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ASSISTANCE IN THE FIELD OF TRANSPORT PACKAGING,

SI/COS/75/806,

COSTA RICA .

Mission report

Based on the work of Ernst R. W. Schmidt, expert in
transport packaging

id.77-6772

Explanatory notes

References to dollars (\$) are to United States dollars.

A full stop (.) is used to indicate decimals.

A comma (,) is used to distinguish thousands and millions

The following abbreviations of organizations are used in this report:

CACM	Central American Common Market
CEP	Centre for Export Promotion
ITC	International Trade Centre
SIS	Special Industrial Services

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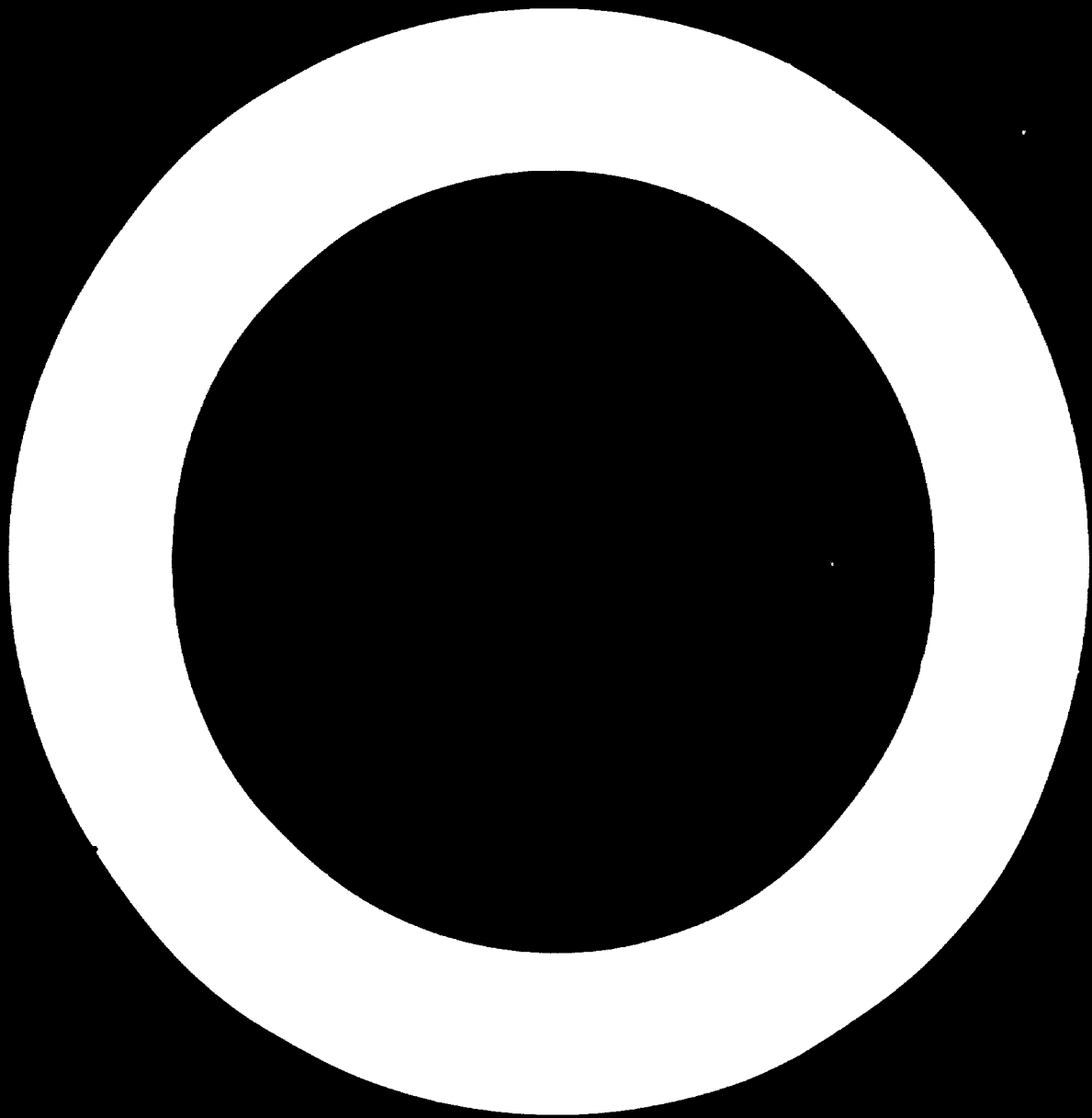
ABSTRACT

At the Second Consultation Meeting on Product Adaptation for Export Industries, held in Brussels in November 1973, which was jointly organized by the Government of Belgium and the United Nations Industrial Development Organization (UNIDO), the participants from Costa Rica recommended, on the basis of discussions held with individuals in many specialties related to export packaging, that assistance be rendered to Costa Rica's Centre for Export Promotion (CEP) to advise it on export packaging. No previous work had been done in this field.

The mission was requested in January 1975 from the Special Industrial Services of the United Nations Development Programme (UNDP), and an expert in transport packaging was assigned to the project, Assistance in the Field of Transport Packaging (IS/COS/75/806), for one month in July and August 1977. The co-operating agency was CEP.

The expert was to assess the present situation in Costa Rica's export packaging industry; visit various enterprises and institutions, offering direct, on-the-spot consultation on packaging problems; make recommendations on the needed improvements in the packaging industry; and examine the effectiveness of common facilities and services with a view to their better utilization and the improvement of their services to the industry.

All of these duties were performed, and a list of recommendations for the packaging industry, for CEP, for the Central American Common Market (CACM) and for UNIDO was drawn up.



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INTRODUCTION

As a result of the Second Consultation Meeting on Product Adaptation for Export Industries in Brussels in November 1973, jointly organized by UNIDO and the Government of Belgium, the participants from Costa Rica requested, on the basis of the discussions held with experts, specialists, technicians, manufacturers and importers from Belgium and other European countries, assistance to Costa Rica's Centre for Export Promotion (CEP) and manufacturers in order to advise them on transport packaging. No work in this field had previously been done in Costa Rica.

Official arrangements

The mission was requested from the Special Industrial Services Fund of the United Nations Development Programme (UNDP) by CEP in January 1975. An expert was appointed and sent to Costa Rica for the one-month mission "Assistance in the Field of Transport Packaging" (IS/COS/75/806). The job description for this expert, including the objectives of his mission, is presented in annex I. The co-operating agency was CEP (Centro para la Promoción de las Exportaciones e Inversiones). The mission was financed by an appropriation of \$4,150.

Activities of the expert

The expert visited enterprises and organizations engaged in exports, in the production of packaging materials and in the transport of goods (annex II) and provided on-the-spot consultation and advice on packaging and related problems. He also attended and participated in two conferences with producers of export goods, aiming to codify the main rules of the packaging industry and to demonstrate their application by the use of practical examples (annex III). Throughout his mission, the expert conducted informal training of his national counterpart, Palomo B. Augustin, Head of the Department for Investigation and Evaluation in the Centre for Export Promotion, during the visits to the various factories and organizations and in subsequent discussions of them. Little time was lost in travel, since all but one visit were made in or near San José.

I. FINDINGS

General observations

The present situation of the industry producing packaging materials and means for non-traditional exports may be characterized by a great need for information; a lack of some basic knowledge in some factories; little sharing of experience; the lack of any system for the collection and re-use of packaging materials; and substandard conditions of transport and of loading, unloading and storage in the seaports, airports and railway stations. On the other hand, the situation was considerably better in some of the freight-forwarding companies and was presumably satisfactory as regards the traditional exports, coffee and bananas.

Requests for information

The expert received many requests for advice on packaging problems, especially with reference to the following goods:

Wood and ceramic handicraft articles

Leather chairs

Foodstuffs (fish, fruit, meat, chilli sauce) packed in bottles and jars

Toys

Semi-finished wooden articles

Leather and leather goods in various stages of finishing or production

Tinned fruit juices

In some cases, such requests were not volunteered but had to be elicited, as in the case of a food packer who was unaware that plastic foils are permeable by water vapour and that this is a fact that must be accepted.

Lack of knowledge

The managements of some factories were unaware of the kinds of packaging materials that are presently produced in Costa Rica. Examples were the corrugated plastic suitable for the production of boxes for frozen fish, and the existence, in one factory, of a skin-packing machine that could be used for packing parts from other factories.

Lack of exchange of experience

There is almost no sharing of experience as regards packaging and packaging materials. Some examples are the re-use of materials used for the transport of raw materials, the use of damaged raw materials for packaging, or damage to imported goods resulting from bad handling or poor packaging.

Lack of a system for collecting waste materials

There is almost no organized system for the collection, re-use or preparation for other uses of used packaging material or of production wastes.

Conditions of transport

The conditions for the transport, loading and unloading, and storage of goods, whether packaged or unpackaged, are substandard, whether they are shipped as individual packages or even as pallet-sized unit loads. Most goods are packed in bags or corrugated paperboard boxes, which are stowed in containers for shipment to other countries of the Central American Common Market (CACM). Except for coffee and bananas, a smaller proportion of exports goes to the United States of America, and a still smaller proportion to Europe.

Effects of taxes on imported goods

The Government of Costa Rica imposes customs duties on imported goods according to their cash value and gross weight, so the importing companies demand light packages. Such packaging can be inadequate, considering the unsatisfactory conditions at the ports. Under these circumstances, not only are some imported goods damaged in transit, but their packaging materials cannot be re-used. Furthermore, the importing companies see packaging methods that are not good solutions to their own problems.

Positive aspects of Costa Rican packaging

Some of the freight-forwarding companies follow rather good practices, and it can be assumed that the packaging practices in the traditional export industries, coffee and bananas, must be satisfactory.

The National Insurance Institute (Instituto Nacional de Seguros) has assigned members of its staff as inspectors to determine the causes of damage

to imported and exported goods. However, what is needed is an institution that is independent and sufficiently specialised to be able to deliver authoritative and objective judgements in these matters.

II. RECOMMENDATIONS

The terms of reference of his mission (annex I) provided that the expert was to "make recommendations on the necessary improvements in the packaging industry" and to "examine the effectiveness of common facilities and services with a view to the better utilization and improvement of services to the industry". He has therefore drawn up a series of recommendations to the industry, to EPC, to CACM and to UNIDO. There is naturally some overlapping of these categories.

To the industry

Persons and organizations engaged in the delivery of goods must be made aware of the susceptibilities of goods to transport hazards and of the need to adapt them to the prevailing conditions of transport, loading and unloading, storage, packaging and presentation and of the facilities that are available to solve their packaging problems.

Product susceptibilities

Manufacturers should attempt to determine the hazards to which their products are subject during transport. For example, wooden and leather articles are often susceptible to the relative humidity of the ambient air and to water, friction and compression. Cotton and woollen textiles are susceptible to high atmospheric humidity and to water.

Ceramics and some plastic articles are vulnerable to shocks and compression.

Unprotected products of iron and steel, other than those made from stainless alloys, are vulnerable to water and to high relative humidity.

To the degree possible, each article should be adapted to the demands of its physical distribution, especially as regards packaging so as to minimize the size and weight of the final package.

Transport hazards

It should be determined exactly to which transport hazards the goods will be exposed from the time the package is dispatched until it reaches the user or consumer. Among such hazards are high relative atmospheric humidity, water

(rain or seawater), high temperatures, shocks, vibration, compression, bending and torsion; they may cause corrosion or similar surface damage, deformation and breakage.

Packaging materials available locally

All companies and organizations that are involved with the transport of goods should try to determine exactly what packaging means and materials are available in Costa Rica. Such materials may include: corrugated or solid fibreboard; solid wood, plywood and hardboard; boxes and crates made from these materials; bottles, jars and tins; plastic film or fabric bags; adhesive tape, wrapping paper, old newsprint and cordage.

They should be aware that some of these materials have important limitations. For example, cords, whether of natural fibres or of plastic (polyethylene) strips, are inadequate for strapping, since they may cut into the edges of corrugated fibreboard boxes and become loose. While old, crumpled newsprint may be useful to protect ceramic items against impact, it should be tested to determine whether it has been deformed adequately and will maintain its impact-protecting properties under the climatic and other conditions that will be encountered during transit. It is sometimes better to stuff plastic bags with crushed or shredded newsprint and use these bags for cushioning.

The needed testing can be conducted by the general methods of the mechanical engineer; simple tests corresponding to the anticipated transport hazards can be performed. Information on such tests would be obtainable from the Packaging Referee (when one has been trained and appointed) and from consultation with other packaging experts or institutes.

Sets of goods

Possibilities of exporting some goods in sets so as to minimize packaging costs should be investigated. Some examples of such sets are:

Two or more articles that fit into or on to each other

Two or more articles shipped together so as to make better use of the space within a rectangular package

One or more articles shipped together with another that could be used to reduce their susceptibility to transport hazards, as a ceramic article packed with a leather or wooden one to protect it against shock.

To CEP

Designation of a Packaging Referee

A staff member of CEP should be designated as Packaging Referee to act as an authoritative consultant and arbiter as regards transport and packaging. To satisfy the requirements of the packaging industry for more and better information about packaging possibilities, he should be given the following responsibilities:

- (a) To organize a systematic exchange of experiences in packaging, transport hazards, presentation of goods, their physical distribution and their adaptation to the requirements of packaging and the demands of the market. This could be done in collaboration with the Chamber of Commerce and Chamber of Industry;
- (b) To collect data on all packaging materials available in Costa Rica: domestically produced; imported (including materials imported with goods) and materials normally considered as wastes;
- (c) To determine what other packaging materials should be produced in Costa Rica or other CACM countries;
- (d) To find and keep up to date a collection of packaging means, periodicals and books on packaging and physical distribution of goods (the expert could provide the basis for it) and to collect information on packaging problems from trade publications and exhibitions all over the world;
- (e) To initiate a system for the collection and re-use of packaging materials such as paper, corrugated paperboard, tins, bottles, jars and factory wastes;
- (f) To investigate existing systems for the use of cargo containers and trailers with the aim of extending their use and to diminish transport hazards by insisting on providing means to keep the load in a container from shifting;
- (g) To promote the training of administrative staff and workers in companies that have packaging problems;
- (h) To promote the exploitation of the experience, knowledge and skill of the administrative staff and workers in the freight-forwarding companies by the exporting industry;

(i) To publish the results of all of the above activities by suitable means, as in reports to the Chamber of Commerce and Chamber of Industry or of CEP, so as to spread the knowledge of the problems of physical distribution, and especially of packaging and their possible solutions throughout the exporting industry;

(j) To inform the Government about what must be done to improve conditions in the seaports, airports, roads and railways.

To CACM

CACM should designate a member of its staff as Packaging Referee for the entire community. While his duties would be basically the same as those of his opposite number in Costa Rica, he should devote particular attention to the following areas:

Co-ordinating the work and collating the findings of the Packaging Referees of the member countries

Endeavouring to reduce transport hazards in the seaports and airports and the roads and railways of CACM

Developing packaging means from materials available within CACM

Testing and evaluating packaging materials and filled and closed packages from the relevant points of view, and above all, the presentation and protection of the goods that they contain

Analysing packaging and shipping costs

Endeavouring to establish himself as an independent and unbiased authority with sufficient knowledge and experience to be able to deliver objective judgements in cases of damage to goods during transit, loading and unloading, and storage

This person could become the nucleus of the CACM packaging institute suggested below.

To UNIDO

Packaging technology is so complex a subject that it cannot be learned solely by experience in the national industry of a developing country and study of the literature. Consequently, at least one of the designated Packaging Referees, with a background in industrial or mechanical engineering, should be sent to North America, Europe or both to study the subject as practised at the most advanced levels in packaging institutes, with the pro-

ducers of packaging materials and in the packaging departments of important exporting firms. Courses in this area are offered at the International Trade Centre in Geneva, and possibilities for such study exist at the Institute TNO for Packaging Research, in Delft, Netherlands; Beratungs- und Forschungsstelle für Seemässige Verpackung e.V. (BSFV) Institut für Export-Verpackung (IfE), in Hamburg, Federal Republic of Germany; and Institute für Lebensmitteltechnologie und Verpackung e.V., Munich, Federal Republic of Germany.

To judge from the experiences of some other developing countries, it would appear advisable for Costa Rica or CACM, to establish a packaging institute. The latter suggestion would seem better, since the efficiency of such institutions tends to be greater if the economy that it serves is not too small, and close relations already exist among the countries of CACM. A Packaging Referee who has studied the subject in developed countries could be assigned to study the feasibility of creating such an institution. It would be very useful for him to be given the technical assistance of an expert in this field. This help should be provided by UNIDO.

Annex I

JOB DESCRIPTION
(IS/COS/75/006/11-01/14)

Post title: Product Adaptation Adviser in Transport Packaging

Duration: One month

Date required: As soon as possible

Duty station: San José, with travel within the country

Purpose of Project: To assist the Centre for Export Promotion (CEP) in offering services to firms by improving their transport packaging for export products.

Duties: The expert, in co-operation with the CEP, will assist manufacturers of export products in adapting the products and improving the production processes to meet world market requirements. Specifically, the expert will be expected to:

1. Assess the present situation in the industry;
2. Carry out in plant visits to the various enterprises, providing direct, on-the-spot consulting services on problems of packaging;
3. Make recommendations on the necessary improvements in the packaging industry;
4. Examine the effectiveness of common facilities and services with a view to the better utilization and improvement of services to the industry.

Qualifications: Degree in engineering or equivalent, with emphasis on packaging and extensive experience in overall product development

Background information: As a result of the Second Consultation Meeting on Product Adaptation for Export Industries in Brussels from 20 - 29 November 1973, jointly organized by UNIDO and the Belgian Government, the participants from Costa Rica recommended, on the basis of the discussion held with experts, specialists, technicians, manufacturers and importers from Belgium and other European countries, assistance to CEP and manufacturers from Costa Rica in order to advise them on transport packaging.

Annex II

ORGANIZATIONS AND COMPANIES VISITED AND CONFERENCES ATTENDED

A. Official institutions

Centre for Export Promotion (CEP)

Central American Institute for Investigations and Industrial Technology

National Institute for Assurance

B. Transport organizations and companies

Shipping lines and port

Airlines and airfields

Railway company

C. Producers of packaging materials

Producers of tins

Producers of bags and bagging

Producers of cordage

A company that packs and ships household articles

D. Producers of goods for export

Exporters of food products: fruit, fish, meat, cocoa, fruit juices, spices

Producers and exporters of leather and leather goods

Producers and exporters of ceramic and wooden articles

E. Conferences

30 July 1977 - Conference with members of the National Chamber of Handicrafts and Small Industry, concerning packaging problems relevant to the export of handicraft products. Practical solutions were demonstrated.

12 August 1977 Conference with members of the Chamber of Commerce in connection with the presentation of a paper on packaging technology (annex III).

Annex III

PACKAGING FOR EXPORT^{a/}

A. Definitions of various types of packaging

The six-language Verpackungswörterbuch,^{b/} or dictionary of packaging, defines embalaje as a broad, general concept applicable to all media in which goods are packed in order to protect them.

Envase is a special type of packaging to contain liquids or powders.

A bulto is a full, closed package.^{c/}

B. The purposes of packaging

Packaging can be used for the following purposes:

For sending goods to a seller, a user or a consumer. This is packaging for purposes of dispatch.

For the presentation of goods in shops. This is packaging for consumption.

For both purposes, as in supermarkets.

The functions of packaging in general, whether for dispatch or consumption, are the following:

- (a) The protection of goods against possible damage during shipment;

^{a/} Paper delivered (in Spanish) to a conference with members of the Chamber of Commerce, 12 August 1977.

^{b/} Johannes P. A. Hoffmann, Fachwörterbuch Verpackung, Heidelberg, Verlag für Fachliteratur, 1975.

^{c/} Corresponding distinctions do not exist in English; throughout this text embalaje and envase are translated as packaging and bulto as package.

(b) The rationalization of the shipping process, so that packaging facilitates transport, loading, unloading and storage. This can be achieved, for example, by using packages that can easily be lifted by cranes or hoists. The rationalization aspect also covers the opening of a package, the removal of its contents and its re-closing without difficulty, as well as storage before and during the use or consumption of the contents;

(c) The information function; this means that the packaging should carry all the information needed to ensure that the package reaches the customer and is handled properly.

There are international symbols for instructions about the handling of packages.

This function also includes the information needed to persuade the customer to buy the merchandise and to ensure that he uses it correctly.

C. The performance of the three functions

The three functions of protection, rationalization and information can be carried out at minimum cost only if the following information is available:

Information regarding the properties and susceptibilities of the product that is to be shipped, in order to determine the risks involved in transportation from the producer to the consumer or user. This information concerns susceptibility to pressure, shock, vibrations, extreme dampness or heat

Information concerning the risks involved during the planned transportation

Information about types of packaging and their properties in order to comply with the packaging requirements of the domestic and international markets.

All of this information should be very specific. This is possible only if precise data are available on the relevant properties of the goods, the transport process and packaging. Also, the shipper must know how to draw the right conclusions from these data.

The performance of the functions mentioned also depends on the care taken by the personnel involved in the production of packaging goods, transport, storage, loading and unloading, as well as legislators and the administrative personnel of railways, seaports and airports. Each of them shares responsibility

for ensuring that merchandise, especially goods for export, reaches its destination in good condition.

The performance of the three functions of packaging also depends on how easy it is to obtain the necessary information regarding packaging, the properties of the goods concerned and the various types of transportation, and to apply this information.

D. Comments and recommendations

In Costa Rica there is a considerable lack of knowledge of the various systems for dispatching goods.

An attempt should be made to group products intended for export with other products that have export potential. In this way, one product could be exported as the packaging of others.

Export products should be combined with information on their origin and utilization.

This is the approach in terms of systems, for example:

The system composed of the product and the packaging

The system composed of packages and of methods for dispatching them

The system composed of products, markets, consumers and users

In Costa Rica there appear to be some enterprises that are aware of the importance of using the right packaging, but in order to improve the situation, the results of bad packaging must be demonstrated, and photographs shown of damaged packages at ports.

In order to obtain precise data on conditions and requirements for a shipment, studies of these conditions must be carried out in the country to which it is to be sent. Use can also be made of the data published by packaging institutes in some European countries.

In some enterprises there was great interest in obtaining the information referred to in section C above, but considerable problems are involved. The following steps can be taken to improve the situation:

Upgrading the specialists and manual workers responsible for packaging in shipping firms; endeavouring to ensure that the training is used to the maximum by exporters in general

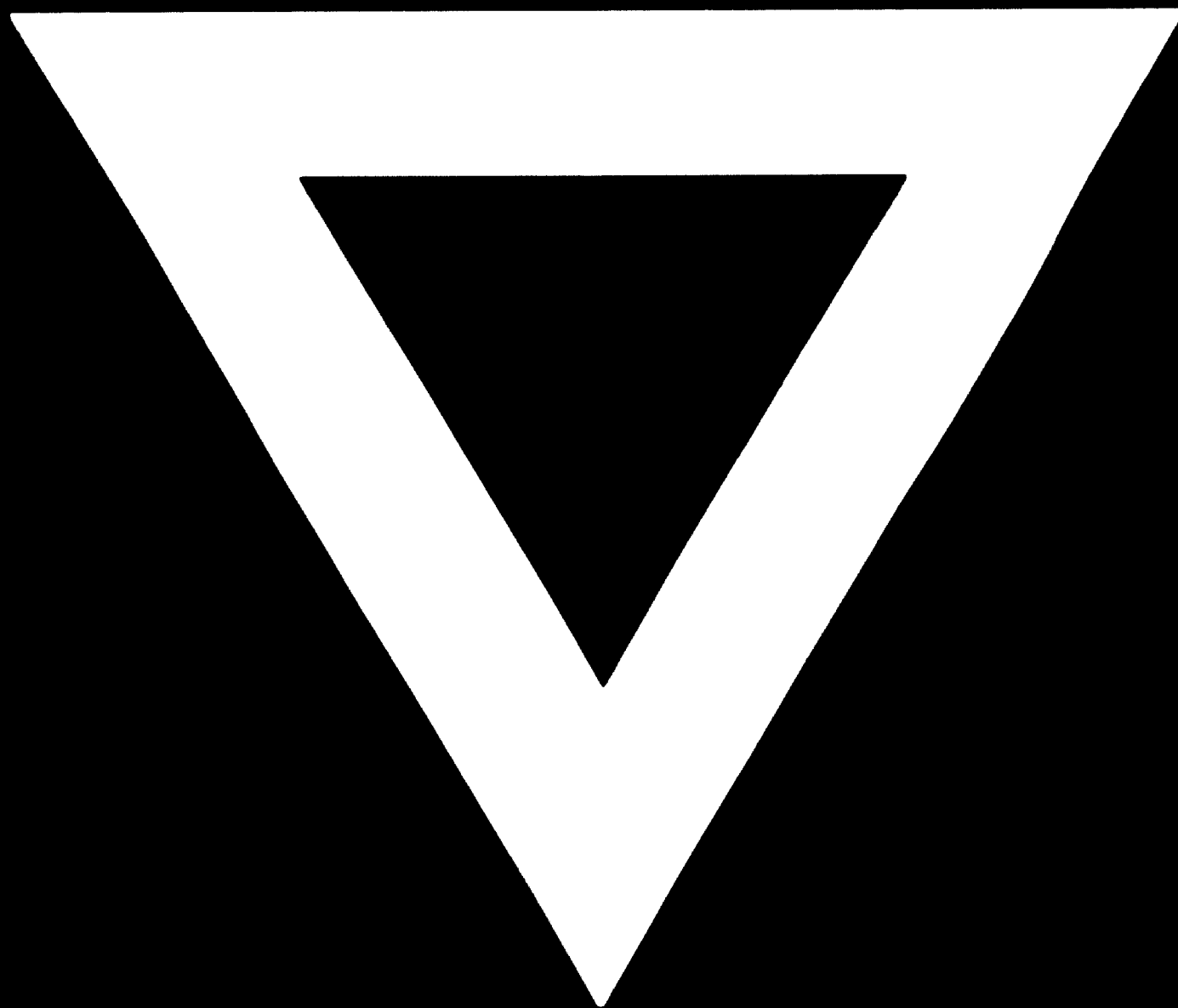
Appointment at CEP of an assistant responsible for improving the dispatching process; that is, an assistant who could continue the work, that the expert could only begin, of investigating the current situation in certain enterprises and pointing out what must be done

Establishment of a library on matters relating to shipping and packaging and of a collection of packaging samples

This packaging assistant would have to deal with conditions for the use of containers, palletized loading units and means of protection against pressure, shock and corrosion. He would be expected to carry out the duties described in these comments and recommendations.



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