OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

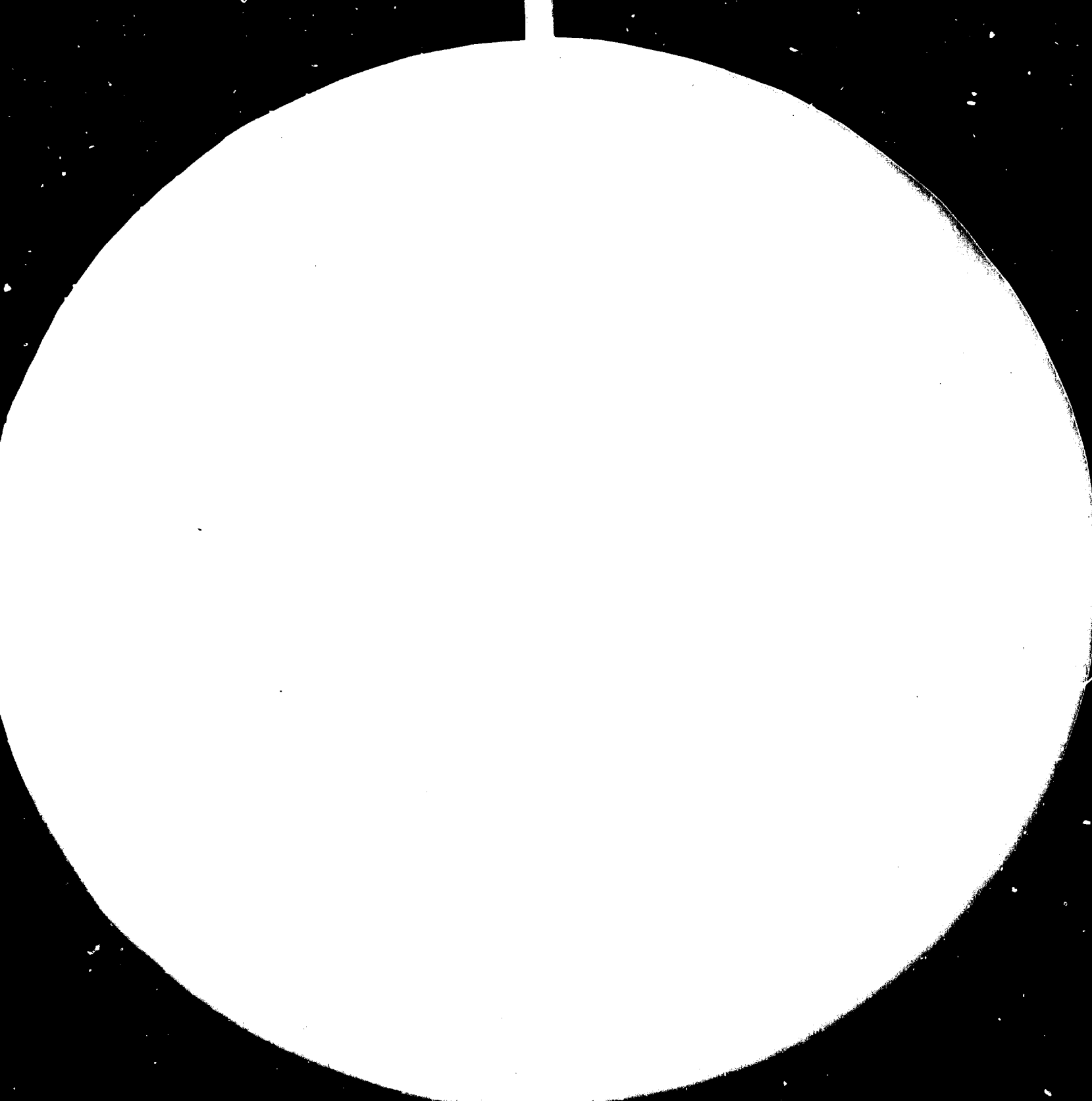
FAIR USE POLICY

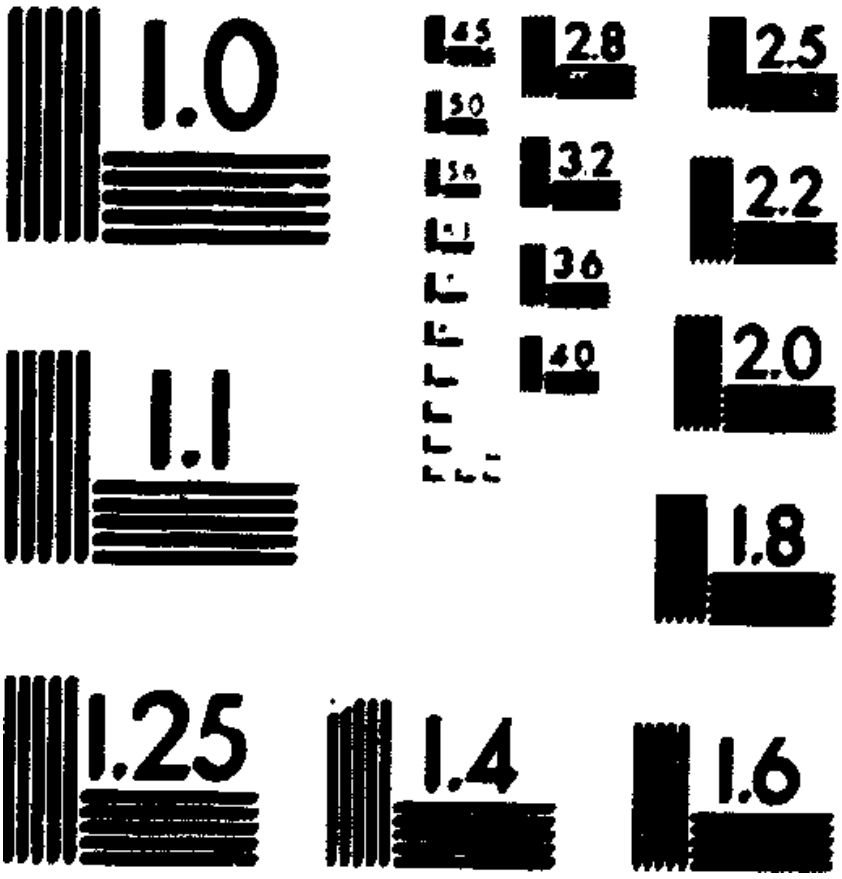
CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org





RESTRICTED

14053

DP/ID/SER.A/544
3 October 1984
ENGLISH/SPANISH

RESEARCH AND DEVELOPMENT IN FOOD PROCESSING AND PACKAGING TECHNOLOGY. PHASE II

DP/MEX/82/010
MEXICO

Technical report: Production of Metal Containers*

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 C. Warren Parkinson,
Consultant in the Production of Metal Containers

United Nations Industrial Development Organization
Vienna

2879

* This document has been reproduced without formal editing.

V.84-91853

CONTENT

INTRODUCTION.

The present assignment was carried out in one month from May 12th, 1934 to June 11th, 1984.

I would like to thank LANFI for providing the facilities to carry out the brief and express my appreciation of the help given by members of the staff.

Overall statistics beyond 1981 or 1982 have not been available so that the information has had to be obtained from the can-makers, their suppliers and customers and trade associations, to all of whom I am indebted.

This report, being a follow - on of the more complete work done in 1980/1981, needs to be read with the earlier one (DP/MEX/78/011/11-09/31.7.E). DP/ID/SER.A/290.

1.- BACKGROUND TO ASSIGNMENT

The original project was designed to assist the Government in the definition of a national packing consumption and manufacture policy; in the elaboration of integrated guidelines, regulations and incentives for the development of the packing manufacturer industries according to the main national needs and priorities; and in the rationalizatien of the packaging machinery utilized in the country for economic planning purposes.

The original project was submitted for a thorough revision in the light of the related priorities within the present Government programme, namely: effective substitution of imports, elimination of non-indispensable imports, consolidation of an export industrial capacity, development of technology in the priority sectors and rationalization of the production activity.

The revised project is aimed at providing the Government with basic working elements and specialized advice for the elaboration of an appropiate policy for the development of the packaging industries in the light of the actual economic conjuncture of the country.

The consultant was assigned to the Director General of Food and Consumer Goods Industries of SECOFIN and in the field of metal containers was asked to:

1.- Get acquainted with the existing study on the short and medium term forecast for the consumption of packaging in the country, as well as with the reports of former experts who have recently carried out missions related to the technical field of the present one;

2.- Get acquainted with the main principles and priorities of the Government's economic policy and analyse their influence or effect on the utilization and manufacture of metal containers in the country;

3.- Visit some important metal containers user and manufacturer industries, to evaluate and discuss the present conjuncture of metal packaging in the country and define the main parameters which have a definitive influence of the country's self - sufficiency in metal containers;

4.- Elaborate and propose a programme of technical, economic and legal measures for the promotion and guidance of the development of the country's metal container manufacturer industry in the light of the Government's economic policy;

5.- Give ad hoc advice on matters within the technical field of the mission whenever specifically requested by the national counterparts.

These terms of reference have been elaborated on by the Director of Food and Consumer Goods Industries in the light of the country's present needs.

2. FINDINGS AND RECOMMENDATIONS

The can manufacturing industry is efficient and is using plant comparable with that used in the U.S.A. and Western Europe. The one problem is that of over-capacity due to too much 2 piece equipment being installed and the high peso price of both imported and, even more so, locally made tin-plate, leading to severely reduced demand. Some companies are running at only 50 % capacity, probably some others at less. One company has closed down.

The fall in demand since 1980 is of the order of 35 % and all outlets have dropped with the exception of fish, which has made a little progress, and crown corks and caps which have benefitted from the substitution of metal by glass.

As consequence total tin-plate consumption including some 10,000 tons per year for other purposes, has dropped from some 425,000 tons in 1980 to approximately 290,000 tons in 1983. The figures for 1984 is likely to be 280/290,000 tons.

The big technological gap facing the industry is the lack of supply of indigenous tin-plate and aluminium and the poor quality of plate supplied by AHMSA. The hopes of improving supplies of metal in the medium term lie with Alcan Aluminium developing rolled aluminium suitable for beer can bodies and HYLSA finding ways of increasing tin-plate production.

Market forces have already caused major steps in the substitution of other packaging materials for metal. In my opinion it is generally better to let market forces work on the problem than for Government to interfere in too detailed a manner.

Indeed, there is a serious risk of the collapse of large parts of the can manufacturing industry and forcing more substitution than strictly dictated by market needs could precipitate a very serious situation with implications of loss of capital and jobs on an unacceptable scale.

Canning practices in many instances are not up to the standards of the U.S.A. and Western Europe. These need correcting by legislation and by a more dynamic approach to Quality Control.

The main bar to exports appears to be the high cost of products produced in Mexico. For instance Mexican tin-plate is now far more expensive than imported plate. Again, affecting exports of canned tuna, the price in Mexico is considerably higher than in the U.S.A. The best action for galvanising exports of canned goods would be by floating the peso.

RECOMMENDATIONS

1) That Government provide any help that may be necessary to any proposals HYLSA may propose for expanding its tinplate production.

2) That Government, having wisely lifted controls on the price of Mexican tin-plate, request AHMSA to expand production of tin-plate and to pay particular attention to quality under the admittedly difficult circumstances under which it is working.

3) That Government treat as urgent the need for a new strip mill and tin-plate complex as envisaged in Part III of the steel development plan just as soon as the daunting costs can be contemplated.

4) That Government give all support that may be needed in encouraging Alcan Aluminium to roll beer can aluminium sheet and to expand production.

5) That Government recognise the serious state in which the can-making industry finds itself and refrains from pushing the substitution of metal packaging further than necessary tinplate import restrictions and market forces are dictating and bearing in mind the vast space capacity that exists, does nothing to encourage further installations of can-making capacity for state or para-state industries.

6) That Government consider sympathetically the request of the Guadalajara can-makers to reduce or eliminate the special tax on non returnable containers. A reduction in this tax is most unlikely to increase the off-take of beer cans but might give some small profit relief to the can-makers.

7) That LANFI be asked to experiment on the use of large glass bottles with twist-off or screw caps for the chili in vinegar market. Experiments should be carried out with two of the canners - say Herdez and La Costeña - and cover integrity of the pack, shelf life and transport problems (particularly for export).

8) That Government issue regulations for maximum lead contamination in food and drink, covering metal containers under standard NOM-EE-11-S. It is suggested a figure of 3 parts per million be set from January 1st, 1985, 2 ppm from January 1st, 1987 and 1 ppm from January 1st, 1989.

9) That Government introduce legislation governing canning practice. Refer ANNEX I.

10) That Government abolish price controls on canned products. This recommendation is made bearing in mind that cheap milk products for the poor and for children would still be available from LICONSA.

11) That Government review the background help given to exporters through consular commercial attachés particularly in the U. S. A.

12) That Government invite the Asociación Nacional de Empacadores de Productos Alimenticios to nominate say four of its canning members who are already active in the export market to join a working party, chaired by the Director of Food and Consumer Goods Industries, dedicated to ironing out any problems in the export field. I would suggest the committee meet not more frequently than every two months and is abandonned after a year if it is not achieving anything.

One immediate item for discussion could be an offer to finance the market survey discussed in Section 7.

13) That LANFI be asked to experiment on the lead content found in fresh fish.

14) That Government encourage jointventures in the canning field.

15) That Government offer every possible help to the beer-can manufacturers to export beer cans to the U.S.A. It is assumed that the duty on importing the raw material is paid back when the cans are exported. Favourable freight rates for the large volume of trade involved could be investigated. There may be other forms of relief available.

3. STATE OF THE CAN MANUFACTURING INDUSTRY

This subject was discussed in the earlier report (p 55) and the findings were that the can making industry in Mexico is well up to world standards.

Since then there has been a dramatic increase in the number of 2 piece beer/soft drink lines to nine. Sadly as a result of lower demand and of the high price and restricted imports of tinplate, this expensive modern equipment is running at probably less than 30 % of its capacity.

A great deal of three - piece capacity suitable for food canning and general line uses has been released by the introduction of 2 piece lines so that there is now much spare capacity in this field also.

On the international scene, apart from the introduction of 2 piece beer and soft drink can lines, the only other important development is the introduction of the welded side - seam soudronic type body-maker. This eliminates the use of solder and gives an extremely strong seam for pressurised containers such as aerosols. There were many of these lines installed in Mexico in 1981 and a number more have been added since then.

There is a movement to use these welded seam lines for processed food cans. World - wide there is a surplus of soldered side seam lines as in Mexico and this factor is delaying the change-over. However, it will be many years before the soldered side seam can ceases to be used for processed food and meanwhile any new lines installed should be of the welded type.

In recent years there has also been a movement to use solid-drawn seamless cans for the smaller sizes of food cans. These are expensive as the sides of the can have to be thick enough to withstand processing. In some markets these cans are being used for processed baby food and some fish packs, but their high cost has limited the areas in which they can be used. Such solid drawn cans are available in Mexico and are used for some of the tuna pack.

Operations are generally efficient and the way the industry copes with the poor tinplate supplied by AHMSA is ingenious and commendable.

Whenever able to do so, the industry uses the most efficient and economic type of material - tin free steel, double reduced plate, lighter weights of plate and tin-coatings - but these economic variations are not generally available from Mexican tin-plate producers so that these savings can only be obtained with imported material.

There remains the specific question of the possibility of Mexican engineering companies undertaking the manufacture of tin-box manufacturing equipment in the future. As can-making technology has advanced the types of machines used have become more and more specialised. Indeed demand for traditional can - making machinery has almost disappeared and present demand has crystallized into beer can-making lines and soudronic lines. I cannot see Mexican firms tackling either of these. The demand for high speed presses is also at a low ebb and even when demand begins to pick up, there would not be enough demand in Mexico to justify local manufacture. The same applies to high speed conveyor and transfer equipment.

Local manufacture of can-making machinery is not a feasible proposition.

4. THE CAN MARKET 1983/1984

With the necessity to license tinplate imports for balance of payment reasons, the very high price of imported tinplate in peso terms and the even higher price of AHMSA tinplate, the price of the can has now risen to a level which is pricing it out of the market.

This price factor, combined with reduced purchasing power in the country, has resulted in a drop of some 35 % in the activity of the industry. In some cases the drop has been even greater. There is no sign of overall improvement in 1984. Indeed demand is still falling and the industry, bled also by excessive abortive expenditure on 2 piece beer can lines, is in a parlous state. One large company has already closed, another factory appears on the point of closing and employment has suffered badly in the others.

The extent of the damage is shown by the attached table showing the drop in manufacturing activity since 1980 under various types of can. Whilst the quantities of cans shown under each category can only be approximate, the overall picture is undoubtedly no exaggeration of the present reduced demand for cans.

In addition attached is a further table showing the amounts of tinplate used for each outlet. These again must be approximate but may be useful if further cuts in the imports of tinplate have to be made.

The following notes on the state of demand in the various industries served, complete the picture:

TOTAL MARKET FOR CANS

	1980	1983	1984
SANITARY CANS (OTHER THAN FISH)	900 m.	700 m.	700 m.
FISH CANS	291 m.	340 m.	390 m.
BEER & SOFT DRINKS	1,718 m.	860 m.	500 m.
NECTARS AND FRUIT JUICES	560 m.	220 m.	180 m.
MILK CANS	607 m.	483 m.	488 m.
AEROSOLS	67 m.	68 m.	64 m.
OTHER GENERAL LINE CANS	375 m.	216 m.	200 m.
T O T A L	4,518 m.	2,887 m.	2,522 m.

TINPLATE FOR CANS AND CLOSURES

	1980		1983		1984	
	QUANTITY (000,000's)	TONNAGE	QUANTITY (000,000's)	TONNAGE	QUANTITY (000,000's)	TONNAGE
SANITARY CANS	900	70,000	700	53,000	700	53,000
FISH CANS	291	23,000	340	27,000	390	31,000
BEER & SOFT DRINKS (*)	1,718	103,000	860	19,500	500	11,250
FRUIT JUICES	560	34,500	220	13,750	180	11,000
MILK CANS	607	59,000	483	47,250	488	47,750
AEROSOLS	67	7,000	68	7,000	64	6,500
GENERAL LINE	375	40,000	216	26,000	200	24,000
TOTAL CANS	4,518	336,500	2,887	193,500	2,522	184,500
CROWN CORK AND CAPS		80,000		90,000		95,000
TOTAL PACKAGING		416,500		283,500		279,500

(*) Also, Beer cans used some 13,500 tons Aluminium in 1983.
The corresponding figure in 1984 is estimated at 8,250 tons.

a) SANITARY CANS

The fall in demand of over 20 % is general among all the products packed. The tomato pack has kept up better than most due to the export trade from Sinaloa, but even here a move to aseptic packing in drums has reduced demand for large A 10 sized cans.

One deterrent to any increase in packing activity by the canners is price control of the finished pack. Due to price control, the price the canners can offer the fruit grower for his produce is insufficient. As a consequence the market for fresh fruit is preferred by the grower and he is reducing the size of some crops. This applies particularly to peaches, apricots, apples and pears which some canners find hard to obtain.

b) FISH

The canning of tuna has increased since 1980 in fits and starts, Whilst 1981 and 1982 were good years, the pack dropped in 1983 to figures not all that much greater than 1980.

This drop is attributed to price controls which made packing unprofitable, but the recent relaxation in the price is expected to produce a large increase in the number of cans packed in 1984.

The export market to the U.S.A. has not developed as well as expected due to Mexican prices for canned tuna being higher than U.S. prices. Consequently the U.S. market takes Mexican canned tuna only when U.S. supplies are short.

The size of the sardine pack has made minimal progress since 1980. This is in part due to the unpredictable habits of the sardine shoals which have migrated from the ocean into the gulf. Again price control of the packed sardines is blamed for causing catches to be diverted from the canneries to the fish meal market, where prices are uncontrolled and higher. This seems a waste of a good food product.

In consequence, there is abundant can-making capacity for fish cans - capacity that was installed in 1981 to meet the large expansion which has not materialised.

c) BEER AND SOFT DRINKS

These two products are taken together as the cans are the same. In fact from the can-manufacturers' point of view the soft drink market is now very small and the beer market is the one that matters.

Since 1981, seven high speed 2 piece lines have been installed bringing the total up to 9 of which 5 are using tinplate and four aluminium. Working continental shifts, as they are designed to do, this represents total 2 piece capacity of approximately 3,600,000,000 cans per year and investment of some hundred million U. S. dollars. Demand in 1983 was some 800 m. cans and is likely to drop further to 600 m. or less in 1984. As a result requirements of metal (mostly imported) have dropped from 23,660 tons of aluminium in 1982 to 8000/9000 tons this year. Tinplate requirements for beer cans in 1984 seems likely to be approximately 10,000 tons (N.B. the cost of metal per can is approximately the same. The heavier weight of tinplate per can is counterbalanced by the higher cost per ton of aluminium).

The seriousness of the position needs no emphasising.

The causes of the catastrophic drop in demand for beer cans are the high price of tinplate, the 21.5 % tax on non - returnable containers, the overall drop in the demand for beer and the financial state of the brewing industry.

The position in Guadalajara is particularly serious. There are five 2 piece can lines in the town split among three companies. A copy of the representation made to the Governor of Jalisco and the Finance Minister is attached.

So - the very necessary reduction in tinplate and aluminium imports has been achieved but at a terrible cost to the beer - can manufacturers.

Cans have also priced themselves out of the soft - drink market. The use of returnable bottles is increasing at the expense of the can and sales to this market in 1984 are unlikely to exceed 50 m. cans.

To end on a slightly better note, one manufacturer has arranged to export the production of one line to the U.S. for 1985 and another manufacturer is making similar arrangements. These steps should provide a little relief for the can manufacturers - but the prices obtained will be barely profitable.

BEER CONSUMPTION IN MEXICO

	1980 (hectolitres)	1981 (hectolitres)	1982 (hectolitres)	1983 (hectolitres)	1984 (hectolitres)
CONSUMPTION IN MEXICO	26.0 m.	28.1 m.	27.6 m.	23.6 m	5.8 m. (3 months)
EXPORTS	.386 m.	.308 m.	.403 m.	.445 m.	.146 m.
PACKED IN CANS	5.57 m.	6.12 m.	5.95 m.	2.76 m.	.49 m.
	Units	Units	Units	Units	Units
NO. OF CANS	1,638 m.	1,814 m.	1,764 m.	818 m.	145 m.
PERCENTAGE OF PACK IN CANS	21.4 %	21.8 %	21.5 %	11.7 %	8.4 %

NUMBER OF TWO PIECE BEER CAN LINES INSTALLED

		TINPLATE	ALUMINIUM	TOTAL
TOLUCA		2	0	2
GUADALAJARA	(*)	2	3	5
ENSENADA		1	1	2
		5	4	9

(*) One of the tinplate lines may turnover to aluminium.

d) NECTARS AND FRUIT JUICES

The big drop in this category is due to the high cost of cans. There has been considerable substitution by bottles.

e) MILK CANS

Whilst the drop in demand for milk products has been most pronounced, the position seems to have stabilised and there could be increased off-take in 1984.

f) AEROSOLS

Up to 1982 this was a steadily expanding outlet for cans but high prices have severely reversed the trend.

g) GENERAL LINE CANS

The paint and enamel markets are overall some 10 % down in 1980 and it appears that 1984 could see a further drop of 10 %. But in addition to the fall in the total market, the share taken by the can has dropped. Plastic containers are replacing cans at a fast rate. Consequently, the market for paint and varnish is down by almost half.

In the case of motoroil also substitution of cans by plastic containers and composites has accelerated with the high price of tins.

h) CLOSURES

The market for crown corks has continued to increase helped by the turn-over to bottles by the breweries.

Caps also have made some progress due at least in part to substitution of cans.

5. THE PROBLEMS OF RAW MATERIAL SUPPLY

Attached are figures showing the apparent consumption of tinplate and T.F.S. in Mexico. Imports have dropped from 305,000 tons in 1980 to 82,000 tons in the first nine months of 1983 indicating a total figure for the year of same 110.000 tons. However, it seems likely that 1983 saw a considerable drop in can-manufacturer's stock so actual consumption was probably some 290,000 tons instead of the 250,000 shown. This would indicate total requirements of local and imported metal for 1984 of perhaps 280,000. If AHMSA and HYLSA produce 130,000 tons this indicates import requirements of 150,000 which I understand is the figure allowed for by Government of Mexico.

In fact the high price of tinplate, both imported and local have gone a longway to achieving the Government's requirement of reducing the demand for imported plate.

The supreme need for Mexico is the plentiful provision of reasonably priced Mexican - made tinplate to international standards of quality and choice (double-reduced, tin free steel, lower gauges and greater choice of tin-coating).

This can only be achieved by the installation of new hotroll coil facilities and cold-reduction tinplate mills as envisaged in Part III of the Steel Development Plan. This is many years away.

We are therefore left with possibilities of marginally increased productions at AHMSA and/or HYLSA. It would seem that AHMSA might find it possible to produce more now that demand for other steel products has fallen. A steady 180,000 tons a year of improved quality tin - plate from AHMSA would be of great help.

There is also the problem of the high cost to the can - makers of AHMSA plate. It is now far higher than the price of imported plate. Concentration by AHMSA on improving productivity and the quantity of tinplate rolled could well improve quality and efficiency, but it is recognized that their venerable plant makes the production of first quality tin plate almost impossible.

It is understood that studies have been carried out with a view to increasing tinplate production at HYLSA by a combination of balancing equipment and the installation of cold rolling equipment with the extra requirements of hot rolled coil being supplied from local sources. Any increase of tin plate supplies in this way would give some relief to the can - manufacturers.

A L U M I N I U M

Many of the outlets for aluminium foil and steel such as diaphragms and ROPP caps are already catered for by local manufacture. But the biggest outlet for aluminium sheet is for aluminium beer cans. The tolerances for beer can body sheet are very demanding and so far it has all been imported. It is understood that a local manufacturer expects to roll 2,000/3,000 tons of this sheet this year. This is good news and the company concerned should be encouraged to increase production if at all possible.

For the long term the installation of a new aluminium rolling mill producing say 50,000 tons of sheet a year would resolve the problem of supplies of material for the beer can manufacturers, but the present state of the market makes this an impossible proposition to contemplate at present.

CONSUMPTION OF TINPLATE AND TIN FREE STEEL IN MEXICO

IN TONS

	1978	1979	1980	1981	1982	1983	1984
Tinplate made in Mexico	183,000	175,000	142,000	99,000	127,000	139,000	43,000 (4 months)
Imported Tinplate			234,000	210,000	163,000	49,000 (9 months)	N/A
Imported T.F.S.			71,000	57,000	68,000	33,000 (9 months)	N/A
TOTAL IMPORTS	138,000	164,000	305,000	267,000	231,000	82,000 (9 months)	
TOTAL SUPPLY OF TINPLATE AND T.F.S.	321,000	339,000	447,000	366,000	358,000	250,000 (*)	

(*) Estimated from import figures for January/September 1983.

NB 1) The total supply figures include a small amount of tinplate exported - approximately 2,000 tons p.a.

2) Of the total supply of tinplate some 10,000 tons p.a. are used for non packaging purposes.

6. SUBSTITUTION OF METAL BY OTHER PACKAGING MATERIALS

In general terms substitution of tinplate by other materials is already taking place at a fast rate, brought on by the prohibitive cost of tin plate. The process in the case of beer and soft drinks has been dealt with exhaustively. The number of cans used for fruit juices and nectars has dropped over two years by some 60%. However much of this drop is due to the changeover to glass.

In the case of motor oil, very little tinplate is now used having been replaced by plastic and composite (board body) containers. For paint, the small tins are being replaced by a plastic container and trials of plastic containers for the larger 4/5 litre size are taking place.

In effect the market is already forcing substitution for those products where there exists a suitable alternative packaging material.

Let us consider the remaining products

SANITARY CANS

Some high acid products can be packed in glass containers with white caps - at all events in the smaller sizes. The shelf life is limited depending on the acidity and the sugar content. Distribution costs are high, there are breakage problems and the presentation of the fruit in the bottle needs care. Nevertheless there is already a degree of movement towards glass for some products which can safely be packed in glass - for example asparagus.

Of these packs still in tinplate and with potential for moving over to glass the most obvious example is the chili in vinegar pack. This pack is really too corrosive for tinplate, whether internally varnished or not. The shelf life is limited and the varnish is apt to strip into the contents. Lead may be picked up by the acid. The product is highly acid and self - preserving and should be most appropiately packed in glass with a screw - cap or perhaps a twist off cap. Large quantities of this product are packed in large A 10 cans and use much tinplate. The possibility of LANFI carrying out test on this pack in conjunction with some of the large packers to test for shelf - life, effect of light on the product, handling and distribution problems has been discussed with Dr. Santayana.

Substitution of tinplate for low-acid packs-vegetables, fish, meat products - is much more difficult. The use of retort pouches is discussed in my earlier report (p 76). The hazards in its use particularly with low-acid products are considerable. Bearing in mind the present unsatisfactory canning practices in some canneries and the points made under the specific subject of low acid canning, a major effort to turn over to retort pouches can not be recommended.

MILK

For low fat powders, plastic is already in use. Full fat milk powders need to be gas packed and the tinplate container is the only pack which at present gives a satisfactory shelf-life performance. Condensed and evaporated milk will also continue to require cans.

AEROSOLS

Plastic coated glass containers are an alternative to metal. However this is some thing of a convenience market rather than a basic need, and economics are already reducing the use of aerosols and may be left to continue to do so.

CROWN CORKS AND CLOSURES

Although the total tinplate tonnage for this category is high, each closure represents a saving on tinplate in so far as the main container is glass. Crown corks and closures such as the Twist-off cap are much more sophisticated products than they appear and there is no alternative to metal.

7. DEVELOPMENT OF EXPORTS

a) GENERAL

Perhaps going outside the brief, the best possible encouragement to manufacturers to export is to allow the peso to float freely. A controlled exchange rate is by definition holding the value of the peso higher than it should be on economic grounds and making exports more difficult. The other effect of controlling the rate is to make imports cheaper and therefore suck them in. A floating exchange rate might be particularly beneficial to Mexico as its main export, oil, is priced in dollars. Obviously, at the same time rigid control of the money supply is essential.

Secondly, price control of canned foods, by limiting supplies of raw material to the canner and in some cases leading to reductions in acreage under cultivation must hinder attempts to develope export markets. Removal of price control would also encourage competition among the canners and any higher profits make it easier to spend money on developing export markets. Also the effect of price control is to discourage the quality product and the quality canner, who should be leading the export effort.

Manufacturers have to have the urge to export and the best spur is an inability to sell easily in their home market. In the long run, export development can only be done by the industries concerned. Governments contribution is to provide a favourable economic environment, encouragement and background help in the export markets concerned through consular channels.

To build up an export market, the product must be right,- in the case of canned goods, well presented and matched to local tastes - the supplier must study his market and set up a suitable distribution net work. The market must be serve just as efficiently - indeed more so - as the home market. Any approach based on an opportunistic export of an odd consignment during a glut will not get very far.

The obvious market to be tackled is the U. S. A. not only because of size but also because the experience gained in marketing into the U. S. A. will make other markets so much easier to penetrate.

For the development of new markets and bearing in mind the marketing problems, joint ventures with foreign firms are to be encouraged. The foreign firm should have knowledge of the needs of export markets and their canning expertise should help to raise quality standards in Mexico. I would suggest an absolute minimum of obstacles of a financial or any other nature should be put up when such opportunities arise and every help and encouragement given. Such arrangements to help develope the fish canning industry and in the field of canned fruits would be invaluable towards developing exports.

On specific products I can see no possibility of developing exports of milk products (in which Mexico is deficient) or of aerosols or General Line products except perhaps in very small quantities into Central American countries.

Canned fruit and vegetables are exported already but the volume is small. The bar to greater volumes is the price of Mexican packs and the limited supply or raw materials as described elsewhere. The products with good potential for expanding exports are asparagus (to EEC countries), chili specialities and one or two tropical fruits such as mangoes.

Fruit juice packs are already being exported to the U.S.A. and the very big drop in demand in Mexico is forcing the packers to make a big effort on the export front.

Fish exports really depend on tuna and here the price factor is crucial.

Small but increasing amounts of beer are being exported but the main effort of the beer can manufacturers is now towards the exporting of empty cans. The trade is quite capable of extending these exports. Any help they ask of the Government should be given sympathetic treatment.

One area in which Government of Mexico could give help to developing exports of canned goods is by the commissioning of market surveys. These should only be undertaken if the canners concerned want it and appreciate its possible value to them. Otherwise it will be money wasted. Two possible markets spring to mind - tropical fruits and juices to the North East part of U. S. A. and South East Canada and the market for bottled and canned asparagus in E.E.C. countries. Both offer potential. A specimen brief for the market survey people covering the first suggestion is attached. For the asparagus market in the E.E.C. preliminary desk research would indicate if a full survey is called for.

SURVEY INTO THE POSSIBILITIES OF DEVELOPING A MARKET FOR MEXICAN CANNED TROPICAL FRUITS AND JUICES IN THE N.E. OF THE UNITED STATES OF AMERICA AND S.E. CANADA.

The aim of the survey is to evaluate the possibility of developing a market in the New England states of the United States and that part of Canada lying between Montreal and Toronto for Mexican canned tropical fruits and fruit juices.

In particular the survey should cover:

a) The present size and value of this market, distribution methods and suppliers and the sizes of cans the market prefers.

b) The acceptability of Mexican packs of these products now being canned and the adjustments, if any, to suit local tastes.

c) The price structure and the competitiveness of Mexican canned fruits.

d) Advice on methods of marketing the products and preferred distribution arrangements.

It will be necessary for the survey to familiarise itself with the relevant products of the Mexican canning and fruit juice producers.

It is envisaged that the products covered should be canned mangoes, guavas, avocadoes and peaches (not the cling type) and juices of papaya, melon, coconut, pineapple and combinations of these. This list is not intended to limit the scope of the survey, but to pin-point the most probably acceptable products.

b) LEAD CONTAMINATION

There was an appendix on lead contamination in my earlier report.

Since then beer and soft drinks have changed over to the use of two piece cans which are perfectly safe from the lead pick-up point of view.

In addition LANFI have carried out some tests on the presence of lead in fish packs, canned vegetable packs and in fruit juices. The exact findings are with LANFI. A summary is attached. It has to be said that these lead figures, while not acceptable, are less alarming than the writer expected when recommending the tests should be carried out.

In formulating a policy the following points need bearing in mind:

a) These figures compared with maximum limits laid down by the F. D. A. of 1 ppm and in the U. K. of 1 ppm for general products and 0.4 ppm for baby foods.

b) Some manufacturers maintain that as there is no maximum figure laid down in Mexico, there is no problem! However, most manufacturers are very much aware of the problem and some U. S. companies and some Mexican companies exporting their goods work strict by to F. D. A. limits.

c) The pressure of Governments to tackle the problem of lead in food has a certain emotional content which has been fanned by consumer groups. Medical opinion is united in condemning lead pollution in food as being most dangerous particularly for babies. Nevertheless, presumably what are now regarded as dangerous by high lead levels have been ingested by consumers in all countries for some 60 years prior to the problem being recognised. Some poorer countries consider that a little intake of lead may be preferable to an empty stomach.

d) Medical opinion indicates that high lead levels are particularly dangerous for children. There have been suggestions of high lead levels in some milk packed in cans sealed by soldering a vent hole in the end. The introduction of minimum lead levels might well lead to this type of can being eradicated from the market. Such an outcome would be no loss.

e) The results of lead levels in fish packs show no significant difference between packs filled in Mexico and those imported. Further, there is no great difference in the lead levels in fish packed in 3 piece cans (with tin/lead solder) and those packed in a 2 piece cans (no lead in the can). This suggests that at least some of the lead may come from the fish itself.

f) Any goods exported to developed countries must be controlled by the manufacturer to meet the maximum of 1 ppm laid down.

g) To avoid dislocation in the industries concerned permitted lead levels should be reduced steadily over a period to F. D. A. standards rather than introduced at the 1 ppm level immediately. This will allow industry to adjust steadily.

The firm recommendation to Government of Mexico is that a maximum permitted lead level of 3 ppm should be introduced on January 1st, 1985. At the same time notice should be given that the permitted level will be reduced to 2 ppm on January 1st, 1987 and to 1 ppm on January 1st, 1989.

RESULTS OF EXPERIMENTS ON THE PRESENCE OF LEAD IN CANNED FOODS AND JUICES

The samples were bought in shops indicating that they had been packed for 6/12 months.

PRODUCT	NUMBER OF CANS IN SAMPLE	LEAD READINGS IN PARTS PER MILLION		
		MEAN	HIGHEST	LOWEST
CANNED FISH (ALL)	17	2.4	4.2	1.1.
CANNED FISH IN SEAMLESS CANS	8	2.3	3.8	1.1
CANNED VEGETALES	36	1.5	3.7	0.4
CANNED FRUIT JUICES	13	0.9	1.6	0.6

c) CANNING OF LOW ACID FOOD

This matter was covered in the writer's earlier report (p 87) and there is no reason to think that the unsatisfactory position has improved.

The draft regulations in the earlier report have now become law in the U. K. and similar legislation applies in the U. S. and most Western European countries. Attached is an advisory memorandum on the subject and these regulations would apply to any cannery in Mexico wishing to export to the countries concerned.

The earlier recommendation that these standards should be insisted on in Mexico is repeated in the recommendations in this report.

d) DYNAMIC QUALITY CONTROL

This subject is so important that I am attaching the observation on it made in the earlier report.

Courses should be held under the auspices of LANFI both here in Mexico City and at suitable places on the two coasts for the benefit of the fish canners. Some statistical background will need to be given but this need not be too mathematical and the courses should be aimed at managers and line supervisors as much as at quality controllers.

ANNEX I

ADVISORY MEMORANDUM ON HYGIENIC PRODUCTION OF LOW ACID CANNED FOOD

Introduction

This Advisory Memorandum is not intended to be a comprehensive guide to canning hygiene but summarises the points which are felt to be essential to prevent a hazard to the consumer. These points apply to the canning of all low acid canned foods.

The canning of meat and meat products intended for export to the United Kingdom is subject to more detailed specific requirements which are laid down in the "Explanatory Memorandum - Importation of Meat Products into the United Kingdom" distributed by the Ministry of Agriculture, Fisheries and Food to which reference should be made before export of these products to the United Kingdom is contemplated. The UK Explanatory Memorandum is made available to the Central Veterinary Authorities of all countries approved to export meat and meat products to the United Kingdom.

1. All canned foods that are intended to be shelf stable should be subjected to a heat process which will ensure destruction of Clostridium botulinum unless they are so formulated that the growth of Clostridium botulinum is prevented. The scheduled heat process should be established only by competent and properly trained persons using acceptable scientific methods. All new products or changes in the production process must be fully evaluated as to their effect on the adequacy of the process before commercial production is undertaken.

2. The details of the scheduled processes and the heat penetration data should be kept and be readily available for inspection for a minimum period of 3 years from the date of the last production to which they relate.

3. The Fo value (heat treatment used) of any scheduled process involving hot filling of cans does, to a large extent, depend on the maintenance of the temperature of the fill at the levels specified in the scheduled process. The fill temperature should be checked at regular intervals during production and the record should be kept and should be readily available.

4. If the cans are not given a full Botulinum cook or are not otherwise shelf stable at ambient temperature, conditions of storage should be clearly marked on each can and on any packaging that is used. The maximum temperature of storage should be given precisely.

5. When reliance is placed on acidity to prevent growth of Clostridum botulinum, the fill must be checked regularly, to ensure that the acidity is satisfactory.

6. All cans should be marked with a code enabling the identification of, at least, the place and date of production. The symbol used for this code should be easily legible and should be embossed or otherwise indelibly marked on the metal of the can.

7. Empty cans should be stored and handled so as to prevent their becoming contaminated or damaged in a manner which may affect proper seam formation.

8. Before filling, cans should be cleaned mechanically in an inverted position by a suitable air jet or water jet.

9. Can seaming processes should be kept under constant supervision. The efficiency of can seaming should be checked before processing begins and at intervals during production, depending on the output and the can manufacturer's recommendation. During production, the cans for seam checking should be filled cans taken from all seaming heads on the actual production line and the examination should be carried out on the cannery site. Seam checks should be carried out on the manufacturer's end and on the canner's end of the can. They should include the following measurements:-

Seam thickness, seam length, countersink depth, percentage overlap and free space

The can manufacturer's recommendations should be observed as to the points on the can where measurements should be made and as to the limits to be observed. Seams should be stripped and examined visually for an abnormal degree of wrinkling of the cover hook. Records of measurements should be kept and should be readily available for inspection for a minimum period of 3 years from the date of production.

10. All retorts should be fitted with direct reading (indicating) thermometers and with automatic time and temperature recording devices. These should all be checked for accuracy at least twice a year. Time and temperature records should be kept, and should be readily available for inspection for a minimum period of 3 years from the date of production.

11. A satisfactory system, such as heat sensitive tape or a colour change device, should be used with baskets of cans to indicate when they have undergone heat processing.

12. Water used for general purposes in the plant, including that used in the making up of products or likely to come into direct contact with the product should be of the following quality:-

a) Coliforms must not be detectable in 100 ml in 95% of the samples taken nor in any two consecutive samples. If coliforms are detected immediate investigations should be undertaken. The water should be sampled at different points in the distribution system within the plant at least once every month. Total aerobic colony counts should also be performed and under most circumstances these should not give values of more than 100 organisms per millilitre after incubation for 5 days at 20°-22°C. However, too much importance should not be attached to an absolute value; it is essential that limits should be established for water in the plant and subsequent variations from these should be investigated immediately. Samples for total aerobic colony counts should be taken at least once a week at different points in the plant.

b) If this standard cannot be maintained in any other way the water should be chlorinated or otherwise adequately treated.

c) The water should not contain toxic chemicals in quantities likely to cause harm to health.

d) It is essential that water used for can cooling should be free from harmful organisms. Even though the can seams are satisfactory, small quantities of water can enter the can during this cooling period. For this reason the can cooling water should be tested for coliform organisms at monthly intervals and it should never be possible to detect coliforms in any samples of 100 ml. It should be shown that the water supply can maintain this standard consistently before the water put into use for can cooling. The total aerobic colony count should be performed at suitable, but at least weekly intervals. A colony count of less than 100 organisms per millilitre after incubation for 5 days at 20-22°C is satisfactory, but any significant variation from the established limits should be investigated immediately. This count cannot be totally relied on to ensure the absence of harmful intestinal organisms so it is essential that coliform tests are performed at least once a month.

e) If it is not certain that the standards can be maintained, cooling water should be chlorinated. The chlorine should be in contact with the water for at least 20 minutes before the cooling water enters the retort. Sufficient chlorine should be added to give a residual free chlorine content of 0.5 ppm in samples of water taken at the exit from the retort or continuous steriliser. It should be measured at least 4 times a day. If the cooling water is re-circulated it is essential to screen or filter the water to remove organic debris before chlorination. Monthly coliform counts should be performed, even if the water is chlorinated.

13. After heat processing, until the cans are both cool and dry, organisms deposited on the outside may gain access to the interior of the can through the double seam, even though this is satisfactorily formed. Therefore after heat processing the can should not be touched by the bare hand until it is cool and dry. Any mechanical handling equipment should be constructed so as to permit easy cleaning. Any can runways in the post processing area which are wet or likely to become wet should be disinfected regularly during production runs by mist spraying with appropriate disinfectants. Can seams should not come into contact with runways. It is advisable that regular microbiological monitoring should be performed in the post processing areas on cans, runways and other can handling equipment. It is important that cross contamination from raw food areas should be avoided; processed cans should be dealt with in an area that is structurally separated from areas where the raw food is stored or prepared and all precautions should be taken to protect processed cans from contact with any raw food, equipment, clothing or staff who have been in contact with raw food.

14. Cans may be cooled with water sprays outside the retort. The spraying areas should be protected from contamination and the water should be of the same standard as water used for cooling cans within the retort.

15. After heat processing cans should not be washed with brushing machines, with or without sawdust. They may, however, be washed with a water spray containing detergent. This water should be of the standard of can cooling water and the spraying area should be protected from contamination. If cans have to be wiped, this should not be done until they are both cool and dry; disposable paper tissues should be used, one for each can.

16. At all times, cans should be handled with care so that they are not damaged. Mechanical handling equipment should be constructed so as not to cause damage to cans.

17. After cooling processed cans should show no evidence of internal positive pressure.

18. A representative sample of heat processed cans with a minimum of one can from each retort load should be subjected to an appropriate incubation test. The time and temperature of the incubation will depend on the type of process that the can has received. After incubation, all unblown incubated cans should be opened and the contents subject to appropriate organoleptic and pH examination. Microbiological examination should, at the very least, be performed on the contents of all cans showing any organoleptic or pH changes, not just on the contents of blown cans. Incubation tests are no substitute for proper control of seam integrity, heat processing and hygienic cooling and handling.

19. Processed cans should not be stored in direct contact with the floor. Pallets, packing material and other material in direct contact with the cans should be clean, dry, of good quality and not liable to transmit contamination to the cans. It is preferable that cans should not come into direct contact with wooden pallets or shelves.

20. For further detailed advice on all aspects of the canning of low acid foods reference should be made to the Codex Alimentarius Code of Hygienic Practice for Low Acid and Acidified Low Acid Canned Foods, to be published by the Secretary of the Joint FAO/WHO Food Standard Programme, Food and Agriculture Organisation of the United, Nations, Rome. (final draft copy should be available from your National Government Codex contact point).

ANNEX II

CAMARA DE LA INDUSTRIA METALICA DE GUADALAJARA

PONENCIA PRESENTADA ANTE EL LIC. JESUS SILVA HERZOG, SECRETARIO DE HACIENDA Y CREDITO PUBLICO, SOBRE EL PLAN PARA LA DEFENSA DE LA PLANTA PRODUCTIVA, EL EMPLEO Y LOS SALARIOS DE LA INDUSTRIA PRODUCTORA DE ENVASES METALICOS PARA BEBIDAS Y ALIMENTOS, DE JALISCO.

1.- Tres de las cinco plantas productoras de latas de 2 piezas para bebidas, así como para alimentos y línea general: Envases de Jalisco, S. A. de C. V., Fábrica Mexicana de Latas, S. A. de C. V. y Envases Generales Continental de México, S. A., están instaladas en Jalisco en el Corredor Industrial del Salto y en la actualidad están trabajando a menos del 25% de su capacidad instalada. Estas plantas cuentan con la tecnología más avanzada a nivel mundial y son consideradas como las más modernas, no sólo en México y en América Latina, sino en todo el mundo.

2.- Durante 1981 y 1982, en esta rama industrial se realizaron inversiones por $20,000 millones de pesos, de los cuales corresponden a Jalisco $12,000 millones de pesos. Para realizar estas inversiones, las empresas adquirieron una deuda externa del orden de $100 millones de dólares.

3.- De las tres plantas instaladas en Jalisco, una de ellas fabrica además envases para alimentos y de línea general. Los envases para alimentos están sujetos al régimen de control de precios y por consiguiente, dado el proceso inflacionario, operan con márgenes sumamente reducidos.

4.- LAS PLANTAS DE JALISCO DAN OCUPACIÓN A DOS MIL JEFES DE FAMILIA Y A NIVEL DE RAMA INDUSTRIAL SE DÁ OCUPACIÓN A 10,000 JEFES DE FAMILIA, MÍSMOS QUE ESTÁN EN RIESGO INMINENTE DE PERDER SU EMPLEO SI NO SE CORRIGE ESTA SITUACIÓN QUE EN EL SEGUNDO SEMESTRE DEL AÑO DE 1983 SE TORNÓ DRAMÁTICA; YA QUE LAS PLANTAS DE JALISCO ESTUVIERON PRÁCTICAMENTE PARADAS EN LOS ÚLTIMOS MESES DEL AÑO.

5.- UN ASPECTO MUY POSITIVO DE ESTA RAMA INDUSTRIAL ES EL RECICLAJE DE LA LATA, QUE CON BASE EN ESTUDIOS REALIZADOS EN EL SEGUNDO SEMESTRE DE 1981 Y EN LOS PRIMEROS MESES DE 1982, SE DETERMINÓ QUE A NIVEL NACIONAL SE ESTABA RECICLANDO EN PROMEDIO HASTA UN 80% DE LA LATA DE CERVEZA, HABIENDO PLAZAS EN EL NORTE DEL PAÍS QUE DICHO PORCENTAJE SE ELEVABA A MÁS DEL 90%.

6.- EL RECICLAJE A NIVEL NACIONAL TIENE UNA GRAN IMPORTANCIA ECONÓMICA Y SOCIAL, YA QUE LA LATA DESPUÉS DE HABER CUMPLIDO SU FUNCIÓN COMO ENVASE, LE DÁ VALOR ECONÓMICO A LOS MATERIALES QUE SE RECUPERAN, COMO LA CHATARRA DE ACERO Y DE ALUMINIO, ASÍ COMO AL ESTAÑO; TODOS ELLOS ESCASOS EN EL PAÍS Y QUE REQUIEREN OTRAS ACTIVIDADES INDUSTRIALES COMO LAS FUNDICIONES DE ACERO VACIADO QUE SE DEDICAN A LA FABRICACIÓN DE PIEZAS AUTOMOTRICES, MUEBLES, INDUSTRIA DE LA CONSTRUCCIÓN, ETC.; DICHOS MATERIALES AL NO DISPONERSE EN EL PAÍS EN CANTIDADES SUFICIENTES, AL NO OBTENERSE POR ESTA VÍA, TENDRÍAN QUE IMPORTARSE, LO CUAL IMPLICARÍA UNA FUGA DE VARIOS MILLONES DE DÓLARES, YA QUE EN 1982 SE ESTIMA QUE SE TUVO UNA RECUPERACIÓN DE 20,000 TONELADAS DE CHATARRA DE ACERO Y ALUMINIO, MÁS EL ESTAÑO QUE SE PUDO RECUPERAR.

7.- OTRO ASPECTO MUY IMPORTANTE DEL RECICLAJE ES LA OCUPACIÓN QUE GENERA, ESPECIALMENTE EN PERSONAL POCO CALIFICADO, DE MUY ESCASOS RECURSOS QUE DIFÍCILMENTE EN NINGUNA OTRA ACTIVIDAD PODRÍA ENCONTRAR OCUPACIÓN. EN ESTOS MOMENTOS DE CRÍSIS Y DESEMPLEO, HACE MÁS RELEVANTE E IMPORTANTE ESTA ACTIVIDAD QUE ESTIMAMOS QUE EN TODO EL PAÍS DÁ OCUPACIÓN A MÁS DE 20,000 FAMILIAS.

8.- A NIVEL NACIONAL LAS MISMAS EMPRESAS QUE FABRICAN LA LATA PARA BEBIDAS, FABRICAN UN GRAN PORCENTAJE DE LAS LATAS PARA ALIMENTOS QUE SE CONSUMEN EN EL PAÍS, QUE COMO YA SE SEÑALÓ ANTERIORMENTE, ÉSTAS ÚLTIMAS ESTÁN SUJETAS AL RÉGIMEN DE CONTROL DE PRECIOS. DEBIDO A QUE LAS MISMAS EMPRESAS O GRUPOS INDUSTRIALES FABRICAN LAS LATAS PARA ALIMENTOS Y LAS LATAS PARA BEBIDAS, PERMITIÓ QUE DURANTE ALGÚN TIEMPO ÉSTAS ÚLTIMAS SUBSIDIARAN A LAS PRIMERAS, MOTIVO POR EL CUAL EN LA ACTUALIDAD LA SITUACIÓN DE LA RAMA INDUSTRIAL CADA VEZ SE HACE MÁS CRÍTICA.

9.- HASTA ESTE MOMENTO, LOS ENVASES DE DOS PIEZAS SE UTILIZAN FUNDAMENTALMENTE PARA CERVEZA. LA VENTA DE CERVEZA EN LATA ESTÁ SUJETA AL PAGO DE IMPUESTOS SOBRE PRODUCTOS Y SERVICIOS, QUE INCLUYE DENTRO DE LA BASE GRAVABLE EL ENVASE, YA QUE HASTA LA FECHA LA LATA SE HA CONSIDERADO COMO ENVASE NO RETORNABLE (21.5% ADVALOREM). CUANDO SE TRATA DE ENVASES RETORNABLES, LA BASE DEL IMPUESTO ES EXCLUSIVAMENTE EL VALOR DE LA CERVEZA.

10.- EN EL CASO CONCRETO DE LA LATA PARA CERVEZA LA

CARGA FISCAL HA PROVOCADO UN AUMENTO CONSIDERABLE EN EL PRECIO FINAL, LO CUAL SE HA TRADUCIDO EN UNA CONTRACCIÓN MUY CONSIDERABLE EN LA DEMANDA, CON LAS CONSECUENCIAS TERRIBLEMENTE NEGATIVAS PARA LA RAMA INDUSTRIAL QUE FABRICA LA LATA DE DOS PIEZAS.

11.- DE NO TOMARSE MEDIDAS DE EMERGENCIA A LA BREVEDAD POSIBLE, ESTA IMPORTANTE ACTIVIDAD INDUSTRIAL NO PODRÁ SOBREVIVIR Y POR CONSIGUIENTE SE PERDERÁN LAS FUENTES DE EMPLEO, LAS EMPRESAS O LOS GRUPOS INDUSTRIALES QUE FABRICAN ENVASES PARA ALIMENTOS Y BEBIDAS, SE VERÁN EN SERIAS DIFICULTADES PARA EL PAGO DE SUS PASIVOS ESPECIALMENTE EN MONEDA EXTRANJERA, POR LO QUE PUEDE AFECTARSE SERIAMENTE TAMBIÉN LA PRODUCCIÓN DE LATAS PARA ALIMENTOS QUE SE UTILIZAN PARA EMPACAR PRODUCTOS DEL CAMPO Y PRODUCTOS DEL MAR, QUE ANTE LA IMPERIOSA NECESIDAD DE DISPONER DE ESTOS ENVASES PARA LA INDUSTRIALIZACIÓN Y COMERCIALIZACIÓN DE LOS ALIMENTOS, LOS ENVASES QUE SE PRODUCEN PARA ESTE OBJETO TANDRÁN QUE SOPORTAR LOS GASTOS FIJOS Y LA CARGA FINANCIERA, O BIEN, TENDRÁN QUE REALIZARSE IMPORTACIONES POR LOS FALTANTES DE LATAS PARA ALIMENTO.

12.- COMO UNA SOLUCIÓN QUE PERMITA REDUCIR EL PRECIO, PROPONEMOS COMO MEDIDA DE EMERGENCIA QUE SE ELIMINE DE LA BASE GRAVABLE LA LATA EN LA PROPORCIÓN QUE SE RECICLA DICHO ENVASE, CONSIDERÁNDOLO COMO ENVASE RETORNABLE.

13.- CON BASE EN ESTUDIOS REALIZADOS, LA MEDIDA QU ES TAMOS PROPONIENDO, LEJOS DE REDUCIR LA PERCEPCIÓN FISCAL CON EL INCREMENTO DE LA ACTIVIDAD ECONÓMICA Y UNA MAYOR VENTA DE ENVASES PARA BEBIDAS, SE GENERAN IMPUESTOS MAYORES A LOS DEJADOS DE PERCIBIR.

GUADALAJARA, JAL., A 17 DE FEBRERO DE 1984.

FABRICA MEXICANA DE LATAS, S. A. DE C. V.

ENVASES GENERALES CONTINENTAL DE MEXICO, S. A.

ENVASES DE JALISCO, S.A. DE C.V.

6. DYNAMIC QUALITY CONTROL

Inevitably standards of quality control vary between can manufacturers and between canners. Many are very good. Some are too mechanical and are designed to indicate the quality of the cans or the canner's seam made yesterday rather than the quality of what is being made now.

The hazards from imperfectly made cans for processed food, cannot be emphasised too much nor the difficulty in ensuring that among the billions of cans made in a year, none can be a risk to the ultimate customer due to faulty manufacture of the can or faulty closing.

The following are features of a good overall quality control system:

a) OBSERVATION

Trained and observant operators who can and are encouraged to use initiative within their competence. No statistical quality control system can see and reject a damaged can which may cause a further hundred damaged cans at the next operation.

b) MANUFACTURING PROCESS CHECKS

Regular checks of all attributes of the can being manufactured and of the performance of each machine. It is not sufficient to ensure that the body blank is within the correct tolerance for dimensions, rectangularity, thickness and surface shape at the start of a run. After a few thousand cans, variation will creep in and all engineering measurements of the can throughout the manufacturing process must be checked regularly. Go and No-go gauges on the line for each operation help supervision to carry out this responsibility.

The bursting of bodies on an expanding mandrel to check solder penetration and visual inspecting of the double seam should be almost continuous.

c) STATISTICAL CONTROL

All the crucial measurements (particularly in the double seam) must be controlled by Statistical methods. The frequency of the tests, the attributes to be measured, the statistical danger limits appropriate to the frequency and quantities of the cans tested must all be laid down by management, perhaps through the Quality Controller. Extra attributes to be measured may become necessary from time to time to meet particular problems.

The results of these tests can be conveniently represented on graphs showing danger limits.

These graphs or tables are needed urgently by line supervision and should be placed on or near the relevant machines immediately on completion. They are of no use to the quality control staff or indeed to the manager who may not see them before the following day. They are of immediate concern to supervision, who want to know what is happening on their line now - not what happened yesterday or a few hours ago.

Further, when represented in graph form, the supervisor can see not only the latest figure but also the trend of the particular measurement. He may well be able to act to prevent trouble before it occurs. He will also know that a pattern which is not random around the median line may be cause for concern.

This approach to quality may be regarded as dynamic rather than static, reflecting as it does the present position and even future movements rather than sets of historical figures.

d) SUPERVISION TRAINED IN STATISTICAL METHODS

Every supervisor need not be a statistician, but a knowledge of the meaning of statistical methods employed is essential and this calls for training for all supervision if they are to be capable of discharging their responsibility.

e) BATCHING

For long runs of a critical container the cans should be batched, each batch numbered and an appropriate number of samples in each batch inspected by the supplier. The inspection report may accompany the batch.

This enables any future problem with the filling and seaming of the tins to be traced to the quality conditions on the line at the time of manufacture. It is not inappropriate for the supplier to draw attention to any doubtful batches so that the customer may be alerted.

f) MANAGEMENT

The interest shown by the manager in the whole quality control system and his insistence on high standards will ensure concentration on quality standards throughout the organisation.