Assistant manager design
6. Design group
7. Production line engineer
8. Consumer evaluation engineer



PACKAGING IN THE COMPANY ORGANIZATION



PACKAGING COMMUNICATIONS

MANUFACTURING

RESEARCH

ADVERTISING AGENCY

ENGINEERING

SALES MARKETING

PACKAGING

PURCHASING

FINANCIAL

SUPPLIERS

DESIGNERS

LEGAL

PACKAGING SKILLS.

Packaging is a unique profession in that it calls for a very diverse set of skills - management, marketing, design, engineering and laboratory sciences with a sensitivity for economics, legal matters and even broad social issues.

Good management becomes the key to results, backed up with a staff and available services to meet a broad range of very specific needs. It is particularly important to staff the packaging function with people who can communicate with other departments and in areas outside their own specific skills. This is because packaging is interdisciplinary by its very nature and occupies an interfacial position in the company.

Packaging involves chemistry in paper, plastics, glass, adhesive. Physics: testing, processing, structural design; graphic arts - design, printing, inks; manufacturing, specifications of materials, production, engineering, distribution engineering.

Options for assembling the specialized packaging skills are:

1. Selecting and training people within the company
2. Hiring from outside
3. Contracting services

Advantages of in-company training are:

1. Short indoctrination time
2. Familiarity with the organization, people, product.
3. Early effectiveness
4. Upward mobility for employee

Advantages or objectives of hiring outside the company.

1. Acquire specially needed skills
2. Does not create a void in part of company ·cated by an in-house employee.

Advantages of contracting.

This is most commonly done in areas of design, custom packaging, consulting and commercial testing.

1. Provides specialized skills that are generally not needed on a full-time basis. Legal skills, for example, are often less expensive to buy than to own-patent applications, trademarks, licensing, development contracts and the like.

Using Supplier Skills.

These cover virtually every phase of packaging: materials, printing, design, engineering. If special service is obtained it should be directly charged on a job basis. Otherwise the service charg ,t appear in the price of the materials, containers or equipment. It then becomes difficult to determine how much the service is used and what is its true cost.

Some simple rules.

1. Where creative design is needed as for a new product or package use a staff designer or independent designer (Supplier cannot work-outside his own products).

2. For existing products that are to be modified - no creative work involved -and where supplier will eventually make the molds, dies or printing plates - a good choice may be the supplier. This service should always be separately quoted and billed if it is very large so buyer can compare the charge with alternate options.

3. Technical consultants in flexible packaging, marketing consultants and advertising agencies can be used in areas where the packaging department lacks specific knowledge and skill.

Facilities

The packaging department will frequently use the facilities of other branches of the company, but has some specific needs. Research or technical

service laboratories can do much package testing without special equipment. They can hand-pack samples and examine them after storage in laboratory ovens and refrigerators to check the effects of time and temperature, controlled humidity storage can be arranged in desiccators. Quality control laboratories can test for leakers using standard laboratory equipment and they can screen most packaging materials for conformance to dimensional specications, using ordinary scales and gauges.

Package strength tests generally require special but simple equipment puncture, tear, impact, burst. Heat seal materials require at least a laboratory heat sealer with temperature , dwell time and pressure controls to evaluate seals for development of specifications.

That is the minimum level. From this a company can scale up to a separate and complete packaging laboratory and pilot plant.

Here are some reasons.

1. Keep the work within the company for security reasons.
2. A policy of consumer testing before commiting production.
3. Training personnel on a pilot operation
4. Working out problems at a pilot rather than a production level.

Of the above security is the most important. All the other objectives could be met by using a contract packager or a supplier's facilities.

Repeat-A packaging decision can change the course of your business. And that decision should be professional.

Let me give you an example.

At Montgomery Ward, package engineering services are all encompassing and include problem solving for their various merchandising departments.

Packaging services was asked to study a problem in the packaging of dinnerware dishes. Shredded newspaper was used for cushioning in corrugated shipping containers.

The method was:

1. Slow and expensive - done by hand.
2. Minimal product protection
3. Very high transit damage
4. Messy poor presentation to the customer
5. Increasing parcel post charges
6. Poor and inefficient working conditions.

Engineering studied various methods and finally chose a skin package. It was:

1. Semi-automatic
2. Used modular-sized corrugated packing sheets
3. Used modular-sized corrugated shippers
4. Compact and efficient packing stations.
5. Operation is very simple. One girl peeces the backing on the machine platen which can handle eight small orders or four large orders or combinations. After the dishes are positioned a skin of plastic film is applied. The skin packed ware is placed in the modular - sized corrugated cartons. These can accommodate orders from 1 to 56 pieces.

What are the advantages,

1. Production up 50%
2. Savings in labor 15%
3. Breakage in transit down 41%
4. Effective customer presentation
5. Savings in postal charges 10%
6. Better customer acceptance; complaints down 24%

And that is how a professional packaging decision changed the course of this one department that ships more than 100,000 orders a year to every corner of the United States.

One final example. You all know Coca-Cola. In Europe they call it American Champagne.

This fine and very successful company has developed a system approach to making packaging decisions. At Coca Cola USA the packaging function is defined as a dynamic grouping of all activities associated with, developing, producing, evaluating, processing, using, distributing, consuming and disposal.

Major packaging activities at Coca Cola include:

1. Idea generation
2. Preparation of project proposal, work plans, priorities
3. Initiate evaluation from manufacturing, marketing, sales and technical standpoints
4. Test packaging ideas with consumers
5. Initiate market studies
6. Evaluate consumer market, cost, technical logistical and environmental studies.
7. Develop packaging policies
8. Develop marketing objectives for a new package or packaging program.
9. Graphic design and package graphics
10. Develop recommended specifications and drawings.

11. Develop test procedures for monitoring package quality
12. Monitor package quality
13. Develop new or modify existing machinery systems to run new packaging items
14. Procure packaging items
15. Manufacture packaging items
16. Develop promotions compatible with packaging
17. Develop marketing plans to implement packaging polices and/or decisions
18. Implement polices and/or decisions
19. Monitor the effectiveness of the packaging mix in the market place
20. Make sure packaging complies with laws and regulations
21. Maintain accurate files on suppliers, art, specs, labeling regulations, etc.
22. Evaluate legislation affecting packages or packaging
23. Project future packaging requirements
24. Anticipate changes in technology and materials that may have impact on existing packaging programs
25. Anticipate changes in consumer needs or wants that might have an impact on packaging.

Coke deals with these items at four levels of varying complexity. The fourth and highest in the area that involves the highest degree of uncertainty and risk - directly affecting return to stockholders. This mainly involves staff studies for senior executive management review.

Now you may be a one-man packaging department, or part of a large packaging team. You may be a professional packager by training and experience or you may be involved simply because you realize that professional decisions are demanded.

I think the following suggestions will be important:

1. Audit your packages periodically - formally or informally.

2. Work with LANFI - use their testing labs and pilot facilities, their library, their sponsorship activities and special reports.

3. Read packaging publications European, U.S. and a very good one in Venezuela.

4. Encourage and support the development of packaging committees for flexible materials, food packaging, etc. especially for education, training and solving of common problems.

5. Attend packaging shows if you can - especially ALIM-EN-TEC

DO WE NEED STANDARDIZATION IN PACKAGING OF FOOD PRODUCTS ?

DO WE NEED STANDARDIZATION IN PACKAGING OF FOOD PRODUCTS ?

Still today it is commonly thought that packaging planning means only creating an attractive consumer pack that is easily notices and, in consequence, bought by the customer.

However, when one thinks of the long chain-storing, re-storing, transporting by different kinds of vehicles, etc. - that products have to move along before they end up to a retail store, it should become clear that packaging planning has a far greater task than just "artistical" planning.

Today, the distribution costs form about a half of the retail price of products; and of the distribution costs the share of handling costs or wages is about 40% whereas that of the space is more than 25%. An effective way to reduce these costs, is the planning of packages in a way that they give appropriate protection for the product, demand less space, are easier to handle and more effectively into vehicles, in fact, standardization.

What then is standardization? The International STandardization Organization, ISO, has defined it in the following way:

"Standardization is activity, where such rules are made and agreed upon that aim to the systematic guiding of activities with the help of all parties concerned and to their profit. It aims to better general economy, taking into consideration the demands of the activity and safety. It is based upon established results of science, technology and practice. Standardization does not only create the basis for the development of today but also for future and must thus be kept in step with progress".

A standard again is a paper that gives a unified solution to technical, often repeated tasks, and which solution a community has accepted.

Packaging standardization has the following objectives:

1. Internationally, to remove the technical obstacles of international trade.

2. On the national level, to make the cooperation between package manufacturers package users and transportation and marketing businesses proceed better and better.

To reach these objectives, a vast amount of standards has been created. These can be roughly divided into three categories:

1. Product standards that define the properties and measurements of a certain product (materials and packages).

2. Method standards that define the testing or analysis methods for a certain product or raw material.

3. Communication standards that aim to unify the terminology and symbols used in different countries.

The general principle of the national standardization work is that, as far as possible, the results of international standardization work are adopted. That means that national standards should reflect the international ones, and if on some area international standards do not exist, the national ones should be compatible with the national standards of some country having trade relations with the first one mentioned.

What is the International STandardization Organization?

Standardization work covering the whole world and all fields of activity (except electro-technical activities) is done by ISO.

The object of ISO is to promote the development of standards in the world with a view to facilitating international exchange of goods and services, and to developing mutual co-operation in the sphere of intellectual, scientific, technological and economic activity. The results of ISO technical work are published as International Standards of Technical Reports.

Today 88 countries have joined ISO as members. The countries are represented by their national standardization organizations.

Any country is allowed to join ISO and take part in the technical work by letting the Secretariate of a technical committee know that the country is willing to work there. There are two levels of activity and the country in question has to choose whether they want participating membership (p) or observer membership (o).

The standardization work of the technical committees covering packaging and transport is controlled and coordinated by the technical division TD 4 - Distribution of Goods. Subordinated to TD 4 are 11 technical committees of which the following are the most important general committees related to packaging.

51	pallets
104	containers
122	packages

The task of the technical committees is to create international standards, i.e. ISO-standards.

Involved in the creating of these standards are all those countries that have announced there active (p) membership in that committee. A standard is finally accepted if at least 75% of the P-members vote for it.

Countries of the COMECON group have their own cooperation organization that is responsible for COMECON - standards. Other regional standards organizations are e.g. COPANT (Comisión Panamericana de Normas) and CEN (Comitée European de Normalisación) All these organizations cooperate with ISO and guidelines have been developed to minimise any possible conflict of interest.

Why should we abide with ISO-standards?

International trade is rapidly growing and it is a fact that without international trade activity, many a country could not exist economically. This is true for both Mexico and Finland. Without standardization this trade would be considerably more expensive and difficult.

As most of the industrialized countries abide with ISO-standards, it is clear that using them facilitates and simplifies materials handling storage and display everywhere, and in many cases prevents the exported goods from being rejected by the importing country authorities.

Product Standards in the Field of Packaging

The pallet plays a central role in all materials handling. Its dimensions form the base i.e. in the dimensioning of forklift trucks, road vehicles, railroad wagons and stores. These dimensions are mostly pallet dimensions multiplied.

In order to use space as effectively as possible (SPACE IS MONEY), the dimensions of packages must be standarized according to the pallet dimensions, too.

ISO has accepted the measurements 600 x 400 mm as the world packaging basic module. Sub-multiples of this basic module form the basic for smaller packages. The outer dimensions for transport packages based on the packaging module are given in the ISO-standard 3394.

Packages dimensioned according to the basic module or its submultiples can be laid without waste of space to the standard pallets (ISO/R 198). The mostly used standard pallets are 1200 x 1000 mm and 1200 x 800 mm.

The height of the unit load has not been standardized; however, the wholesalers build their stores on shelf-basis and the most usual maximum height that can be fitted to the shelves is 1100mm. When the height of the unit loads is dimensioned accordingly, the handling of the standard unit loads is easy; they can be put on the shelves of the store without further measuring or fitting.

Big central stores that deliver goods all over their country and even abroad do not accept any unit loads that are not dimensioned according to the standards.

Further advantages of standardizing the packages are that there are less sizes, which enables using the same transport packages for different goods and the making of longer series and thus reducing manufacturing costs.

Material standards and testmethods standards facilitate the package planning and purchasing whereas communication standards such as handling symbols, product codes, etc. aim at improvement in handling of the goods during distribution.

Food Packaging

The most important task for standardization in food packaging is to protect the health of human beings by ensuring that materials known to be harmful are not used in contact with food.

Many countries have regulations regarding the packaging materials for food but the largest collection of these regulations comes from FDA. The yearly publication of the Federal Register, part 21 includes all requirements of food packaging. Foodstuffs are divided into eight

groups and each group has its own requirements. Many countries have adopted the FDA regulations because of their wide scope and exactness. For controlling the safety of a packaging material for any foodstuff, LANFI has an excellent equipment and a well educated staff that works according to standardized test methods.

PUBLICITY ORIENTATION

OBJECTIVE 9

"PACKAGING" LANFI SEMINARS

Some excellent material is being presented at the various seminars and conferences. Some of this is presented from a prepared paper, but some is extemporaneous.

The prepared papers, of course, can be reproduced and then become part of the LANFI library of training materials. These can then be considered for publication or can be disseminated to a selected mailing list.

The extemporaneous talks can be recorded on tape for further use in training courses as well as for preservation in a library of materials, either as a tape or transcription.

Some conferences reproduce and sell the tapes to companies for use at in-plant conferences or training courses. Reproduction of cassettes should be considered for the conferences at ALIM-EN-TEC 82. This would be a service to those who are forced to miss a conference and it can also be a source of revenue. At one conference, I gladly paid $12.00 U.S. for each tape or $50.00 for a series. Because the tapes were produced professionally it was better to pay for them than to try to record the talks myself and risk poor recording, battery failure, changing tapes etc. Also recording in a specific translation is an important consideration.