

# SUSTAIN

NEPAL

DECEMBER 4 - 18, 1992

**FEASIBILITY OF ESTABLISHING COMMERCIAL  
(PRIVATE SECTOR) FOOD TESTING  
LABORATORY SERVICES**

**S**haring  
**U**nited  
**S**tates  
**T**echnology to  
**A**id in the  
**I**mprovement of  
**N**utrition

A U.S. Private Food Industry initiative  
in collaboration with the U.S. Agency for International Development  
through a Cooperative Agreement with the National Cooperative Business Association

Upgrading the Food Processing Industries in Developing Countries.

## ***Why SUSTAIN?***

SUSTAIN represents a successful collaborative effort between the U.S. food industry and the Agency for International Development (A.I.D.) to upgrade food processing in developing countries. It provides an excellent model for similar private-public sector joint ventures in health, agriculture and other areas of concern to developing countries.

Food processing is a major contributor to development. It serves multiple roles. Food processing can increase the available food supply by extending the life of perishable food products. It can improve the nutritional quality of the diet by making nutritious foods available the year round. It can lead to the growth of related enterprises in transportation, storage, distribution and marketing. And, it can produce much needed foreign exchange by creating value added products both for export and for internal substitution of imported processed foods.

The U.S. food industry has embraced the concept that freely sharing its expertise and knowledge is of mutual benefit to recipient and donor - to the recipient by improving current operations - to the donor by contributing to a healthier global future.

## ***How SUSTAIN Works***

A.I.D. missions and trade associations in developing countries publicize SUSTAIN's goals and activities. Executives of U.S. food companies with technical expertise and overall knowledge of the food industry serve as the SUSTAIN Steering Committee, providing guidance and overseeing activities.

Food related companies in developing countries submit their requests to SUSTAIN through the A.I.D. mission or a designated organization in their country. SUSTAIN screens all incoming requests and if necessary asks for additional information. Appropriate U.S. companies are then invited to respond.

Some problems can be readily resolved by providing information. Others require that consultants be sent. When a consultant is sent, the usual assignment is for one to three weeks. Upon completion of the assignment, the consultant prepares a report describing findings and making recommendations. Depending on need, some consultants may return for follow-up visits to ensure that recommendations have been appropriately implemented.

## ***SUSTAIN Helps***

Requests are diverse. Help may be needed to solve processing problems, to identify equipment needs and sources of new and used equipment, to train personnel in the use of new equipment and new technologies, to find new uses for indigenous commodities, to establish or improve quality assurance procedures, to control insects and rodents in food processing plants and to improve plant layouts and materials handling.

In the past, U.S. food companies, large and small, have provided technical assistance in the form of information, consultants and training to food processors in Africa, Asia, Latin American and the Caribbean.

# **SUSTAIN PROGRAM**

## **TECHNICAL ASSISTANCE MISSION TO NEPAL**

**December 4 - 18, 1992**

### **SUSTAIN Mission Team:**

**Dr. Damien Gabis, CEO, Silliker Laboratories**

**Elizabeth Turner, Program Director, SUSTAIN**

**Dr. John Bowman, Senior Technical Advisor, USAID**

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**NCBA/SUSTAIN Project 111.013**

**SUSTAIN MISSION TO NEPAL  
DECEMBER 4 THROUGH 18, 1992**

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## INTRODUCTION

The SUSTAIN mission to Nepal was a collaborative effort undertaken by SUSTAIN, Chemonics (the implementer of the Nepal AgroEnterprise Center), and USAID to help strengthen Nepal's food and agriculture sectors.

In 1991, USAID and the government of Nepal began implementing the AgroEnterprise and Technology Systems Project (ATSP). This five-year project is designed to assist two organizations in Nepal that play key roles in technology generation and transfer. One of the major activities being carried out by ATSP is assisting the private sector to provide effective agribusiness development services through the AgroEnterprise Center (AEC).

After initial communication with SUSTAIN, USAID/Nepal and Chemonics suggested that the technical expertise provided by SUSTAIN's volunteers could complement the work of the AgroEnterprise Center. AEC requested a specialist in private food testing laboratories. In December 1992, SUSTAIN furnished Dr. Damien Gabis, CEO, Silliker Labs, to help identify and investigate opportunities for local Nepali scientists and businessmen to establish a private food testing laboratory company. AEC's interest in developing an effective food testing laboratory reflects the underlying consensus that meeting international quality and safety standards could give Nepal's agribusiness sector greater access to international markets.

## FOOD TESTING/QUALITY ASSURANCE (FTQA) SPECIALIST

### TERMS OF REFERENCE FOR SHORT TERM CONSULTANCY (revised 10/92)

#### A. PURPOSE:

Assess the feasibility of developing a self-sustaining and reliable food testing and quality assurance program for the food industry in Nepal by up-grading one or more private sector (independent) laboratories.

In more general terms, discuss the Nepal Agroenterprise Center's broader strategy for enhancing the safety and quality of the Nepalese food supply. Suggest preventative management systems (ie. HACCP) and other practices that can be applied within food manufacturing operations to minimize the incidence of food quality and safety problems.

#### B. BACKGROUND:

SUSTAIN assistance has been requested by the Nepal Agroenterprise Center (AEC), under the auspices of a USAID-sponsored Agroenterprise and Technology Systems Project that is managed by Chemonics International. Depending on the conclusions reached from this initial assessment, ATSP advisors indicated that they may ask USAID to provide short-term (up to 3 years) support and training to help up-grade one or more independent laboratories in Nepal.

To maximize use of SUSTAIN consultant's time overseas, AEC is asked to fax information on independent laboratories to be visited and data on foods produced in Nepal in advance of the mission (attached is a request for information)

#### C. TASKS FOR LABORATORY ASSIGNMENT:

The FTQA assignment is expected to involve the following tasks:

1) Assess Present Conditions -- assess the potential of current personnel and institutions to provide quality food testing services in Nepal (information on laboratories to be visited will be supplied in advance by AEC). Comment on the extent to which such operations appear to adequately serve the needs of food producers and manufacturers, consumers, government, and international business community.

2) Demand for Lab Services -- identify factors that may contribute to the demand for laboratory services and recommend actions AEC can take to more clearly assess and project demand for laboratory services (information on foods produced in Nepal will be supplied in advance by AEC).

3) International Systems' Criteria -- describe international systems' criteria that should be adhered to in order to assure quality testing and assurance for domestic and export food products. List sources for obtaining relevant laboratory standards and procedures manuals. Identify sources for quality assurance systems for laboratories that should be implemented to maintain system integrity (including any equipment, personnel, and operating procedures that would be needed)

4) Recommendations for Further Development -- identify those laboratories which have the greatest potential for meeting international standards (assuming they will be future recipients of USAID assistance). Identify general needs of these laboratories for (a) management, (b) personnel training, (c) equipment, (d) information resources, and (e) government policies

5) Principal Constraints -- identify principal constraints that could limit the project's effectiveness for enhancing food safety and quality of the Nepalese food supply

REVISED VISIT ITINERARY

December 6, Sunday	12:55 pm	Dr. Gabis, Ms. Liz Turner, and Dr. John Bowman arrive by TG 3110, Hotel Himalaya
December 7, Monday	9:30 am	Meeting at AEC office
	11:00 am	Nepal Bureau of Standards and Metrology, Balaju
	2:30 pm	Central Food Laboratory, Babar Mahal
	4:30 pm	IUCN
	7:00 pm	Dinner with USAID Mission Director & staff
December 8, Tuesday	8:30 am	FD&C Laboratory Pvt. Ltd., Chhauni
	11:00 am	Visit to local markets, Patan
	2:00 pm	RLABB, Indrayani
December 9, Wednesday	9:30 am	Meeting with two potential groups starting up laboratories
	1:30 pm	Nutrition Unit and Food Technology Pilot Plants, Babar Mahal
	3:30 pm	Water Analysis Laboratory, Dilli Bazar
December 10, Thursday	9:30 am	Presentation to the Nepal Chemical Society
	1:30 pm	Meeting with pesticide group
	4:00 pm	US medical doctor, Fohara Durbar
December 11, Friday	Visits to	Industries
	9:30 am	Pepsi Cola
	12:00	NEBICO
	2:30 pm	Talk program in Nepal Food Scientists & Technology Association
December 12, Saturday	FREE	
December 13, Sunday	8:00 am	Himalayan Brewery, Godawari
	10:30 am	Nepal Thai Foods, Bhainsepati
	1:00 pm	Work Program "Quality Assurance in Food Industries"
December 14, Monday	9:30 am	Report writing
	12:00	Consumers' Forum
	2:00 pm	Review meeting at USAID offices
December 15, Tuesday	9:00 am	Meeting with University's Division of Food Science
		Report writing
		Dr. Bowman leaves
December 16, Wednesday	1:55 pm	Dr. Gabis leaves
December 17 - 18		Ms. Turner's other engagements



U.S. AGENCY FOR  
INTERNATIONAL  
DEVELOPMENT

December 24, 1992

Dr. Damien A. Gabis  
Chief Executive Officer  
Silliker Laboratories Group, Inc.  
1304 Halsted Street  
Chicago Height, Illinois 60411

Dear Damien:

This is to officially document how much we appreciated the terrific work you did as a Project SUSTAIN volunteer in evaluating the feasibility of establishing commercial food testing laboratory services in Nepal. Your experience in the U.S. private sector, together with your analytic skill and genuine interest in people, combined to make you one of the best experts we've ever had to visit this Mission. I believe your very complete and thoughtful report cut to the heart of the matter in terms of what is needed in Nepal to develop hygienic food standards for potential food processing and export companies. I look forward to circulating your report widely in Kathmandu as a first step to creating an awareness of the problems that currently exist in the food processing industry.

Again, many thanks for the excellent service that you rendered. I certainly hope that we have the opportunity to work together again in the future.

Sincerely,

A handwritten signature in cursive script that reads "Kelly C. Kammerer".

Kelly C. Kammerer  
Director

cc: J. Gingerich, USAID/ARD  
A. Dickie, USAID/ARD  
E. Turner, Project SUSTAIN  
R. Seifman, R&D/N  
J. Bowman, R&D/N

**REPORT ON THE FEASIBILITY OF ESTABLISHING COMMERCIAL  
(PRIVATE SECTOR) FOOD TESTING LABORATORY  
SERVICES IN KATHMANDU, NEPAL**

**DECEMBER 13, 1992**

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## I. INTRODUCTION

Observations of unsanitary food handling practices on the streets and in the food plants that were visited during the December 1992 mission reveal an absolute need for a systematic implementation of basic practices of hygiene for the water and food supplies of Nepal. The absence of these basic hygienic requirements must be recognized and their implications understood first, in order to give context to the AgroEnterprise Center's idea for establishing a private sector laboratory to serve the food, feed, and pharmaceutical industries of Nepal. While this report focuses on the food industry, the comments about the need for private sector, commercial laboratories to serve the food industry are probably applicable to the animal feed and pharmaceutical industries as well.

I observed a definite need for increased quality and quantity of laboratory services. This need could be served very well by a private laboratory. However, in my view the demand for laboratory services will not be fully developed until the government adopts strict enforcement of adequate food laws and regulations. In the future, consumer demand for safer food will help to drive demand by the food industry for laboratory services to verify product safety and quality. The desire by local food processors to increase exports will drive demand for laboratory services in order to assure compliance with importers' criteria.

The establishment of a private sector food testing laboratory should not be viewed as the cure for poor sanitary practices with respect to the safety and quality of the food and water supplies. It is a tool to monitor safety and measure progress -- not a solution to inadequate handling and manufacturing practices. The solutions lie in changing food handling and manufacturing practices through broadly disseminated training and compliance enforcement implemented by government and industry.

From my observations of the facilities visited, it does not appear that systems to achieve internationally accepted standards for food quality and safety have not yet been achieved in the regulatory, food, feed, and possibly the pharmaceutical sectors. Currently, the motivation and the knowledge of methods to control quality and safety appear to be limited to the technical people and not passed on to line workers.

With respect to the infusion of direct USAID support in providing capital and/or purchasing services to establish a commercial food testing laboratory, in my opinion, such this type of support

could reduce the probability that the lab would survive and grow once USAID support stops. I believe that USAID support to fund activities such education and training in quality assurance systems, Hazard Analysis for Critical Control Points (HACCP), strategic planning, marketing, operation and maintenance of equipment, personnel management, business management, etc. will help establish the matrix out of which increased demand for laboratory services will come and provide the probability of lasting success.

## II. ASSESSMENT OF PRESENT FOOD TESTING CAPABILITIES

### A. General conditions

Food, feed, and pharmaceutical testing capabilities are rudimentary in the government, industry and private laboratories that were visited. Generally speaking, the physical conditions of most of the facilities were unsatisfactory under the principles of good laboratory practices for operating food quality and safety testing laboratories. Many pieces of equipment and instruments in the laboratories set up for food testing were nonfunctional because of lack of training in their operation and/or inadequate maintenance and repair. The scope of testing capabilities offered and capacities of the laboratories appear to be very limited.

### B. Government laboratories

No clear strategies appear to be in place and effectively implemented in regard to enforcement of laws and regulations having to do with food safety and quality.

As a result of the government laboratories performing routine analytical testing for industry and their reluctance to take enforcement action, the line between enforcement of compliance with regulations and performance of service is not clearly defined as it should be, in my view.

Some government personnel may believe that private testing laboratories pose a threat to the credibility of the government laboratories. No direct evidence of such a threat was actually noted in the discussions, but a between-the-lines reading of the situation gives a sense that there is at least some reservation on the part of government officials as to the role that private sector laboratories would have in the overall scheme. Emphasis should be placed on the idea that regulatory, industrial, and private laboratories have discrete non-competitive functions to perform. Ideally, all laboratory segments, regulatory, industrial, and commercial labs, require high quality analytical service organizations to effectively carry out their respective missions. The three different lab segments should be

complementary in their roles of promoting food safety and quality. The options for technical solutions to the problems and challenges of the food industry are widened when private sector laboratory services become available.

It appears that the long turnaround times for results of analytical work performed by the government laboratories is unsatisfactory for the food industry. It is clear that the government laboratories do not have a "service mentality" when it comes to working for the food industry as a group of clients.

In the long term view, I believe that the role of the government regulators is in enforcement of compliance rather than in service to the industry. In my experience, I see the primary role of the government to be the protection of public health and policing of industry for economic fraud that could bring harm to the public. In the long view, the credibility of the government laboratories will not be strong if they continue to provide routine analytical/consulting services to industry. It is simply a conflict of interest.

The present testing volume activity of the government laboratories is very low, i.e. <10 samples/day. Protection of the public health and welfare cannot be adequately served with such minimal analytical enforcement activity. In my experience, the capacities of the government laboratories (Central Food Research Laboratory and Nepal Bureau of Standards and Metrology) are far greater than the current testing volume level indicates. It appears that the managements of the government laboratories do not seem to actively enforce food laws and regulations. The absence of significant regulatory pressure signals to the food, feed, and possibly, pharmaceutical manufacturers that the status quo for safety and quality is acceptable. Without increased regulatory activity, the potential demand for private sector laboratory services will not be satisfactorily developed.

Specifically, the mission of the Nepalese Bureau of Standards and Metrology (NBSM) is unclear to me as it relates to the need for testing by food plants. It seems that NBSM is responsible for establishing standards of identity for foods, and to authorize the use by industry of the Nepal Standard seal for those foods which meet the standards that have been established by NBSM for that particular food. The NSBM uses minimal requirements for establishment and enforcement of standards for food products. To date, only a few standards have been developed for foods. NSBM is responsible for a wide array of standards, these others being far beyond the scope of the food industry. Unless there is an increase in activity by NSBM in the food arena, I tend to think that in the long run NBSM will not have much influence (excepting political influence or through lab accreditation standards) on the success or failure of a private laboratory sector.

The government laboratories do not appear to be engaged in organized, ongoing food hygiene training programs for the food industry. This is an important consideration because education, training, and participation in hygiene and quality issues by all levels of food plant workers are necessary to develop and maintain effective, long term, quality assurance programs in the food industry.

Government food testing laboratories could be more useful to the food industry by providing certification that a particular lot of food to be exported meets the required criteria for safety, quality, composition, labelling, etc.. This role of the government would be useful in helping to develop the Nepalese food export business by building international confidence in Nepalese value-added food products that have been certified.

#### C. University laboratories

No university laboratories were visited. It should be noted that some universities may have resources available that could be useful to the food industry. In my experience, the relationships between most universities and the food industry involve extension. When laboratory services are provided they are usually of a short term, problem solving nature. This seems to be the predominant modus operandi in the U.S. Further, universities may have pilot plants which can be useful for product development research.

#### D. Industry laboratories

My observations indicate that the food plants visited are in the very earliest of stages of development of effective quality and safety assurance systems. Some of the plant personnel indicated that the absence of regulatory compliance enforcement results in lower expectations of quality and safety. In my opinion, this view by some industry people could be a sign that the food industry believes that government is responsible for safety and quality. This, of course, is not true. The responsibility for safety and quality must stay with the food processors and handlers. Certainly, for those companies who already have an edge on the competition with respect to implementation of quality assurance programs, it would be desirable for the government to increase their enforcement activities.

The food industry laboratories appear to be equipped with the basic materials and supplies to conduct those wet chemical or physical tests that are critical to characteristic product quality. For example, protein, fat moisture, ash are routinely determined by the plant laboratories. Some plants also test their water for suitability for processing. There does not appear to be any routine microbiological testing for pathogens, spoilage organisms, or indicators of sanitation after clean-up.

The capability for routine instrumental analyses does not exist in any of the food plants that were visited. This means that raw materials or finished products cannot be tested for pesticide residues, heavy metals, or other toxic substances requiring instrumental analysis.

When more sophisticated tests are required, the companies must send them to India, Japan, Germany, or other countries to be tested. The turnaround times are very long and this limits the usefulness of the data for management decisions. The overall costs are then much higher because of shipping charges and currency exchange rates.

The food plant managers were unhappy with the turnaround times provided by the government laboratories. The managers who commented preferred not to send their samples to government laboratories for a variety of reasons.

The food plant managers indicated that they would use the services of a private laboratory, but none indicated the amount of work that would be sent out. This picture is not promising because the amount of testing done in-house is minimal. The aspect of statistical sampling plans and process control must yet to be developed among the food processing in order for the food industry to see the value of analytical tests.

The volume of testing conducted in the plant laboratories was, in general, very low. The low volume of testing indicates a lack of resources, lack of understanding of the usefulness of testing for process control, lack of understanding of the role of product variability, etc..

The quality of the physical facilities among the food plant laboratories varied greatly from very poor to moderately acceptable. The key word here is that these labs appeared to be "functional".

No bona fide laboratory practice audits were conducted in any of the labs visited. It is not possible, at this time, to draw any conclusions regarding the accuracy and precision of the tests conducted in the food plant labs.

Continuing education and training of the management in quality assurance principles and practical applications will help increase the awareness of the value of high safety and quality. Ongoing motivation and training of factory workers in hygienic food processing practices is necessary for any quality assurance program to be effective. Most importantly, a prerequisite to establishing and implementing a quality assurance system is the commitment of the top management executives and owners to the idea that high quality products are more profitable, in the long term, than those of lower quality.

## E. Private commercial laboratories

None of the three private commercial laboratories visited has the facilities or equipment to provide anything but the most rudimentary tests for the food industry. The physical facilities of most private labs visited would not meet the minimum requirements for good laboratory practices. However, it should be comparatively noted that the private labs gave the impression that maintenance of the facilities is at a higher plane than that observed in the government labs.

The discussions with the managements of RLABB and the Water Analysis Laboratory gave me some indication that their operations could be conducted on a sound business footing, especially RLABB. However, at present neither of these two organizations has expertise in the food testing arena. The principals of Food Tek Associates met with us at AEC, but their organization is embryonic and is without any laboratory facility.

The capital requirements to set up an effective and profitable full service laboratory business may be beyond the ability of any one of the private laboratories that were visited. A company or an association with a sufficient number of capital contributors (shareholders) may be required in order to launch an effective private sector testing lab. The food plant labs alone probably could not afford to buy the necessary instruments, but if there were a private sector laboratory that owned the equipment then the food plants could obtain analyses at a reasonable cost.

The initial favorable reactions from the food plant people and other business management individuals who were visited gives a moderately strong sense that a properly functioning laboratory could be a financial success in Kathmandu.

## **III. NEED AND DEMAND FOR TESTING SERVICES**

The need for competent food testing services is obvious from the absence of any credible laboratory on the scene now. There is no laboratory, government or industry, that is supplying a sufficient level of testing to assure that Nepalese or imported foods are safe and of acceptable quality.

The true demand for lab services is unknown at this time. I suspect that the number of samples that are currently tested in all existing food labs is very small. The people we met with who sent out samples send a few at a time, and then not frequently. I also suspect that once a lab would become established and earn a good reputation that the number of samples would increase. It is important to understand the meaning of "demand" in order to gauge the number of samples that can actually be counted on to

show up at the lab. I notice that the definition of "demand" varies with the definer.

True measurement of demand is obviously crucial in the planning stage in order to calculate how much business can be expected. The number of client's X the number of samples per unit time X the analytical fee charges per sample = the expected amount of revenue per unit time. This value will tell you the expected turnover, and is a good first indicator of the probability of success, based on the amount of work available. This is common sense at this point. When the cost of operations and the capital cost of assets are known, the picture will be clearer as to the sufficiency of the demand to support a successful lab operation. The careful estimation of demand is the critical step with respect to financial prospects of the laboratory.

The actual demand for food testing services is not quantifiable based on the information gained during this visit. Intuitively, however, there is no doubt in my mind that some level of demand exists. For example, for any foods that are exported there is no current service to provide reliable data that the food to be exported meets the criteria for acceptance by the importer. The business people and food plants that we visited indicated that they would make use of a local private sector laboratory rather than send their samples abroad for testing.

The absence of consistent enforcement of food regulations by CFRL holds back the latent demand for lab services, even though the need is clearly present. There is no motivation (absence of sanctions) on the part of industry to test their products for safety and quality.

Demand for lab services will be held back by the absence of consumers' demand for safe and high quality foods. There appears to be an awakening consumers' group that should increase awareness in this area, and the pressure on industry generated by the consumers should increase demand for lab services. Any broad programs to educate consumers to demand safe and high quality foods will put pressure on government to enforce the regulations and industry to comply.

Increasing competition among Nepalese food processors should increase demand for lab services. The loss of sales by Nepalese food processors to imported foods should drive the demand for higher Nepalese quality, and lab services will be required to document the quality and safety of these foods.

The opportunity for a lab to service the animal feed and pharmaceutical industries will also be a factor in determination of demand.

If food labelling regulations are enforced, the demand for lab services should increase.

#### IV. CRITERIA REQUIRED FOR ESTABLISHMENT OF A FOOD TESTING LAB

##### A. Technical competence of leadership

A high level of technical competence is required in order to develop a reputation for expertise and reliability. Education and understanding of food science is needed. The technical leadership should come from a person who is recognized by peers as being highly competent. An understanding of each of the food processing segments to be served is required to develop confidence. A high degree of integrity and intellectual honesty is required to build trusting relationships with the clients. A high level of communication skills and the ability to listen to clients' needs is required. A service oriented mentality is needed by the technical staff in order to be able to please the client with respect to the service rendered.

##### B. Business management

Honesty and integrity are prerequisites for building any service business. Marketing, effective operations management, and cost control are very important to the financial success of a private laboratory. The laboratory must be managed by a person with sound business judgement. Elaboration on business management skills is not appropriate here, but the point to be made is that technical knowledge alone is not sufficient to make a successful food testing laboratory. The merging of technical and business acumen is necessary to develop a financially and technically successful lab business. It is the working together of the different aspects of service that gives desirable results.

##### C. Personnel

The laboratory workers are a critical factor in the success of a private laboratory. Technical competence in the specific field of work, honesty, high level of personal motivation, diligence, ability to communicate with clients, coworkers, and management, and loyalty to the company are essential attributes. The workers are a key to success so that providing good working conditions, rewards for outstanding achievement, opportunities for advancement, on the job training, and meaningful participation in the management of their work are very important in order to develop a highly skilled and effective work force.

##### D. Facilities

The laboratory facilities must meet requirements for health, safety, and comfort in order to be effective and reliable. Much

has been published on the design and building of laboratories, and these resources should be used to plan, build, and equip a food testing laboratory.

#### E. Equipment

The proper equipment must be available and in good working condition for each analysis to be conducted. Likewise, much has been published with respect to equipment purchasing, set up, calibration, operations, maintenance and repair. These resources should be consulted in the planning stage in order to incorporate appropriate equipment into the laboratory's operations.

#### F. Laboratory quality assurance

An effective laboratory quality assurance program must be established to ensure the accuracy and precision of tests being conducted. There are many reference works to assist in this area. Laboratory quality assurance and the commitment to high quality is the keystone to the success of a private laboratory. Sources of information on implementing a laboratory quality assurance system can be obtained from the Association of Official Analytical Chemists, US Food and Drug Administration, American Public Health Association, US Department of Agriculture, US Environmental Protection Agency, International Standards Organization, and others.

#### G. Confidentiality

Absolute confidentiality concerning client-related matters is required. The private laboratory is in a privileged position to possess potentially harmful information about clients or their products. It is essential that all information about clients be kept completely private within the laboratory organization. Keeping of confidentiality is an absolute essential to develop a trusting, open relationship with clients.

#### H. Service-minded approach to the laboratory business

Success in the laboratory business comes from determining the client's needs and wants and then exceeding client expectations in meeting them. Some of the more important needs and wants include: accuracy of data, prompt turnaround times for results, confidentiality, interpretation of data, understanding of the client's processes and products, reasonable and consistent fees, consistency in levels of service, ease in getting samples to the laboratory, prompt reporting of results by phone, fax, or personal delivery of reports.

**V. PRINCIPAL CONSTRAINTS ASSOCIATED WITH ESTABLISHMENT OF A COMMERCIAL FOOD TESTING LABORATORY**

**A. Capital requirements**

Setting up a minimally full-service food testing lab will require about US\$ 300,000-500,000 initial costs, depending on the services offered, the facilities, and equipment required. Capital contribution requirements may be too high for any one individual.

- B. Absence of quantitative market research information**
- C. Failure of government to enforce food laws and regulations**
- D. Absence of reliable equipment and instrument maintenance and repair services**
- E. Absence of reliable utility services**
- F. Absence of strong, organized consumer demand for safety and quality of foods**
- G. Possible lack of understanding on the part of owners and managers of food industries of the requirements for manufacturing safe and quality products**
- H. Possible lack of long term commitment of food plant owners and managers to production and sale of products with high quality and safety**
- G. Lack of business management training of technical personnel**

**VI. RECOMMENDATIONS**

Potential investors in a private laboratory need to come together to evaluate business opportunities for the lab. Their first step should be to develop a strategic business plan and financial analysis. Care should be taken not to over-state anticipated revenues and understate expenses and the length of time needed to get a financial return. Failure to realistically estimate these items could easily lead to undercapitalization.

A marketing survey and business plan need to be drawn up to address the following issues:

- A. Budgeting and costs analyses (realistic estimates are critical)**

- B. Establishment of services to be offered and fees to be charged
- C. Market development and promotion of the lab
- D. Development of the lab quality assurance system based on the principles of total quality management
- E. Leadership -- Executive level management must incorporate the total quality management principles in all aspects of the laboratory's work.
- F. Leadership of the laboratory must be oriented to a high level of achievement, possess strong organizational skills, communication skills, business and management skills, customer marketing skills, interpersonal skills, and strategic planning/brainstorming skills
- G. Selection of personnel to integrate technical competence, entrepreneurial temperament, competition in a cooperative manner
- H. Productivity and capacity planning
- I. Salary and incentives (quality personnel require commensurate compensation)
- J. Staff training on an active and on-going basis
- K. Waste handling and disposal
- L. Infusion of international donor support for competing laboratory
- M. Risks and hazards
  - Failure to understand the needs of the market
  - Lack of availability of equipment and supplies
  - Failure to maintain and repair equipment and facilities
  - Failure to provide adequate electric and water supplies
  - Failure to respect, train, and maintain human assets
  - Slow turn-around time

Failure to provide good customer service

Failure to maintain client confidentiality

Failure of government to bring pressure on industry to meet minimum food safety and quality standards

Failure of consumer groups to bring pressure on government to enforce adequate food and water standards

With respect to the infusion of direct USAID support in providing capital and/or purchasing services to establish a commercial food testing laboratory, in my opinion, such this type of support could reduce the probability that the lab would survive and grow once USAID support stops. I believe that USAID support to fund activities such education and training in quality assurance systems, Hazard Analysis for Critical Control Points (HACCP), strategic planning, marketing, operation and maintenance of equipment, personnel management, business management, etc. will help establish the matrix out of which increased demand for laboratory services will come and provide the probability of lasting success.

December 14, 1992

TO: David Sowerine  
Nepal Agroenterprise Center (AEC)

FR: Elizabeth Turner  
SUSTAIN Program Director

RE: Summary and Follow-up to December 1992 mission

## I. SUSTAIN Program

The SUSTAIN Program (Sharing U.S. Technology to Aid in the Improvement of Nutrition) provides access to U.S. private sector expertise in food manufacturing. The expertise is provided by volunteers from the U.S. food manufacturing sector who come with broad experience in food technology, business management, and marketing. The program is managed under a cooperative agreement between USAID/R&D/Nutr and the National Cooperative Business Association.

The quality and caliber of the volunteers recruited by the SUSTAIN Program is exceptional. All are pre-screened by senior industry executives serving on the SUSTAIN Steering Committee and peers in the industry. In addition to technical and managerial expertise, SUSTAIN volunteers also bring a level of prestige to a given project activity that often helps to focus attention on critical needs, bring diverse parties together, and spark follow-up responses. SUSTAIN volunteers are primarily motivated by an interest in other cultures and the desire to help by sharing their particular expertise.

The director of the SUSTAIN Program works closely with counterpart institutions and food manufacturers in developing countries to formulate scopes of work and follow-up actions that address specific needs and make appropriate use of the expertise provided by volunteers.

A technical newsletter ("SUSTAIN Notes") is also prepared and disseminated quarterly under the program to food manufacturers in developing countries.

To the extent possible, SUSTAIN funds international travel and requires overseas counterparts to provide local per diem and transportation.

## II. Follow-up with the AgroEnterprise Center (AEC)

I. The primary purpose of the December 1992 SUSTAIN mission to Nepal was to assist the AEC in analyzing the potential for establishing a private food testing laboratory in Nepal. To conduct the analysis, SUSTAIN furnished Dr. Damien Gabis (Chief

Executive Officer for Sillicker Laboratories), Elizabeth Turner (SUSTAIN Program Director), and Dr. John Bowman (Senior Advisor, USAID/R&D/Nutr).<sup>1</sup> A report outlining the conclusions and recommendations of the SUSTAIN team is attached.

In summary, the SUSTAIN team identified the following factors as critical to the establishment of a private food testing laboratory (while AEC involvement in all these areas may not be appropriate, it would be useful to review other USAID programs that may related):

- Strategic Planning -- potential investors who might be interested in taking a financial stake in establishing a private laboratory need to be brought together to discuss options for the venture and to develop a strategic plan which would include the following: financial and business plan; market research, analysis, and development; and management plan; etc.

- Private Sector Training -- a laboratory in itself is not an "end-all" for resolving food safety and quality problems among private food manufacturers. To improve in-plant operations, active on-going training programs need to be implemented for local industries that address quality assurance, sanitation, and safety. Training in market research, development, etc could also help facilitate access to international markets, which require compliance with quality and safety standards and could further drive the demand for private laboratory services in Nepal.

- Consumer Education -- strong consumer demand for safe, sanitary, and nutritious foods could be a motivating force in getting the government to adopt and enforce compliance with adequate standards for food and water safety and increase competitive pressure among local food industries for safe foods. Strict enforcement would require industries to improve manufacturing practices. To facilitate consumer activism in this area, education and training programs should be implemented to increase consumer awareness of food safety, sanitation, and impact on health

- Government Regulatory Reform & Enforcement -- the adoption of credible food quality and safety standards and the strict enforcement of these standards will be a major motivating factor in getting industry to adopt better manufacturing practices. To encourage action in this area, a strategy needs to be developed for garnering public and private support for: (1) strengthening

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<sup>1</sup> Expenses for the mission were shared between the SUSTAIN Program and the AEC/Chemonics. Airfare for Dr. Gabis and Ms. Turner were paid by SUSTAIN. No consultancy fees or salaries were charged (Dr. Gabis volunteered his expertise, Ms. Turner is covered under the SUSTAIN Program, Dr. Bowman is covered under AID). AEC/Chemonics paid local per diem for Dr. Gabis and Ms. Turner.

government regulations on food and water safety and sanitation, (2) developing strict enforcement system

III. Other Needs for Assistance Identified by AEC Staff:

In addition to the laboratory initiative, the AEC staff also expressed interest in having access to high quality U.S. food industry professionals to conduct the following:

- Short-courses and training seminars for local food industries<sup>2</sup>
- Short-courses and training seminars in collaboration with local university (designed for food technology, microbiology students and local industry)
- Technical assistance (including problem solving, strategic planning, and business management) to individual food industries as the needs are identified by the AEC

IV. Options for SUSTAIN Technical Assistance

Options for SUSTAIN assistance could include the following (contingent on availability of resources and concurrence between AEC and SUSTAIN on each action):

- Fielding SUSTAIN Experts to further assist in the strategic planning and development of a private food laboratory, based on needs identified by the AEC
- Fielding SUSTAIN Experts to conduct short-courses and training seminars on:
  - Quality Assurance, Sanitation
  - Product Development
  - Sensory Evaluation
  - Market Research/Development (run as training of trainers)
- Fielding SUSTAIN Experts to assist local food manufacturers with technical problems that have been evaluated by the AEC

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<sup>2</sup> In addition to the technical knowledge that is delivered through short-courses and seminars, these activities can play an important role in raising the overall consciousness among local industries for improved quality, good manufacturing practices, management, etc. and fostering competition. It could also be a forum to promote greater awareness of AEC and for AEC to gain broader knowledge of the needs among local industries.

## V. Complementary Resources

SUSTAIN requires that counterpart institutions cover local per diem and transportation costs. To the extent that SUSTAIN core funding is available, SUSTAIN covers international travel costs. Expansion of SUSTAIN activities in any given country may require additional resources.

Nepal Mission

List of Persons Involved

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Ms. Elizabeth Turner, SUSTAIN Program Director  
Dr. John Bowman, Senior Technical Advisor, USAID

ATSP/AEC Staff

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