MANUAL OF PROCEDURES FOR THE SURVEILLANCE, OUTBREAK INVESTIGATION AND RESPONSE TO MICROBIAL AGENTS OF FOOD AND WATERBORNE DISEASES

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FOREWORD

Food and waterborne diseases caused by microorganisms is a large and growing global public health problem. Three major reasons are the globalization of food supply, travel and migration. In the Philippines, diarrheal diseases has been the number one cause of morbidity for many years to the present time with a morbidity rate of 913.6/100,000. While not all gastroenteritis is foodborne, and not all foodborne diseases cause gastroenteritis, food does represent an important vehicle for pathogens of substantial public health significance. In the limited reviews conducted on foodborne diseases in the Philippines from 1988-96 and 1999-2004, the authors admitted that their reviews may underestimate the true situation since it is likely that numerous food-related outbreaks are unreported or uninvestigated. Both papers recommended the need to establish a foodborne disease surveillance in the Philippines.

Realizing the importance of foodborne diseases, the Fifty-third World Health Assembly, in resolution WHA 53.15 requested the World Health Organization (WHO) Director-General to put in place a global strategy for surveillance of foodborne diseases and to initiate a range of other activities on food safety and health. The WHO recommends the establishment of integrated foodchain surveillance systems. An **integrated foodchain surveillance system** monitors the nature and level of foodborne disease integrated with food monitoring data along the entire foodchain (from the farm to the plate) utilizing sentinel sites linked with local, national and international **laboratory** networks. An **integrated foodchain surveillance system** entails collection, analysis, interpretation of **laboratory-confirmed** data from animals, food and humans in order to provide etiology-specific outputs including **subtypes** of microorganisms. In addition, **internationally agreed methods in epidemiology and microbiology** are needed for surveying foodborne diseases and linking them to food contamination on the basis of risk.

This manual is the initial effort by representatives of government agencies under the Departments of Health, Agriculture and Interior and Local Government to establish standard procedures in the epidemiologic and laboratory investigation of food as well as waterborne diseases. It details the surveillance and outbreak investigation and response methods that will be utilized including procedures for reporting and investigating food and waterborne diseases and appropriate collection, transport and preservation of specimens from the field to the different agencies which have jurisdiction for testing the various food types as detailed in Annex 4.4.8E. In the preparation of standard procedures to undertake in surveillance and outbreak investigation, consideration has also been given to the International Health Regulations of 2005 recently approved by the World Health Assembly in June 2007, most especially on the aspects of reporting foodborne diseases to the WHO.

The manual had been reviewed by various stakeholders involved in food and water safety, nevertheless, the contributors heartily welcome suggestions for its improvement. There are likewise plans to field test the document in selected sites to be able to assess where improvements in its content may still be applied. The contributors look forward to the manual being utilized at all levels of the political structure nationwide as well as the general public with the goal being, the Philippines having valid data on food and waterborne diseases which will direct interventions towards their control. In the course of preparing this manual, the contributors identified certain weaknesses in the existing system and have therefore laid down some recommendations to address these weaknesses which are detailed in Annex 6.5.

The undersigned wishes to thank the WHO for providing support to undertake this activity, the contributors from the various agencies of government for sharing their precious time

and effort towards drafting this manual, and the secretariat of the antimicrobial resistance surveillance reference laboratory, namely Ms. Ma. Theresa Sepulveda, Ms. Lea Platon, Mr. June Gayeta, Ms. Eleanor Azores, Mr. Danilo Patulot and Mr. Alex Petersen for technical assistance. Acknowledgement is also given to Dr. Enrique Tayag, director, National Epidemiology Center; Dr. Marlow Niñal, medical officer VII, Mr. Petronilo Buendia, general manager, Philippine Fisheries Development Authority and his chief of staff, Engineer Virgilio Suarez for their valuable comments.

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MESSAGE

Realizing the importance of foodborne diseases, the Department of Health (DOH) has initiated a range of activities to promote food safety and health. The DOH has therefore taken a lead in bringing together technical staff of the Departments of Agriculture (DA) and the Interior and Local Government (DILG) together with its own staff to collectively craft **A Manual of Procedures for the Surveillance, Outbreak Investigation and Response to Microbial Agents of Food and Waterborne Diseases.**

The objective of the manual is to outline the epidemiologic and microbiologic methods that will be employed in the surveillance, outbreak investigation and response to food and waterborne diseases and to identify personnel and logistic requirements including techniques for effective communication and coordination.

This manual is intended to be use to all stakeholders in food safety from both the government and non-government sectors and will certainly be useful to all levels of healthcare infrastructure in the investigation and control of foodborne diseases. We hope that through it, the prevalence of food and waterborne diseases as gastroenteritis and diarrheal diseases, for which food represents a major vehicle for pathogens of substantial public health importance, will eventually decrease.

We hope that this Manual will help us in the public health sector to ensure food and water safety in the Philippines and bolster our efforts toward enhance detection, reporting and surveillance of threats due to food and waterborne disease.

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Secretary of Health

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M E S S A G E

Public health safety is a universal concern that calls for unified and contin uous efforts, particularly among concerned public agencies, local government units and the private sector.

As the government's lead agency mandated to implement food security and sufficiency programs, the Department of Agriculture likewise ensures that g lobal standards and procedures are employed throughout the food supply chain — from the manufacture of inputs, use of crop protection chemicals or biologics, up to harvesting, processing and marketing of various agricultural and fishery food commodities.

Thus, we are privileged to take an active part in the formulation and packaging of this manual that aims to institute an integrated surveillance system along the food chain — as farm and fishery products are highly susceptible to physical damage and microb ial contamination — to effectively prevent and control the incidence of food-borne diseases, and subsequently ensure the health of consumers, here and abroad.

We are therefore privileged to contribute our share — in partnership with the Department of Health, Department of Interior and Local Government, and the World Health Organization — in the crafting of this valuable document, which we hope will serve its purpose well as an indispensable guide to producing world-class, competitive, safe and nutritious ***Pinoy*** food products.

Mabuhay!

ARTHUR C. YAP
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MESSAGE

One of the responsibilities of the national government is to provide a national framework of action that will not only serve as guidance but will also promote and pursue a higher level of competence and effectiveness among various stakeholders, including the local government units, in delivering necessary services to the citizenry.

Along this line, the Department of the Interior and Local Government (DILG) shares with the objectives of the Department of Health (DOH), particularly the Research Institute for Tropical Medicine (RITM) in initiating the effort of formulating and coming up with this 'MANUAL OF PROCEDURES FOR THE SURVEILLANCE, OUTBREAK INVESTIGATION AND RESPONSE TO MICROBIAL AGENTS OF FOOD AND WATERBORNE DISEASES.

This Manual which details the methods and procedures for surveillance, outbreak investigation and reporting incidents of food and waterbome diseases is an important document with a far-reaching significance especially to the local government units. Under Sections 16 and 17 of the Local Government Code (RA 7160), the LGUs are the primary actors in implementing health, sanitation and food safety programs in their area of jurisdiction. Corollarily, data generated by the World Health Organization (WHO) indicate that food and waterborne diseases are among the growing and rising concerns that have pervasive effects on the well being and welfare of the people in the communities.

This Manual is full of information that could help the LGU officials in crafting their respective contingency plans to mitigate the adverse effects of food and waterbome diseases upon the communities. It may be used, likewise as a source- guide to strengthen the system of coordination among the DOH, DA, LGUs and the various stakeholders in preventing and responding to the needs of the communities that may be affected by the disease.

I urge therefore the LGU officials and concerned stakeholders to make use of this Manual in developing a responsive and effective local mechanism in addressing the widespread effects of food and waterbome diseases as the health and welfare of the people is the primary concern of everyone.

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TABLE OF CONTENTS

SECTION 1: INTRODUCTION

In recent years, the world had been experiencing a worsening food and waterborne disease problem which has significantly affected people's health. Factors identified which could have contributed to this situation are the globalization of the food supply, travel and migration, changes in microorganisms and people increasingly consuming food prepared outside the home in commercial foodservice settings. All of these emerging challenges require that public health workers continue to adapt to the changing environment with improved methods to recognize, report, and control these threats. In order to assist public health agencies to quickly and efficiently acquire information of sufficient quantity and quality to identify and prevent the ongoing transmission of food and waterborne diseases, it was deemed appropriate to draft a manual of procedures on foodborne disease surveillance and outbreak investigation to provide guidance in this undertaking. At the same time, selected parts of the manual can provide useful information to the general public on what appropriate actions to take when faced with cases of suspected food and waterborne diseases.

Objectives

This document was prepared with the general objective of outlining procedures in undertaking food and waterborne disease surveillance activities and outbreak investigation and response in the human and animal health side. It describes the epidemiologic and microbiologic methods that will be employed and identifies personnel and logistic requirements including techniques for effective communication and coordination.

Scope

The main concerns about hazards in food and water consist of microbiological hazards, pesticide residues, food additives, chemical contaminants including biological toxins, and adulteration. This manual will only cover procedures for the surveillance, outbreak investigation and response to microbial agents of food and waterborne diseases from the local up to the national government levels.

The manual lays out the steps to be taken to establish an integrated food-chain surveillance (IFCS) system in the Philippines by **initially strengthening laboratory-based surveillance**. In IFCS, collection, analysis, and interpretation of **laboratory-confirmed** data from **animals, food, and humans is undertaken since this type of surveillance provides the greatest contribution to burden of disease estimates and data has high usefulness to contribute to risk analysis. Etiology-specific outputs** including subtypes and information on reservoirs are among the data to be generated. Foodborne disease surveillance is planned to be integrated with food monitoring data **along the entire foodchain** (from the farm to the plate) since pathogenic microorganisms can enter **at any point** from livestock feed to catering and homefood preparation.

This manual of operations will facilitate the implementation of Administrative Order Number 12 series 2005 on the Guidelines for Foodborne Disease Surveillance of the Department of Health (DOH), Philippines with *Salmonella* as pilot pathogen (*Annex 1A*). On the side of the Department of Agriculture, it will initiate activities for surveillance of unprocessed food for microorganisms. Overall, the Manual is expected to improve detection and, consequently, control of food and waterborne diseases in the Philippines.

Who can use the manual?

The manual is intended to be of use to all stakeholders in food safety, from both government and nongovernment sectors. Representing the government are the Departments of Health (DOH), Agriculture (DA), and the Interior and Local Government (DILG). Under them are agencies that are responsible for the legislative, technical and practical implementation of **the country's** food safety program, and each agency often has a dedicated refer ence laboratory associated with it. The access to surveillance data often goes through these laboratories. Other stakeholders of food safety are the non -governmental organizations. They may represent consumers, food industry workers or the environmentalist s. Although these organizations seldom are directly involved in the generation of data, they can influence the launching of food safety initiatives and serve as a driving force behind initiation of surveillance efforts .

SECTION 2: EPIDEMIOLOGY OF FOOD AND WATER BORNE DISEASES

2.1 EPIDEMIOLOGY OF FOODBORNE AND WATERBORNE DISEASES WORLDWIDE

Food and waterborne diseases caused by microorganisms is a large and growing global public health problem. Over the past few decades, most countries with systems for reporting cases of foodborne disease have documented significant increases in the incidence of diseases caused by microorganisms in food, including viruses such as Norovirus, bacteria such as *Salmonella*, *Campylobacter jejuni*, and enterohaemorrhagic *Escherichia coli*, and parasites such as *Cryptosporidium*, *Cyclospora*, and trematodes[1].

Approximately 1.8 million children in developing countries (excluding China) died from diarrheal disease caused by microbiological agents in 1998, mostly originating from food and water. While not all gastroenteritis is foodborne and not all foodborne diseases cause gastroenteritis, food does represent an important vehicle for pathogens of substantial public health significance. One person in three in industrialized countries may be affected by foodborne disease each year. In the USA, some 76 million cases of foodborne disease resulting in 325,000 hospitalizations and 5,000 deaths, are estimated to occur each year[2]. In England and Wales in 1995, there were 2,365,909 cases, 21,138 hospitalizations, and 718 deaths[3] due to indigenous foodborne disease. There are only limited data on the economic consequences of food contamination and foodborne disease. In studies in the USA in 1995, it was estimated that the annual cost of the 3.3 to 12 million cases of foodborne disease caused by seven pathogens was U.S. $ 6.5 -35 billion. The medical costs and the value of the lives lost during just five foodborne outbreaks in England and Wales in 1996 were estimated at UK £ 300-700 million[1].

Several factors have been identified which may have contributed to the world's worsening food and waterborne disease problem. The globalization of the food supply has led to the rapid and widespread international distribution of foods. As some diseases are controlled, others emerge as new threats. In many countries, the proportion of the immunosuppressed population susceptible to severe outcomes from foodborne diseases is growing. Travel and migration expose individuals to unfamiliar foodborne hazards in new environments. Changes in microorganisms lead to the constant evolution of new pathogens, development of antibiotic resistance, and changes in virulence in known pathogens. In many countries, as people increasingly consume food prepared outside the home, growing numbers are potentially exposed to the risks of poor hygiene in commercial foodservice settings[4].

2.2 DATA ON FOODBORNE AND WATERBORNE DISEASE IN THE PHILIPPINES

In the Philippines, diarrheal diseases has been the number 1 cause of morbidity for many years to date with a morbidity rate of 913.6/100,000[5]. With respect to foodborne diseases, these are not routinely reported because there is no surveillance system established specifically for this disease group. Prior to 2001, only the entry "Other food poisoning (bacterial)" is reported in the Philippine Health Statistics issued annually by the Health Intelligence Service. From 1988-92, the incidence ranged from 167-199 per 100,000[6].

In 2001, the Department of Health (DOH) issued Dept. Circular No. 176 s. 2001 dated July 27, 2001 which includes the following diseases as one of notifiable or reportable diseases: cholera, typhoid and paratyphoid fever, paralytic shellfish poisoning, acute watery diarrhea, acute bloody diarrhea, food poisoning and chemical poisoning. Food poisoning is defined as an occurrence of least 2 of any gastrointestinal, neurologic or generalized signs and symptoms with onset at least 30 minutes after taking the implicated meal (includes food poisoning such as staphylococcal, streptococcal and botulism with isolation of causative organism with laboratory support)[7] in a previously well individual.

The Antimicrobial Resistance Surveillance Program being implemented by the DOH is the only laboratory-based surveillance system in the Philippines which routinely screens for *Salmonella* and other bacterial agents causing foodborne diseases from human specimens. In a review of ARSP data from 1988 to 2002, 18% of all stool isolates were *Salmonella*, 15% nontyphoidal and 3% typhoidal *Salmonella*[8]. However, nontyphoidal *Salmonella* and the two other common etiologic agents of foodborne disease (e.g. Norovirus and *Campylobacter*) may be an under-reported and often unrecognized cause of foodborne disease in the Philippines since hospitals within the Department of Health (DOH) and many private microbiology laboratories currently conduct routine screening of stool mainly for *Vibrio cholerae* and *Salmonella typhi* but do not routinely culture stool for other causes of gastroenteritis.

There have been two metaanalysis conducted on foodborne disease outbreaks in the Philippines, one from January 1988- June 1996 by Roque VG et al and another by Niñal MO, et al from June 1, 1999 to September 30, 2004. In both papers, the authors admitted that their limited reviews may underestimate the true situation since it is likely that numerous food-related outbreaks are unreported or uninvestigated. Both papers recommended the need to establish a foodborne disease surveillance in the Philippines.

In the paper by Roque et al, 45 foodborne disease outbreaks were investigated by Field Epidemiology Training Program (FETP) and Regional Epidemiology Surveillance Units (RESUs). Fifty eight percent (58%) of the outbreaks were non-infectious in nature, e.g. caused by marine toxins[9], 19 (42%) were caused by infection. The most common etiologic agents involved in these outbreaks were *Staphylococcus aureus* (47%), nontyphoidal *Salmonella* (26%), *Vibrio parahaemolyticus* (21%), *E. coli* (10%), *Bacillus sp* (10%), *Vibrio fluvialis* (5%), and *Clostridium perfringens* (5%). Spaghetti was the most common vehicle for transmission. In 14 (78%) of these outbreaks, the etiologic agents were implicated by culture and symptomatology of cases. Major contributory factors to the occurrence of this type of outbreak were improper storage temperature and poor hygienic practices (each at 58% of 19 infectious foodborne disease outbreaks investigated)[9].

Of the non-infectious type of outbreaks, 58% were due to marine toxins (15 out of 26 outbreaks investigated). The most common toxin associated with these outbreaks was scombrotoxin (53% of 15 outbreaks) in fish of the tuna/mackerel family as the most common vehicles for transmission. Six (2% of noninfectious foodborne outbreaks) were attributed to poisonous plants. Most common among these were wild mushrooms (*Amanita sp* and *Psilocybe sp*.)[9].

In the study by Niñal et al, a total of 11 foodborne disease outbreaks involving food caterers were reviewed. Patients' ages ranged from 3 to 72 years (median 28). Majority of the outbreaks occurred either during a seminar (36%) or in a daily food-serving canteen (36%). Food served in styrofoam containers were associated with the most number of outbreaks (36%), next were food trays (27%) and buffet pans (18%)[10].

E. coli was the most common pathogen associated with the foodborne disease outbreaks (45%), followed by *Aeromonas sp* (36%), *Salmonella* (27%), *Vibrio* (18%), *Staphylococcus aureus* (18%), and *Plesiomonas shigelloides* (9%). Pastry desserts (36%) were the most frequent food vehicle implicated in the foodborne disease outbreaks, next were meat (27%-pork adobo, lechon) and poultry products (18%-egg sandwich, hardboiled egg). Different pathogens were associated with the food vehicles implicated. Most (82%) of the food vehicles implicated in the investigations were only presumptive. None were categorized as a confirmed food vehicle responsible for an outbreak [10].

Only 1 (9%) of food caterers complied with the Sanitation Code of the Philippines for Food Establishments. Majority (54%) of the food caterers did not have sanitary permits that allowed them to legally operate. Sixty four percent (64%) of them employed food handlers without health certificates [10].

Improper food preparation and handling contributed to all of the foodborne disease outbreaks. Inadequate temperature control anytime from food preparation to the time food was being served contributed to 73% of the outbreaks [10]. Environmental inspection of the caterers' kitchens showed that they operated in settings that do not meet the food safety standards detailed in the Sanitation Code.

2.3 PHILIPPINE DATA ON FOOD CONTAMINATION IN PROCESSED FOOD

The Bureau of Food and Drugs (BFAD) is the agency of the Department of Health mandated to ensure that food manufacturers comply with Good Manufacturing Practices (GMP). The agency's microbiology laboratory tests processed food samples for microbial contamination. From 2002 to 2006, the BFAD microbiology laboratory tested 1,890 food samples of which 203 (11%) had an identified microorganism. The most frequently identified microorganisms were the following: *Pseudomonoas aeruginosa* (23%), *Staphylococcus aureus* (16%), *Bacillus cereus* (15%), *E. coli* (15%), *Listeria monocytogenes* (14%), molds and yeasts (10%), coliforms (7%) and *Salmonella* (4%)[11].

2.4 DATA ON FOOD CONTAMINATION IN UNPROCESSED FOOD

Monitoring of bacterial etiologic agents of foodborne diseases is conducted on unprocessed food products only by specific agencies under the Department of Agriculture like the National Meat Inspection Service (NMIS) and Bureau of Animal Industry (BAI). The BAI performs aerobic culture on various specimens referred to it, these being mostly swine, poultry, ruminants, eggs, animal feeds and feedstuff. Although *Salmonella* is not considered a FIRST priority disease, it is considered as one of the diseases of farm concern.

BAI data from 2000-2005 on 4,269 microbiologic tests done on various specimens referred from the regions showed a mean *Salmonella* isolation rate of 8.4% (Range: 2 – 21%). Most of the specimens came from the National Capital Region, regions IV and III [12]. Data from National Meat Inspection Service from 2003 to July 2006 showed that 59,850 samples of imported meat were tested for *E. coli* and *Salmonella* by culture, of which 5.97% and 0.39% were positive, respectively for each organism. Testing was performed from samples in NCR, regions III, IV, VII, and XI. Among the regions, region XI showed the highest proportion of *Salmonella* positive samples at 1.625% from 1,078 samples while the lowest proportion was seen in region VII at 0.075% from 1,807 samples. *Salmonella* positivity rates on a yearly basis from 2003 to 2006 showed the following rates: 0.33, 0.07, 0.04, and 0.10, respectively [13].

From 1999 to 2005, data from 2,455 microbiological tests done at Bureau of Fisheries and Aquatic Resources (BFAR) on seafood specimens submitted by exporters of such products showed only 4 positive isolates for *Salmonella* or an isolation rate of 0.16%. The products which tested positive for *Salmonella* were frozen scallops and octopus [14].

At the Bureau of Plant Industry, the only microbiologic test done is screening for aflatoxin. The rest of the tests done are for chemical residues such as metabisulfite, formalin, and for pesticide residues.

2.5 LIMITATIONS OF EXISTING FOODBORNE AND WATERBORNE DISEASE SURVEILLANCE SYSTEMS IN THE PHILIPPINES

As can be deduced from the previous paragraphs, the following are the observed limitations of the existing foodborne and waterborne disease surveillance systems in the Philippines:

2.5.1. There is no national food safety committee, with a committee existing only within the DOH. This body is expected to provide direction towards the drawing up of policies on food safety including setting up of surveillance systems.

2.5.2. There is no existing national **laboratory-based integrated** foodchain surveillance. Laboratory-based surveillance systems in the DOH and the DA exist but data are analyzed independently of each other without attributing foodborne and waterborne diseases to specific food categories. In the DOH, a laboratory-based surveillance system covering bacterial pathogens exists for human specimens (in the form of the ARSP) which runs parallel with the National Epidemic Sentinel Surveillance System (NESSS) of the NEC; however, the latter monitors only selected pathogens causing cholera, typhoid and paratyphoid fever. A few Department of Agriculture agencies undertake monitoring of pathogens causing foodborne disease but on a limited scale.

2.5.3. Many laboratories under the DOH and DA are not capable of identifying nor subtyping pathogens which are major causes of foodborne disease such as Norovirus, *Campylobacter jejuni* and Enterohemorrhagic *E. coli*.

2.5.4. There is serious lack of funding support for laboratories tasked with testing pathogens causing food and waterborne diseases in both the DOH and DA which may be secondary to a poor appreciation of the importance of laboratory surveillance towards the control of these diseases.

2.5.5. There is inadequate monitoring of water quality in many areas outside of Metro Manila.

2.5.6. Some rules and regulations promoting food and water safety such as the Sanitation Code of the Philippines are not fully implemented such as the requirement for regular testing of food and water for safety.

2.5.7. There are no written standard operating procedures on the appropriate epidemiologic and laboratory investigation of food and waterborne diseases (i.e. no SOPs on proper collection, transport, and testing of specimens nor conducting traceback).

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SECTION 3: SURVEILLANCE

3.1 LABORATORY-BASED SURVEILLANCE OF FOOD AND WATERBORNE DISEASES

One of the first steps in reducing illness from food and water-borne diseases **(FWBDs)** is to establish the burden of **FWBDs** by measuring their frequency through surveillance. Surveillance makes it possible to detect outbreaks, determines the etiology and natural history of disease, detects changes in disease agents and health practices and guides health policy. Sustainable preventive measures aimed at a reduction of FWBDs disease can likewise be developed on the basis of this information.

Disease surveillance systems can be categorized according to their capacity to generate information on foodborne diseases. There are four surveillance categories: no surveillance, syndromic surveillance, laboratory-based surveillance and an integrated food-chain surveillance. Integrated food-chain surveillance (IFCS) is the collection, analysis, and interpretation of data from **animals, food, and humans**. IFCS allows the attribution of burden of illness to specific food categories through the use of detailed information from monitoring food and animals. An integrated food-chain surveillance provides etiology-specific outputs including subtypes and information on reservoirs. The surveillance system provides the **greatest contribution to burden of disease estimates and data has high usefulness to contribute to risk analysis**. Because resources required to undertake this surveillance is quite complex with associated high costs, **the World Health Organization encourages countries to at least establish the next best category which is a laboratory-based surveillance system.**

Laboratory-based surveillance is the collection, analysis and interpretation of **laboratory data** from **humans (patients)** from selected sites. Data elements include etiologic identification, etiologic agent-specific case counts and pathogen characterization (e.g., serotyping, antibiogram, etc.). Information expected from this surveillance include the following: etiologic agent-specific trends over time, seasonal variation; definition of at-risk and high-risk populations; recognition of point source at the local and diffuse outbreaks at the national level. The surveillance system uses standard case definitions for classifying diseases. Laboratories use **standardized methods for pathogen identification** with recognized international quality assurance systems. Data are routinely reported, collated at a central level and promptly disseminated to the public health community. This surveillance category has a moderate ability to attribute disease to specific food sources and surveillance data has a potentially significant contribution to risk analysis. Laboratory-based surveillance provides higher quality data than syndromic surveillance which is simply a system for reporting clinical symptoms or diagnoses (i.e. diarrheal disease, foodborne disease).

The Antimicrobial Resistance Surveillance Program being implemented by the DOH is the only laboratory-based surveillance system in the Philippines which routinely screens for ***Salmonella*** **and other bacterial agents causing foodborne diseases from human specimens**. It collects laboratory-based surveillance data from 17 sentinel sites in 10 regions in the Philippines. With respect to surveillance on food, the Bureau of Food and Drugs (BFAD) is the agency of the Department of Health whose microbiology laboratory tests **processed** food samples and bottled water for microbial contamination. The BFAD has committed to initiate a laboratory-based surveillance on processed food.

Monitoring of bacterial etiologic agents of foodborne diseases is conducted on **unprocessed food products** only by specific agencies under the Department of Agriculture (DA) like the National Meat Inspection Service (NMIS) and Bureau of Animal Industry (BAI). Agencies under the DA which have committed to initiate/strengthen its agency's laboratory-based surveillance on food include the following: NMIS for fresh, chilled, frozen local and imported meat and meat products, BAI for swine, poultry, ruminants, eggs, animal feeds and feedstuff, Bureau of Fisheries and Aquatic Resources (BFAR) for fish and other aquatic products, Bureau of Plant Industry (BPI) for unprocessed fruits and vegetables and the

National Dairy Authority (NDA) for raw milk. The East Avenue Medical Center - National Reference Laboratory for Water also plans to initiate a surveillance system for drinking water.

This section outlines the components of a **laboratory-based human, food and waterborne disease surveillance** system which the proponents would like strengthened in the Philippines (see Section 3.7). The surveillance systems described below are in place in varied DOH institutions. For most DA institutions, **monitoring** is being done as part of their regulatory function. Through linkages with agencies of the Department of Agriculture and the Bureau of Food and Drugs, the components of an **integrated foodchain surveillance** are being established with the goal of ultimately institutionalizing this kind of surveillance in the Philippines in the future.

Table 3.1 (Laboratory guidelines for confirmation of food-borne disease outbreak in human infection) summarizes the etiologic agents, incubation periods, clinical symptoms, modes of contamination, specimens to be tested, laboratory criteria and methods for detection of the most important enteric pathogens, Gram-positive and anaerobic bacteria causing food and waterborne diseases. Bacterial Isolates from any specimen may be referred to the ARSRL for confirmatory tests.

3.2 FOODBORNE AND WATERBORNE DISEASE SURVEILLANCE UNDER THE NATIONAL EPIDEMIOLOGY CENTER (NEC)

Foodborne and waterborne disease surveillance under the National Epidemiology Center (NEC) has 2 components: **laboratory-based surveillance** through the National Epidemic Sentinel Surveillance System (NESSS) and **syndromic surveillance** through the Notifiable Disease Reporting System (NDRS). The NESSS system is a hospital-based surveillance system that yields laboratory –confirmed information on cases seen in sentinel hospitals which can serve as an early warning system for outbreaks in the community. A reporting system for laboratory-based surveillance system is included in *Annex 3.2A*.

The NDRS collects data on clinical diagnoses on 17 diseases and 7 syndromes. The data in this system are used to estimate morbidity rates and data are passively collected from all levels of the government's healthcare delivery system starting from the health centers to the tertiary hospitals and consolidated at the NEC. DOH Dept. Circular No. 176 s. 2001 dated July 27, 2001 included the following diseases as one of notifiable or reportable diseases: cholera, typhoid and paratyphoid fever, paralytic shellfish poisoning, acute watery diarrhea, acute bloody diarrhea, food poisoning and chemical poisoning. Reporting of cholera, typhoid and paratyphoid fever require laboratory confirmation and data are submitted to the NESSS while the rest of the diseases mentioned in the previous sentence do not require laboratory confirmation. Specific Foodborne Disease Worksheet (*Annex 3.2B*) and Typhoid and Paratyphoid Fever Worksheet (*Annex 3.2C*) are filled up when the aforementioned diseases are encountered.

Structure of the Epidemiologic Surveillance

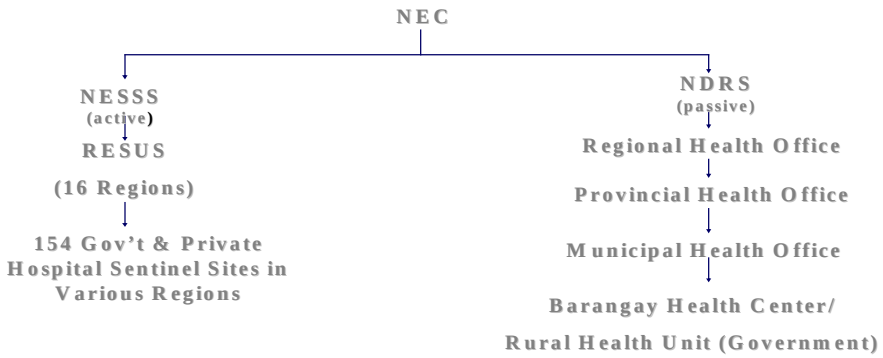


Table 3.1 Laboratory Guidelines For Confirmation Of Food-Borne Disease Outbreak In Human Infection

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
I ENTERIC PATHOGENS						
1.*Salmonella* spp.	12-48 hours	Diarrhea, fever, abdominal pain lasting several days	Infected food-source, animals, human feces	Feces, blood, & incriminated food	Isolation of *Salmonella* organism from stool & blood specimens from ill individuals.	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology 3.b. Susceptibility testing 3.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
2. *Shigella* spp.	1-3 days	Abdominal pain, bloody and mucoid diarrhea, fever	Human fecal contamination, direct or via water	Feces, rectal swabs & incriminated food	Isolation of *Shigella* organism from stool or rectal swabs of ill individuals	1.Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology 3.b. Susceptibility testing 3.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
3. Diarrheagenic E. coli	1-2 days	Watery, bloody diarrhea	Infected cattle	Feces, incriminated food and water	Isolation of the organism of same serotype from stool of ill individuals, and demonstration of enterotoxigenicity or invasiveness of the isolates by special laboratory techniques.	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology 3.b. Susceptibility testing 3.c. Molecular typing
3.1. Enterohemorrhagic E. coli 0157:H7 and other serotypes that produce shiga toxins	1-10 days usually 4-5 days approximately 6% go on to develop hemolytic uremic syndrome (HUS) children or thrombotic thrombocytopenic pupura (TTP) adults	Watery bloody diarrhea (often bloody) abdominal cramps (often severe) little or no fever. Acute renal failure in HUS or TTP	Human fecal contamination, direct or via water			
3.2 Enteroinvasive E. coli	Variable	Diarrhea (may be bloody), fever, and abdominal cramps				
3.3 Enteropathogenic E. coli	Variable	Diarrhea, fever, and abdominal cramps	Human fecal contamination, direct or via water			
3.4 Enterotoxigenic E. coli	6-48 hours	Profuse watery diarrhea; sometimes cramps, vomiting				

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
4. *Yersinia enterocolitica*	1-10 days; usually 4-6 days	Diarrhea, pains mimicking appearance of appendicitis, fever, vomiting, etc.	Infected animals especially swine, contaminated water	Feces, rectal swabs & incriminated food	Isolation of *Yersinia* organism from stool or rectal swabs of ill individuals	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology 3.b. Susceptibility testing 3.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
5. *Vibrio parahaemolyticus*	12-24 hours	Diarrhea, cramps, sometimes nausea, vomiting, fever headache	Marine coastal environment	Feces, rectal swabs & incriminated food	Isolation of Kanagawa phenomenon-positive organisms of same serotype from stool of ill individuals	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology 3.b. Susceptibility testing 3.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
6.*Vibrio cholerae*,(and so-called NAG or non-agglutinable vibrio)	1-5 days	Profuse, watery stools; sometimes vomiting, dehydration; often fatal if untreated	Human feces in marine environment	Feces, rectal swabs & incriminated food	Isolation of toxigenic organism from stool or vomitus of two or more ill persons. Isolation of organism of same serotype from stool of two or more ill persons.	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology 3.b. Susceptibility testing 3.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
7. *Aeromonas* spp.		Watery stools, abdominal cramps, mild fever, vomiting	Seafoods (fish, shrimp, oysters),snails, drinking water	Feces, rectal swabs & incriminated food	Isolation of organism from stool or rectal swabs of two of more ill persons	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a. Susceptibility testing 3.b. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
8. *Campylobacter* spp.	2-5 days	Diarrhea(sometimes bloody),abdominal pain, fever	Infected food source or animals	Feces, rectal swabs & incriminated food	Isolation of organism from clinical specimens from two or more ill persons	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a. Susceptibility testing 3.b. Molecular typing

II GRAM POSITIVE ORGANISM						
Etiologic Agent	**Incubation Period**	**Clinical Symptoms**	**Mode of Contamination**	**Specimens to be Tested**	**Laboratory Criteria**	**Methods**
1. *Staphylococcus aureus*	2-6 hours	Nausea, vomiting, diarrhea, cramps	Handlers with colds, sore throats or infected cuts, food slicers	Vomitus, feces, and incriminated food	Isolation of the organism with same phage or coagulase type in stool or vomitus of ill persons and implicated food and stool of ill persons and implicated food and /or skin lesion or nose of food handler	1.Conventional culture method 2. Conventional biochemical screening and Identification method 3. Toxin detection 4. Subtyping methods 4.a Serology 4.b. Susceptibility testing 4.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
2. *Streptococcus* Group A		Various, including sore throat, erysipelas, scarlet fever	Fever, pharyngitis, scarlet fever, upper respiratory infection	Throat swab	1. Isolation of organism of same M- or T-type from throat of two or more ill persons ; or 2. Isolation of organism of same M- or T-type from epidemiologically implicated food.	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a Serology by lancefield grouping 3.b. Susceptibility testing 3.c. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
3. *Listeria monocytogenes*	1-10 weeks	Meningoencephalitis, still births, septicemia or meningitis in newborns	Soil or infected animals, Directly or via manure	Blood, Implicated food	I. Isolation of organism from normally sterile site; 2. Isolation of organism of same serotype from stool of two or more ill persons exposed to food that is epidemiologically implicated or from which organism of same serotype has been isolated.	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Subtyping methods 3.a. Susceptibility testing 3.b. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
4. Brucella spp.	Several days to several months; usually >30 days	Weakness, fever, headache, sweats, chills, arthralgia , weight loss, and splenomegaly	Ingestion of contaminated animal products(e.g. unpasteurized milk and milk products and meat)	Blood and implicated food	Two or more ill persons and isolation of organism in culture of blood or bone marrow, greater than fourfold increase in standard agglutination titer(SAT) over several weeks, or single SAT 1:160 in person who has compatible clinical symptoms and history of exposure	1. Conventional culture method 2. Conventional biochemical screening and Identification method

III AEROBIC/ANAEROBIC ORGANISMS						
Etiologic Agent	**Incubation Period**	**Clinical Symptoms**	**Mode of Contamination**	**Specimens to be Tested**	**Laboratory Criteria**	**Methods**
1. *Bacillus cereus*	8-16 hours	Diarrhea, cramps, nausea and vomiting	From soil or dust	Feces, rectal swabs & incriminated food	Isolation of organism in stool of ill person, and detection of 10^5 or more organisms per gram in epidemiologically incriminated food.	1. Conventional culture method 2. Conventional biochemical screening and Identification method 3. Toxin detection 4. Molecular typing
2. *Clostridium perfringens*	8-18 hours	Diarrhea, cramps, rarely nausea and vomiting	Soil, raw foods	Feces, rectal swabs & incriminated food	Isolation of organism of same serotype from stool of most ill individuals, but not from stool of controls.	1.Conventional culture method 2. Conventional biochemical screening and Identification method 3. Molecular typing

Etiologic Agent	Incubation Period	Clinical Symptoms	Mode of Contamination	Specimens to be Tested	Laboratory Criteria	Methods
3. *Clostridium botulinum*	12-36 hours	Fatigue, weakness, constipation, double vision, slurred speech, respiratory failure, sometimes death	Types A & B : from soil or dust; Type E: water and sediments	Serum, Feces, post-mortem organs and incriminated food	Detection of botulinal toxin in patient's sera, feces or incriminated food.	1.Conventional culture method 2. Conventional biochemical screening and Identification method 3. Toxin detection 4. Molecular typing

With the approval of the revised International Health Regulations (IHR) of 2005 which requires all Member States of the World Health Organization (WHO) to strengthen their core capacities for disease surveillance and response, the Philippines has taken steps to comply with the 2005 IHR calls by adapting an integrated approach in strengthening the Philippine Epidemic Surveillance and Response (ESR) system. This approach envisions integration of all surveillance activities (e.g. collection, analysis, interpretation and dissemination of surveillance data) at all levels including training, supervision and resources, both financial and material, from all programs and donors.

To meet these challenges, the Philippine Integrated Disease Surveillance and Response (PIDSR) was launched by the Department of Health last July 2007 which will consolidate the NESSS System, EPI Surveillance and National Disease Reporting System (NDRS) in the future.

3.2.1 Case Definitions and Case Classifications as Used in the NEC FWBD Surveillance

3.2.1.1 Foodborne Disease

Clinical case definition: A disease, usually either infectious or toxic in nature, caused by agents that enter the body through ingestion of food or drinking water. (note: definitions are based on PIDSR Worksheet B. See *Annex 3.2B*)

NOTE:
Includes: Food-borne bacterial, viral, parasitic infections (Salmonellosis, *E. coli*, viral gastroenteritis, taeniasis, etc), poisoning due to chemical-contaminated foods or drinks, toxin-producing bacteria (*Staphylococcus*, *Clostridium*, *Bacillus*, etc), marine toxins (scombroid, ciguatera, etc) and other poisoning (tuba-tuba, etc)

***Excludes*:** Food-borne diseases specified in the list of notifiable diseases (e.g., *Salmonella*, typhoid and paratyphoid, cholera, paralytic shellfish poisoning)
The clinical case definition varies with the specific disease.

Case classification:
Suspected: A case that meets the clinical case definition of a specific foodborne disease
Probable: Not applicable
Confirmed: A suspected case in whom laboratory investigation confirms the presence of one or more foodborne pathogens in a clinical specimen

3.2.1.2 Typhoid Fever

Clinical description**:** *An illness caused by* Salmonella typhi *that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea and nonproductive cough. However, many mild and atypical infections occur. Carriage of* S. typhi *may be prolonged.*

Case classification*:*

***Probable*:** a clinically compatible case that is epidemiologically linked to a confirmed case in an outbreak

***Confirmed*:** a clinically compatible case that is laboratory confirmed

3.3 SURVEILLANCE IN HUMAN SPECIMENS

Routine nationwide laboratory-confirmed surveillance of foodborne diseases among human specimens is being undertaken by the Antimicrobial Resistance Surveillance Program (ARSP) of Research Institute for Tropical Medicine (RITM), focusing mainly on aerobic bacterial pathogens.

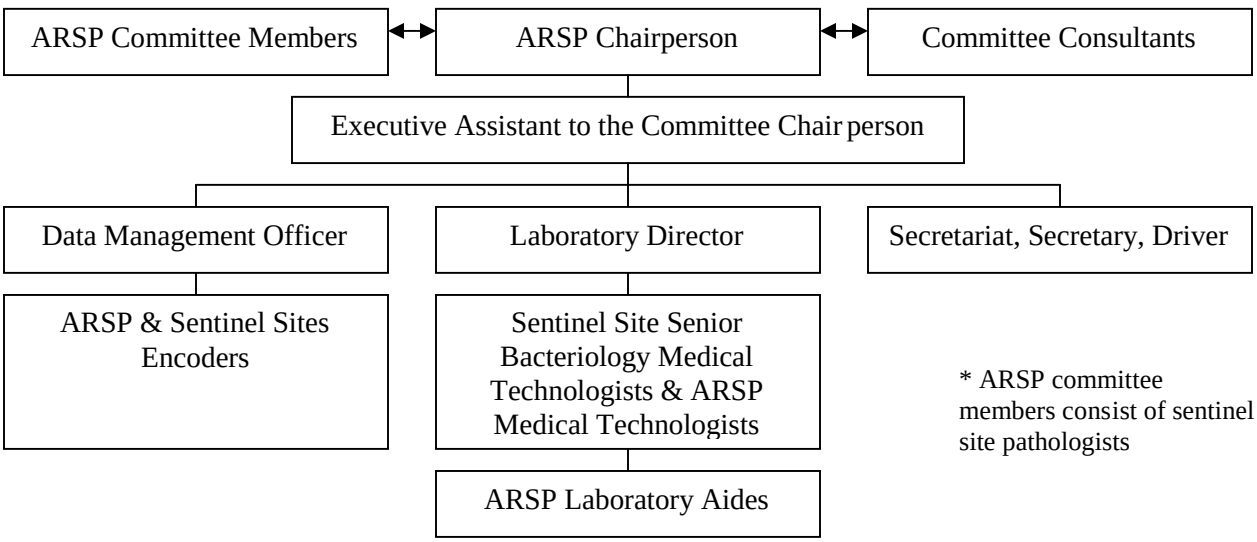
Organization of Surveillance

3.3.1 Scope

The coordinating center for the program is the Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL) at the RITM. ARSP surveillance started in 1988 with all sentinel sites within Metro Manila but has since then expanded to 17 sentinel sites in 10 out of 16 regions of the Philippines. Sentinel sites include tertiary care referral hospitals, mostly government regional hospitals. The following are the existing sentinel sites of the ARSP to date including the regions where they are located:

1. Baguio General Hospital and Medical Center (CAR)
2. Bicol Regional Training and Teaching Hospital (Region 5)
3. Corazon Locsin Montelibano Medical Center (Region 6)
4. Vicente Sotto Memorial Medical Center (Region 7)
5. Celestino Gallares Memorial Hospital (Region 7)
6. Eastern Visayas Regional Medical Center (Region 8)
7. Zamboanga Medical Center (Region 9)
8. Davao Medical Center (Region 11)
9. Cotabato Regional Hospital and Medical Center (Region 12)
10. San Lazaro Hospital (National Capital Region-NCR)
11. Rizal Medical Center (NCR)
12. Philippine General Hospital (NCR)
13. University of Santo Tomas Hospital (NCR)
14. National Kidney and Transplant Institute (NCR)
15. Lung Center of the Philippines (NCR)
16. Nicanor Reyes Memorial Medical Center (NCR)
17. Research Institute for Tropical Medicine (NCR)

3.3.2 Administrative structure of Surveillance



3.3.3 Laboratory Methods

All sentinel sites follow the same laboratory methods. Bacteria are identified using conventional methods up to species level. Antimicrobial susceptibility test method used is disc diffusion following the Clinical Laboratory Standards Institute (CLSI) standards. Minimum inhibitory concentration tests are performed at the Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL) for specific bacteria as required by CLSI standards. Sentinel sites which are able to identify bacterial strains with unusual antimicrobial susceptibility patterns are expected to send these isolates for confirmation (i.e. identification, antimicrobial susceptibility, subtyping) to the ARSRL. Examples of such strains include fluoroquinolone/ceftriaxone/cefotaxime-resistant nontyphoidal *Salmonella*, ampicillin/ceftriaxone/chloramphenicol/cotrimoxazole/fluoroquinolone resistant *Salmonella typhi* and *paratyphi*, fluoroquinolone/cotrimoxazole/nalidixic acid resistant *Shigella*, and tetracycline resistant *Vibrio cholera*. Please refer to *Annex 3.3.3A* for the Referral flow of isolates to the ARSRL and *Annex 3.3.3B* for the ARSRL result form. Sentinel sites intending to refer isolates should provide the required information contained in the ARSRL result form and state the reason for referral. Bacterial isolates should be transported in the appropriate transport medium and should be packed in accordance with Guidelines for Shipment of Bacterial Isolates (*Annex 3.3.3C*). Laboratories other than sentinel sites of the ARSP intending to refer isolates for confirmation should call the ARSRL office at 02-809-9763 to coordinate shipment, be provided instructions and be advised on fees.

Each sentinel site is expected to comply with the **quality control** standards of the CLSI. Sentinel sites are visited by the ARSRL staff as necessary with more visits done on sentinel sites in which problems are identified.

The ARSRL also implements an **external quality assurance** program among its sentinel sites. In turn, it participates in international external quality assurance programs such as those implemented by the World Health Organization. Performance in the EQA is scored and written commentaries/feedback highlighting the reasons for common errors and the correct methods for identification are sent to each participating laboratory as an educative measure.

3.3.4 Data Collection and Reporting

Data come from aerobic culture and susceptibility results from sentinel site inpatients and outpatients and from outbreak investigations, especially in the regions outside the National Capital Region. All culture and susceptibility results (microorganism identification and antimicrobial susceptibility results) from all specimens are included in the surveillance database. Results of culture and sensitivity tests are written into a standard form (*Annex 3.3.3B*). The form includes the following information: hospital code, patient's name, patient hospital number, age, sex, ward, specimen number, specimen date, specimen code, date of patient admission in the hospital if inpatient, microorganism identified, zone diameter readings for the antimicrobials tested, minimum inhibitory concentrations (MIC) if done and other comments.

Zone diameters for each antimicrobial are entered and a computer program classifies the type of susceptibility according to the standards of the CLSI. The sentinel sites utilize the WHONET computer program for data entry and analysis.

Case-based as well as aggregated data are generated. Types of aggregated data include etiologic agent-specific case counts, pathogen characterization (e.g. serotype, antibiogram, etc,

etiologic agent-specific trends over time, seasonal variation, antibiogram trends over time and by hospital ward/geographical area and recognition of point source at the local and diffuse outbreaks at the national level. Data are routinely reported, collated at a central level and significant results promptly disseminated to the NEC and public health community in addition to an annual report.

3.4 SURVEILLANCE IN PROCESSED FOODS

The Bureau of Food and Drugs (BFAD) is mandated to ensure the safety, efficacy and quality of processed foods made available to the consuming public. BFAD Inspectors are responsible for inspection and issuance of License to Operate (LTO) to establishments dealing with the manufacture and repacking of foods and for the implementation of current Good Manufacturing Practice (cGMP); verification of the Hazard Analysis Critical Control Points (HACCP) plans; and conduct of market surveillance wherein samples are taken from the outlet for monitoring purposes.

The BFAD laboratories conduct tests necessary for determining compliance with product safety and quality standards. With respect to surveillance on food, the BFAD is the agency of the Department of Health whose microbiology laboratory tests **processed** food samples for microbial contamination. **The BFAD has committed to initiate a laboratory-based surveillance on processed food.** It also conducts analysis of leftover foods coming from suspected meals endorsed by NEC and DOH Legal Office and samples submitted by complainants.

Surveillance data will come from laboratory test results of food and bottled water samples, including collected samples submitted by the BFAD Inspectors; from routine monitoring samples, from RHO's, samples endorsed by NEC & DOH/ Legal Office; and from complaint products from consumers. Aggregated data which are **proposed to be** generated include number of cases by age group and sex, geographical area, week, etiologic agent prevalence in foods, pathogen characterization (e.g., serotyping, antibiogram, etc.) and attribution of the burden of foodborne disease by food category.

3.5 SURVEILLANCE IN UNPROCESSED FOOD (VETERINARY SURVEILLANCE)

Veterinary surveillance is a term used to describe the collection of information about diseases affecting animals, pets and wildlife caused by organisms such as bacteria and viruses, or by poisons. Infected animals may be asymptomatic but may pose a threat to human health, thus, the need to monitor diseases affecting animals at the earliest possible time. Cases of animal infections or poisoning increase the risk of contaminants getting into human food. The following agencies of the Department of Agriculture which will be undertaking veterinary surveillance related to food-borne disease affecting humans are the following: Bureau of Animal Industry (BAI), National Meat Inspection Service (NMIS), Bureau of Fisheries and Aquatic Resources (BFAR), Bureau of Plant Industry (BPI) and the National Dairy Authority (NDA).

3.5.1 Bureau of Animal Industry

The BAI's participation in foodborne disease surveillance is in line with two of its functions, namely: 1) to develop and transfer technologies that will improve and sustain the development of the livestock industry which ensure food security and competitiveness of the local produce in the global market; and 2) to plan, coordinate and implement research and development programs on swine, beef cattle, poultry, small ruminants and equine on areas of genetics and breeding system, animal nutrition and feed resources utilization, herd management, animal health and disease

control, containment and eradication of diseases, post production, value -added meat products and by-products technology and animal waste management.

With respect to surveillance, the design and implementation of active surveillance in animal health is a routine activity among large farm owners involved in the trade for purposes of farm accreditation to ensure that the farm is disease-free which is an important requirement of importing countries.

Large scale animal producers voluntarily submit samples as part of their routine testing for Salmonellosis which in turn is part of their animal health program in the farm. A good animal health program is a prerequisite in order to participate in local and international trade.

3.5.1.1 The recommendations on the future participation of the different offices with their roles and responsibilities for the active surveillance from national to local levels are as follows:

- Bureau of Animal Industry (BAI) – will set the standard procedures for the active surveillance, isolation and confirmation of the agent from the animals and by-products.
- Department of Agriculture Regional Diagnostic Laboratory (DA -RADDL) – will collect samples for processing and screening for isolation of food -borne agents in a specific geographical area of coverage.
- Local Government Units at the province/ Municipal/ City Levels - will be encouraged to pass board resolutions to support the implementation of the surveillance program to control the prevailing disease affecting their respective area .
- Livestock and Poultry Farms - will submit to the BAI samples for routine testing of animals subject to consultation with the members of their association/ organization.
- Make testing of samples part of accreditation
- Research specific provision(s) in the Consumer Act of the Philippines on the role of each agency

All agencies participating in this surveillance should conduct information campaigns on foodborne prevention and encourage consumers to patronize only products from accredited suppliers.

3.5.1.2 Sampling Method - All culture results from swine, poultry, ruminants, eggs, animal feeds and feedstuff will be included in the surveillance. The consumer food-producing establishment brings the specimen to any of existing 15 regional animal diagnostic laboratories which will submit the results to the Philippine Animal Health Center which, in turn, will have the isolates confirmed at the Antimicrobial Resistance Surveillance Reference Laboratory of the Research Institute for Tropical Medicine of the Department of Health. *Annex 3.5.1.2A* entitled Laboratory Diagnosis of Zoonotic Infections causing Food and waterborne Disease summarizes the appropriate specimens to collect, and laboratory diagnostic methods to perform.

Types of data to be generated from BAI surveillance will include overall and regional isolation rates of *Salmonella* and other microorganisms from samples of animal feed and feed ingredients, environmental samples, fecal/cloacal swabs, organs/tissues from the edge of lesion and normal tissues and isolation rate by region.

3.5.2 National Meat Inspection Service

Raw meats and poultry are derived from warm-blooded animals. Their microbial flora is heterogeneous and consists of mesophilic and psychotropic bacteria from the animal itself, soil and water bacteria from the environment, and bacterial species introduced by man and equipment during processing. The surface flora on freshly slaughtered carca sses, usually about 10^4 to 10^3 per cm^2 is primarily mesophilic, having originated from the gastrointestinal tract and external surfaces of live animals. Psychotropic organisms originating from soil and water are present, but usually only to about 10^1 per cm^2. Mesophiles are important because they indicate the degree of sanitation during slaughtering process.

Public concern regarding the safety of raw meat and poultry has increased markedly over the past decade. From the farm to the table, there are nu merous opportunities for contamination of meat and meat products. Pathogens may be present on fresh red meat tissues because the slaughtering process does not include the bactericidal step sufficient for assured elimination. The frequency and levels of the bacteria on freshly slaughtered animal carcasses vary depending upon climatic, farm, livestock transport, stock yard and processing conditions. Humans and equipment can serve as sources of contamination.

All accredited meat establishment that produce mea t and meat products including poultry, particularly class "AAA", are required to adopt the Haz ard Analysis and Critical Control Points (HACCP) program to take preventive measures at each stage of the meat production process to ensure the safety of meat for human consumption. Critical control points for preventing food-borne illness include eliminating cross-contamination of ready-to-eat foods by raw products, using adequate cooking times and temperatures, avoiding recontamination after cooking by disinfecting surfaces contaminated by raw meat and proper chilling and storing of meat after cooking.

At present, the National Meat Inspection Servi ce (NMIS) has a Pathogens Reduction Monitoring and Surve illance Program to ensure that meat and meat products are sa fe and clean for human consumption.

3.5.2.1 Types of samples

Sample	Example
1. Raw materials	Locally produced meat and meat products including poultry (for local consumption, export); Imported chilled/frozen meat; imported meat products
2. Processed Control	Processed products
3. Finished products	Canned product
4. Complaints samples	Submitted by the Task Force Bantay Karne and/or customers
5. Legal (Suspected and/or Confiscated Samples)	Local and imported meat and meat products without documents from the Controlling Authority and/or showing decomposition

3.5.2.2 Sampling plan for meat and meat products

3.5.2.2.1 Chilled and Frozen meat and meat products

3.5.2.2.1.1 Appropriate sample size to be drawn from a given lot shall be determined from ISO 2859 (Military Standard 105E) standard sampling plan (refer to *Annex 3.5.2.2A*).
The following inspection levels for determining the frequency of sampling (instead of sample size) shall be used:

First Sampling:

1) **Normal Inspection Level** – shall be used for routine examination of all imported meat and meat products;

2) **Reduced Inspection Level** – shall be used under one or both of the following conditions:
   a) When ten (10) successive monitoring of shipment from the same source/establishment at the normal level of sampling are acceptable, sampling can move to the reduced level. After the first unsatisfactory result, sampling shall be reverted back to the normal level;

   b) When exporting establishment had undergone inspection and accreditation by the Department of Agriculture and offers satisfactory food safety guarantee and with veterinary equivalence agreement with the Philippines.

Second Sampling:

3) **Tightened Inspection level** – shall be undertaken without cost to the government under the following conditions:
4)
   a) When two out of five (5) successive monitoring of shipments from the same source at the normal level were unsatisfactory. To revert back to the Normal Inspection level, acceptance of five (5) consecutive lots under the Tightened Inspection Level is required.

   b) When the lot on initial visual examination is obviously unacceptable. The inspector shall perform the following:

      1. The entire shipment shall be placed on hold until results of laboratory analyses have been determined; and
      2. Laboratory examination shall include the routine tests, isolation and identification of physical, chemical and biological hazards.

3.5.2.2.1.2 **Acceptance Quality Level** (AQL) to be used shall be 6.5 percent

3.5.2.2.1.3 Consumer's risk shall be 10 percent and producer's risk is 5 percent

3.5.2.2.1.4 A second sampling shall be done only when results of first examination failed to comply with the requirements of ISO 2859.

3.5.2.2.2 On-line sampling (slaughterhouse, Poultry Dressing Plant (PDP), Meat Processing Plant (MPP)

Appropriate sample size to be drawn from a given lot shall be determined from ISO 2859 (Military Standard 105E) standard sampling plan (*Annex 3.5.2.2A*)

3.5.2.2.3 Canned meat and meat product sampling

Appropriate sample size to be drawn from a given lot shall be determined from ISO 2859 (Military Standard 105E) standard sampling plan (*Annex 3.5.2.2A*).

3.5.2.2.4 Other samples (confiscated, consumer samples)

1. Regular or public samples shall be analyzed based on clients' request.
2. Representative sample from confiscated meat shall be submitted to the laboratory for examination.

3.5.2.3 Sampling Procedures

3.5.2.3.1 **Documentary Requirements**

Attentive to the documentary requirement such as, but not limited to the International Veterinary Certificate (IVC); Veterinary Quarantine and Meat Inspection and Laboratory Certificate (VQMILC), Section 8 AO 26 s. 2005 shall be given per shipment of imported meat or meat products.

3.5.2.3.2 **Labeling Requirements** (Chapter 7 Sect 37-42 OF RA 9296)

The immediate container shall be marked with the following minimum mandatory information:

1) Name of the product
2) Net quantity
3) Name and address of the manufacturer, packer/distributor and country of origin
4) Establishment accreditation number
5) Date of preparation or production
6) Consume before date
7) Lot Identification
8) Inspection Stamp
9) Safe handling instruction
10) Other Information: The words "For export to the Philippines" should also be marked on the box

3.5.2.3.3 **Collection**

A. Imported Meat and Meat Products

In order to obtain the required representative sample from each shipment of meat and meat products the following procedures shall be applied:

1) Determine the size of the container van and the total volume of the product population per shipment
2) Check the production date or product code
3) Determine the sampling size based on ISO 2859 Section III
4) Group the boxes according to the processing date
5) If the production date of the products falls on the same date, divide the product population into three (3) groups then get four (4) to five (5) boxes from each group
6) When the batches comprising the lot have different production dates, they shall be regrouped in accordance with the product description to facilitate sampling size determination
7) Samples shall be randomly collected
8) Identified sampling size boxes shall be properly marked with the use of permanent marker
9) Bring the marked boxes in the sampling room for hygienic and aseptic physical evaluation
10) After conducting physical examination, if the imported items met the NMIS documentary and labeling requirements and are found to be safe and wholesome for human consumption, the inspector may allow the immediate use or distribution in commerce of the imported meat or meat products
11) If the inspector has doubts on his or her judgment, he should cut five hundred (500) grams of meat samples. Ban saw blade should be sterilized with the use of 70% alcohol before and after cutting each sample;
12) All boxes where samples were taken shall be marked, taped and set aside in case a second sampling is required
13) For packed or canned meat products, one (1) small pack or can shall represent one sample unit
14) Each cut sample should be placed in a sterile plastic bag, sealed and properly labeled.

B. Local

Frequency of sample collection

1) Samples shall be collected from accredited "AAA" meat plants twice annually: (1) pre-accreditation sampling, collected by meat plant officer and one (1) unannounced sampling done by NMIS laboratory representative – and shall be submitted to NMIS for laboratory examination .
2) Weekly monitoring shall be done by the meat establishment laboratory .
3) Results shall be verified by the NMIS laboratory during the HACCP audit .
4) Sample collection in "AA" and "A" meat establishments shall be on a quarterly basis, collected by the meat plant officer .
5) All samples collected should be properly identified as to the name of the owner/ dealer and source or origin for traceability purposes.

6) Samples shall be collected by a meat plant officer for laboratory examination. If the result is noncompliant to International standards, the importer shall be immediately informed for proper disposition of products .
7) Laboratory results shall be released within the period of four – five (4-5) days to importers by the Meat Import/Export Assistance Inspection Division (MIEAD)

3.5.2.4 Pathogen Reduction Monitoring Program in Accredited Meat Establishment s

3.5.2.4.1 **Water Contaminants**

Three (3) water samples shall be collected in the meat establishment before operation every second month of each quarter. There is a proposal to recognize the water testing results done by accredited water testing laboratories.

Water sample (100 ml when melted) shall be collected from different sources in the meat establishment {water tank, faucet (source: from water company or deep well)]

Crushed/cube ice samples (100 ml when melted) used in meat plants particularly poultry dressing plants should also be submitted for laboratory examination .

A wide mouth sterile glass bottle should be used in collecting water sample.

3.5.2.4.2 **Pathogen Reduction/Hygiene and Sanitation**

Meat Plant Facilities

Five (5) swab samples from meat plant facilities shall be collected before operation every third month of each quarter.

1) Abattoir swab samples

   a) Butcher's Hands
   b) Dehairing Table
   c) Scalding vat
   d) Meat hook
   e) Butcher's knife

2) Poultry Dressing Plant swab samples

   a) Leg Hanger
   b) Crates
   c) Fingers of dehairing machine
   d) Draining/Sorting table
   e) Worker's hands

3) Meat Processing Plant swab samples

   a) Cutting machine
   b) Stuffing machine
   c) Mixing bowl
   d) Grinding machine
   e) Sorting/Packaging table
   f) Worker's hand

Carcass and Poultry

1) Five (5) carcass swab samples shall be collected before loading

2) Five (5) poultry carcass swab samples shall be collected after chilling

3) Swab sample is placed in a sterile test tube with transport media

3.5.2.5 Packaging

3.5.2.5.1 Samples should be individually placed in sterile plastic bags or bottles and sealed with complete label for identification.

3.5.2.5.2 Packaging material shall be hygienic and strong to protect the product from any physical damage.

3.5.2.6 Transport

3.5.2.6.1 The samples shall be transported in an insulated box and maintained at temperature of not less than 5ºC (chilling temperature).

3.5.2.6.2 Samples shall be brought to the NMIS laboratory within the following period:

1) Six (6) hours for samples transported in cooler box with ice refrigerant

2) 24 hours for frozen samples transported in a freezer van

3.5.2.7 Laboratory Procedures

3.5.2.7.1 **Submission and Receiving**

1. Concerned NMIS Field Officer should fill in the DA NMIS Laboratory Request Form (*Annex 4.4.8P-S*) in duplicate copies

2. The said request shall be recommended for laboratory analyses by the Head of DA NMIS Laboratory Services Division (LSD)

3.5.2.7.2 **Storage**

1. One-half of the sample size collected shall be used for analysis

2. The other half shall be stored as legal sample for a period of one (1) month. Where there are legal questions involved, the legal sample shall be stored for a period of six (6) months.

3.5.2.7.3 **Laboratory Test**

Laboratory examination of meat and meat products shall be performed within 24 hours from submission of sample in the laboratory.

3.5.2.7.3.1 **Water Analysis**

1) Standard Plate Count
2) Coliform Count

3.5.2.7.3.2 **Microbiological Identification/Isolation**

1) Salmonella
2) Staphylococcus aureus
3) E. coli
4) *Clostridium*/Sporeformers
5) Streptococcus
6) Yeast and Molds

3.5.2.7.4 **Laboratory Results**

1) Issuance of laboratory results shall be within five (5) days upon the receipt of samples.

2) No laboratory results will be issued through phone calls or text messages. Results can be obtained from the Laboratory Services Division(LSD).

3) LSD shall interpret the results and In-plant Operation Inspection Division (POID) and MIEAID

4) shall adopt corrective measures if necessary.

3.5.2.7.5 **Disposals**

1) Meat found unfit for human consumption after laboratory examination must be properly disposed.

2) Holding time of samples for legal purpose is one (1) month.

3) Confiscated meat and meat products are considered as government property and if fit for human consumption shall be donated to charitable institutions (DA AO No. 5).

4) Legal basis: RA 7394 (Consumer Act of the Philippines).

3.5.2.8 The DA NMIS Central Office and Satellite Meat Laboratories will conduct testing of meat and meat products. Please refer to Section 5 for the list of DA NMIS Central Office and Satellite Meat Laboratories.

3.5.2.9 Data to be generated include the client's names, samples received, origin of samples, test date, results of total plate count(TPC)/aerobic plate count (APC) and bacterial isolation tests which will include overall and regional isolation rates of *Salmonella* and other microorganisms from samples of local and imported meat and meat products from swab samples from meat plant facilities and carcass and poultry.

3.5.3 Bureau of Fisheries and Aquatic Resources

The record of seafoods as vehicles of infection or intoxication is extremely good. The major exceptions to this are outbreaks of gastroenteritis due to contaminated oysters or mussels which occurred most recently in the areas affected by paralytic shellfish toxin.

At present, outbreaks of food-borne Salmonellosis is a worldwide problem which are associated with seafood products, mostly due to contaminated water or improper preparation or handling.

Salmonella are not normal inhabitants of either fresh water or salt water environments but originate in the intestine of land animals suffering from Salmonellosis. However, they are able to grow on seafood products if conditions are conducive to their growth and multiplication. *Salmonella* can apparently grow out from small contaminant populations at a temperature of 8 degree Celsius (46 degree Fahrenheit) which is within the normal household and retail refrigerator range. Temperature is the principal factor limiting the hazard, particularly under circumstances of improper handling of seafoods. Therefore, it is extremely import ant that fish quality programs be implemented at local/ domestic and international market.

3.5.3.1 Participants in the Surveillance

BFAR fish inspectors, Philippine Fisheries Development Authority (PFDA) and local sanitary officer under the Department of Health will be responsible for the implementation of Sanitation Standard Operating Procedures (SSOP) and Good Manufacturing Practices (GMP) both at fish landing sites and wet markets. At the fish processing plants, BFAR fish Inspector will conduct regular monitoring/ verification of HACCP compliance by fish processors both at national and regional levels to ensure that fish and fish products meet the quality standards and are fit for human consumption.

BFAR Central Office Product Testing Laboratory and Regional Fish Quality Control Laboratories will conduct testing of suspected contaminated fish and aquaculture products.

3.5.3.2 Sampling Method

3.5.3.2.1 Sample Collection

A monthly collection of samples for fish and aquaculture products and water fro m processing plants and some fishlanding areas will be taken from different sampling sites. The amount of samples to be taken should be enough to recover 1 kg meat to be used for the analysis.

Types of specimens to collect

The sample should be representative of the lot. Contamination during collection and before examination shall be avoided.

The product types to collect shall include the following :

1) Fresh Chilled Fishery Products

a) Tuna & tuna-like fishes (Scombroid species)
b) lapu-lapu, grouper, snapper, parrot fish, barracuda, etc.

2) Frozen Fishery Products
   a) Tuna and tuna loins
   b) Octopus
   c) Aquaculture products (milkfish, Shrimps, tilapia)

3) Canned Tuna & Sardines

4) Bottled Fish Paste Products (Anchovy Paste)

5) Pasteurized/ bottled salted shrimp paste

6) Other processed fishery/aquaculture products (eg. smoked, dried, marinated, etc.)

3.5.3.2.2 Five (5) sites identified to participate

1) NCR fishlanding sites and wet markets
   a) Bulacan
   b) Malabon/Navotas

2) REGION 4a – fish processing establishments
   a) Metro Manila

3) REGION 7 – fish processing establishments
   a) Cebu City

4) REGION 9 – fish processing establishments
   a) Zamboanga City

5) REGION 11 – fish processing establishments
   a) Davao City

6) REGION 12 – fish processing establishments
   a) General Santos City

Memo can be issued for these sites to submit their data. From each sampling site, the samples will be obtained from two different locations representing two replicates. The method of sampling will be as follows:

Fish and Aquaculture Products- the replicates will be obtained from different locations. Possible locations will be from fishlanding sites in Malabon-Navotas and wet markets (Farmers' Cubao and Muñoz, Quezon City) and accredited fish processing establishments.

3.5.3.2.3 Sampling analysis for bacteriological quality in order to determine whether fish is safe or acceptable for human consumption constitutes the following bacteriological tests:

1) Total bacteriological count
2) *Escherichia coli*
3) *Salmonella*
4) *Shigella*
5) *Staphylococcus aureus*
6) Yeast and mold

3.5.3.2.4 Raw Material Requirement: 1.0 to 1.5 Kg of specimen for testing.

3.5.3.2.5 Handling of samples from site to the laboratory

3.5.3.2.5.1 Fish and Aqualculture products will be taken from site to the laboratory

3.5.3.2.5.2 Newly harvested fish and aquaculture products will be packed in polyethylene bags and placed in styropore boxes with ice, and maintained at 0 to 4 degrees Celsius during transport.

Types of data to be generated include overall and regional isolation rates of *Salmonella* and other microorganisms from samples of fish and aquaculture products and water from processing plants and selected fishlanding areas

3.5.4 National Dairy Authority

3.5.4.1 Types of Specimens

All raw milk produced by dairy farmers/ farms for the manufacture of dairy products including the manufacture of pasteurized liquid milk.

Pasteurized Fluid Milk- served during milk feeding programs (copy to be provided) Interagency National Milk Feeding Committee.

3.5.4.2 Types of Tests

Raw Milk Receival Tests:

3.5.4.2.1 Microbiological Tests:

1) Antibiotic Residue Test- presence or absence of antibiotics.
2) Somatic Cell Count – Mastitis Check
3) Methylene Blue Reduction Test – estimates the total number of microorganisms in the milk
4) Total Plate Count (TPC)
5) Coliform and *E. coli* Count

3.5.4.2.2 Finished Product Tests Include:

1) Total Plate Count (TPC)
2) Coliform /*E. coli* Count
3) pH

On top of these daily milk tests, the NDA conducts an annual TB and *Brucella* testing of all dairy animals to ensure that only healthy animals would be milked.

3.5.4.3 Milk Quality Standards

The NDA has a set of milk quality standards (*Annex 3.5.4.3A*) by which farmers' produced milk is accepted and rejected by a dairy processing plant. The milk rejection is carried out by giving a note to the farmer regarding the result of his failed milk tests.

Types of data to be generated include overall and regional isolation rates of *Salmonella* and other microorganisms from samples of raw milk produced by dairy farmers/farms .

3.5.5 Bureau of Plant Industry

3.5.5.1 Participants in Surveillance -BPI, Microbiology Section will conduct the surveillance of S*almonella* in fresh fruits and vegetables.

3.5.5.2 Sample Collection - a quarterly collection of samples of fresh fruits and vegetables will be taken from different sampling sites in vegetable growing areas.

Region I	-	Ilocos Norte
Region III	-	Nueva Ecija
Region IV	-	Cavite
Region X	-	Bukidnon
CAR	-	Benguet

Market sampling will also be done in Metro Manila such as:

1. Divisoria Market
2. Clover Leaf Market
3. Nepa-Q Mart
4. Farmers' Market
5. Paco Market
6. Libertad Market

3.5.5.3 Raw material requirement: One (1) kilogram per commodity

3.5.5.4 Transport of sample - Fruits and vegetables will be packed in polyethylene bags and stored in the freezer of the vehicles from the sampling site to the laboratory.

3.5.5.5 Types of Test

Specific Pathogen	*Method*	*Reference*
Salmonella Analytical	Conventional Method	Bacteriological
	(culture, biochemical, screening and identification)	Manual on Line Chapter 5 *Salmonella*

3.5.5.6 Types of data to be generated include overall and regional isolation rates of *Salmonella* and other microorganisms from samples of minimally processed fruits and vegetables

3.6 SURVEILLANCE IN WATER SUPPLY SYSTEMS

The EAMC-NRL is part of the **Metro Manila Drinking Water Quality Monitoring Committee (MMDWQMC), w**hich conducts regular monitoring of water supplies within Metro Manila thru its member agencies which include the following: Metropolitan Waterworks and Sewerage System-Regulatory Office (MWSS-RO), Maynilad Water Services, Incorporated (MWSI), Manila Water Company, Incorporated (MWCI), National Reference Laboratory (NRL), Environmental Management Bureau (EMB), Other LGUs with water laboratories). Other functions of the MMDWQMC include:

1. Conducts regular monthly meeting with its member agencies to discuss issues and concerns regarding quality of water supplies distributed within Metro Manila.;
2. Directs member agencies with water laboratory capability to conduct joint sampling in cases of complaints;
3. Provides consultative and advisory services.; and
4. Makes regular pronouncement regarding Sanitary Quality of Water in Metro Manila .

The following are the functions of the EAMC-NRL and other government water laboratories:

1. Provide sample collection materials and instructions to requesting party including necessary forms to be filled up prior to the conduct of examination.
2. Collect water samples in the designated areas upon request by NEC
3. Receive samples collected by members of surveillance team (NEC/CHD)
4. Verify the integrity of the samples collected (check if protocol for proper sample collection has been followed)
5. Conduct examination on the sample submitted
6. Prepare laboratory results
7. Release results to requesting party

Sampling Procedure for Drinking Water

3.6.1 Location of sampling points

Samples must be taken from locations that are representative of the water source, treatment plant, storage facilities, distribution network, points at which water is delivered to the consumer,

and points of use. In selecting sampling points, each locality should be considered individually; however, the following general criteria are usually applicable:

- Sampling points should be selected such that the samples taken ar e representative of the different sources from which water is obtained by the public or enters the system.

- These points should include those that yield samples representative of the conditions at the most unfavorable sources or places in the supply system , particularly points of possible contamination such as unprotected sources, loops, reservoirs, low -pressure zones, ends of the system, etc.

- Sampling points should be uniformly distributed throughout a piped distribution system, taking population distribution into account; the number of sampling points should be proportional to the number of links or branches.

- The points chosen should generally yield samples that are representative of the system as a whole and of its main components.

- Sampling points should be located in such a way that water can be sampled from reserve tanks and reservoirs, etc.

- In systems with more than one water source, the locations of the sampling points should take account of the number of inhabitants served by each source.

- There should be at least one sampling point directly after the clean -water outlet from each treatment plant.

3.6.1.1 Guidelines for Selecting the Location of Sampling Points.

Sample Location

- **Piped water supply zoning**

  Zoning of piped water supplies should b e undertaken to ensure that different parts of the water supply system that may have different level of risk are adequately covered for water quality sampling.

  A zone can be considered as coverage area per source, service reservoir supplies specific area , an area where different parts of distribution system operates at different pressures and elevations and an area where leakage or reliability is different in different parts of the system

- **Point Source**

  Samples should be taken from the point source from the principal outlet – handpump or spring outlet.

  For routine monitoring boreholes or deepwells generally requires less frequent sampling as they are usually of better quality than shallow groundwater given the greater depths of water abstraction.

It is also important to undertake an extended assessment of point source quality in order to develop an understanding of the process causing water quality failure and thus the appropriate interventions required to improve the source.

Selection of Sampling Sites

When the sample locations and frequencies of sampling visits have been calculated, the final stage is the selection of sampling sites. Sample sites will usually be taken as being representative of a wider area. Samples sites can be either fixed – i.e. every time sampling is carried out in the area, a sample is always picked from the same point. Sample sites can also be random, with the exact location of the sample point in zone or area varying between sample rounds.

- Key fixed points that should always be included in the surveillance include:
  - water leaving treatment works (usually the first tap)
  - the inlets and outlets of service reservoirs
  - critical points in the distribution system - (e.g. low-pressure area or parts of the system prone to frequent discontinuity
- Regular sampling points will include public taps in high-density areas or in places such as markets where large number of people congregate.

3.6.2 Sampling sites in a piped distribution network may be classified as:

- Fixed and agreed with the supply agency;
- Fixed, but not agreed with the supply agency; or
- Random or variable.

Each type of sampling site has certain advantages and disadvantages. Fixed sites agreed with the supplier are essential when legal action is to be used as a means of ensuring improvement; otherwise, the supply agency may object to a sample result on the grounds that water quality may have deteriorated in the household, beyond the area of responsibility of the supplier.

3.6.3 Sampling frequency

The recommended minimum frequencies for these critical measurements in minimum sample numbers for piped drinking water in the distribution system are shown in Table 3.6.3A. and in unpiped water supplies are summarized in Table 3.6.3B.

Table 3.6.3A Minimum sample numbers for piped drinking-water in the distribution system

Population served	No. of monthly samples
<5000	1
5000–100000	1 per 5000 population
>100000	1 per 10 000 population, plus 10 Additional samples

Table 3.6.3B Minimum frequency of sampling and analysis of unpiped water supplies

Source and mode of supply	Minimum frequency of sampling and analysis		Remarks
	Bacteriological	Physical/ Chemical	
Open wells for community suppl	Sanitary protection measures; bacteriological testing only if situation demands	Once initially for community wells	Pollution usually expected to occur
Covered dug wells and shallow tube wells with hand-pumps	Sanitary protection measures; bacteriological testing only if situation demands	Once initially, thereafter as situation demands	Situations requiring testing: change in environmental conditions, outbreak of waterborne disease or increase in incidence of waterborne diseases
Deep tube wells with hand-pumps	Once initially, thereafter as situation demands	Once initially, thereafter as situation demands	Situations requiring testing: change in environmental conditions, outbreak of waterborne disease or increase in incidence of waterborne diseases
Protected springs	Once initially, thereafter as situation demands	Periodically for residual chlorine if water is chlorinated	Situations requiring testing: change in environmental conditions, outbreak of waterborne disease, or increase in incidence of waterborne diseases
Community rainwater collection systems	Sanitary protection measures; bacteriological testing only if situation demands	Not needed	

Table 3.6.3C Minimum Frequency of Sampling for Drinking-Water Supply Systems for Microbiological Examination

Source and mode of Supply	Population Served	Minimum Frequency of Sampling
a. Level I	90 – 150	Once in three (3) months
b. Level II	600	Once in two (2) months
c. Level III	Less than 5,000	1 sample monthly
	5,000 – 100,000	1 sample per 5,000 population monthly
	More than 100,000	20 samples and additional one (1) sample per 10,000 population monthly
d. Emergency Supplies of Drinking Water		Before delivery to users
e. Water Refilling Stations		1 sample monthly
f. Water Vending Machines		1 sample monthly

3.6.4 Sources of samples to be collected

3.6.4.1 Treated Water

- MWSS (Concessionaires' Tap Water and Deepwells)
- Local Waterworks

3.6.4.2 Not Treated

- Ground Water
- Deep Well
- Shallow Well

3.6.4.3 Surface Water

- Spring
- River, etc.

3.6.5 Organisms to be identified

3.6.5.1 Total Coliform Organisms

- *Enterobacter*
- *Klebsiella sp*.
- *E. coli*, etc.

3.6.5.2 Fecal Coliform Organisms (Thermotolerant)

***** Biochemical Tests to be conducted to identify specific total coliform organisms (IMViC**)**

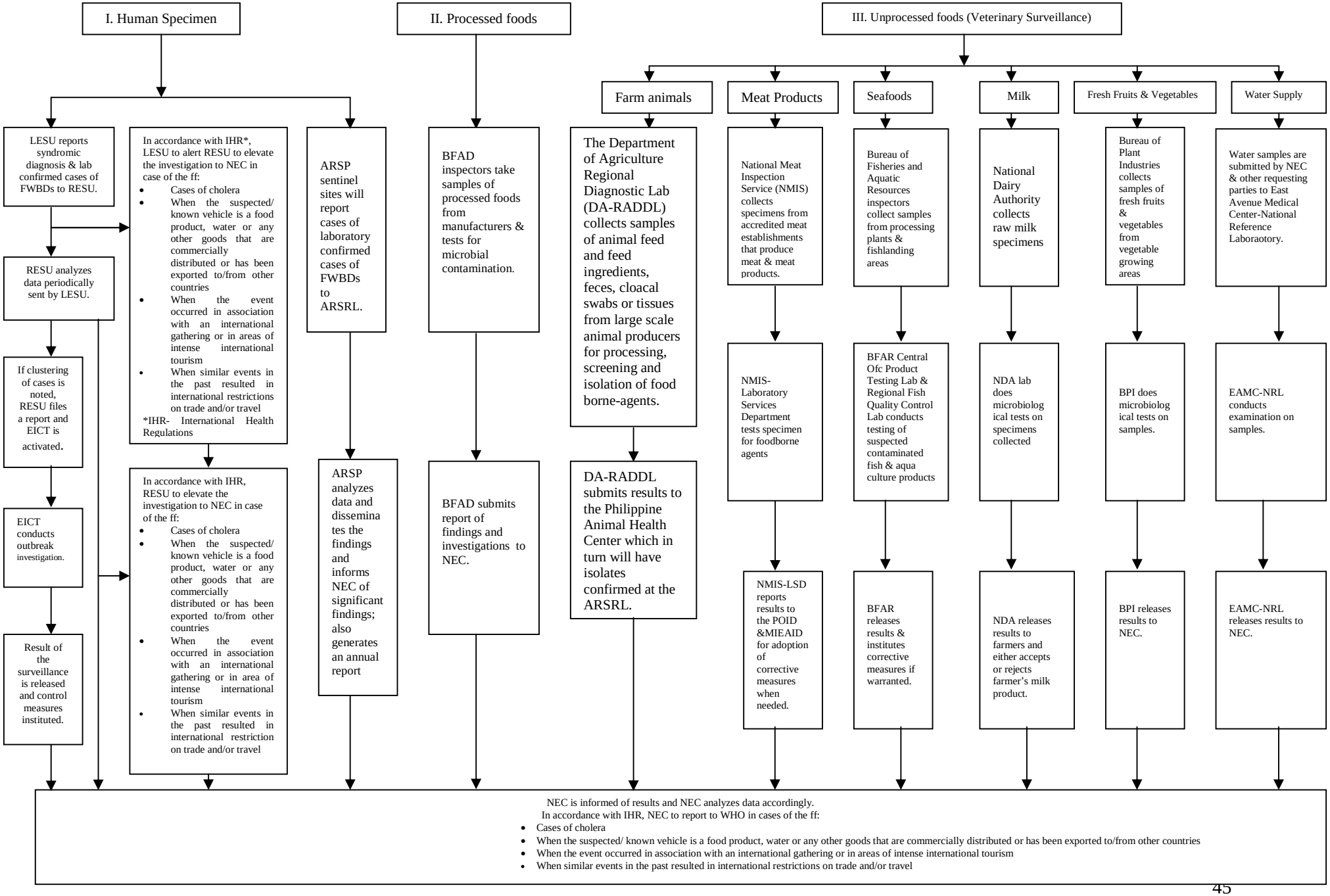
3.6.6 Methods to be used

- Multiple Tube Fermentation Technique
- Membrane Filter Technique
- Chromogenic Substrate

- PHC Medium (Screening test only)

3.6.7 Types of data to analyze- Etiologic agent-specific prevalence in water samples; attribution burden of waterborne disease by water source and percent compliance with Philippine National Standards for Drinking Water (PNSDW) Standard (Total)

3.7 SURVEILLANCE FLOWCHART



3.8 TASKS AND RESPONSIBILITIES OF THE PARTICIPATING INSTITUTIONS IN SURVEILLANCE

3.8.1 Department of Health Agencies

3.8.1.1 National Epidemiology Center

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall coordinate with RITM-ARSP in taking the lead to develop a work and financial plan and/or proposal for funding for the surveillance
- Shall provide assistance to RESUS and LESUS if needed in the investigation of cases of food and waterborne illness
- Shall encode and collate epidemiologic data
- Shall merge NEC and ARSRL data electronically, generates and provides data with interpretation and recommendations to the Department of He alth Executive Committee, Food Safety Committee and the Department of Agriculture
- Shall provide technical assistance on encoding and analysis to group members
- NEC shall notify the WHO through the National IHR (International Health Regulations) Focal Point when the assessment indicates a food or water borne disease event is notifiable pursuant to paragraph 1 of Article 6 and Annex 2 and to inform WHO as required pursuant to Article 7 and paragraph 2 of Article 9 of IHR (*Annex 3.8A*).

3.8.1.2 RESU

- Shall encode data on patients with laboratory confirmed *Salmonella* and other food and waterborne infections identified from the region in the surveillance database
- Shall analyze surveillance data and activates EICT outbreak investigation when deemed necessary.
- Shall provide technical assistance for trainings on laboratory-based surveillance to be conducted among hospital staff of sentinel sites
- Shall fill up laboratory request forms and submits appropriately labeled stool specimens from patients and samples of suspected food/water vehicles to the appropriate DOH or DA laboratory for microbiologic tests
- Shall encode and collate epidemiologic data from provinces (Provincial epidemiology surveillance unit, PESU), city (City Epidemiology Surveillance Unit, CESU) and hospital sentinel sites on the occurrence of *Salmonella* and other food and waterborne disease and submits them to NEC
- Shall submit monthly report to NEC on notifiable diseases
- Shall notify NEC through the National IHR (International Health Regulations) Focal Point when the assessment indicates a food and water borne disease event is notifiable pursuant to paragraph 1 of Article 6 of the IHR and Annex 2 and to inform WHO as required pursuant to Article 7 and paragraph 2 of Article 9 of the same(*Annex 3.8A*).

3.8.1.3 LESU

- Shall register cases of laboratory confirmed *Salmonella* and other food and waterborne infections identified from the local government unit (LGU) in the surveillance
- Shall fill up laboratory request forms and submits appropriately labeled specimens from patients and samples of suspected food/water vehicles to the appropriate DOH or DA laboratory for microbiologic tests
- Shall provide technical support for training on laboratory-based surveillance to hospital staff of sentinel sites
- Shall encode and collate epidemiologic data on the occurrence of *Salmonella* and other food and waterborne infections to the NEC
- Shall submit monthly reports of food and water borne diseases cases to RESU
- Shall notify RESU when the assessment indicates a food and water bo rne disease event is notifiable pursuant to paragraph 1 of Article 6 and Annex 2 of IHR and to inform WHO as required pursuant to Article 7 and paragraph 2 of Article 9 of the same (*Annex 3.8A*)

3.8.1.4 National Center for Disease Prevention and Control

(coordination with LGU concerned)

In the light of devolution of health services to LGUs, most of the activities in the surveillance and outbreak investigation shall be coordinated to the LGU concerned. NCDPC shall facilitate in coordination with LGUs the following:

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall enforce statutes and regulations related to the health supervision of residents, investigation of causes of disease, sanitation inspections and prevention of spread of diseases within the country in accordance with the Sanitation Code
- Shall conduct food, environmental and sanitary investigations
- Shall conduct inspection of food establishments
- Shall ensure that food handlers have appropriate healt h certifications
- Shall identify and address food safety issues that must be observed by all food establishments and food handlers
- Shall conduct orientation meetings/dialogues with food establishment owners and food handlers
- Shall review collated data gathered from the Foodborne Illness Complaint Worksheet copies furnished by NEC
- Shall submit reports to RESU/NEC

3.8.1.5 Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL)

- Shall serve as the lead agency in the laboratory surveillance of foo d and waterborne disease.

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall coordinate with NEC in preparing work and financial plan/proposal for funding of the surveillance
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of food and waterborne diseases which are transmissible to humans
- Shall perform confirmatory tests of all referred *Salmonella* and other microbiologic isolates and enters result into electronic files
- Shall provide NEC with results of confirmatory tests
- Shall coordinate with NEC in merging of epidemiologic and laboratory surveillance data.
- Shall train other laboratories of the Department of Health and Department of Agricultur e in standard laboratory techniques for identification of food and waterborne microorganisms

3.8.1.6 Bureau of Food and Drugs

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiologic tests on food samples submitted to the laboratory
- Shall provide NEC with a monthly report of etiologic agents of food and water borne diseases on food samples tested
- Shall undertake surveillance of microbiologic agents of food and waterborne diseases which are transmissible to humans
- Shall alert the Department of Health agencies in cases of unusual increases in the number of reported organisms known to cause food and waterborne disease in humans

3.8.1.7 National Reference Laboratory for Water

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiologic tests on water samples submitted in the laboratory
- Shall provide NEC with a monthly report of water coliform counts and etiologic agents of waterborne disease on water samples tested

- Shall undertake surveillance of microbiologic agents of waterborne diseases which are transmissible to humans
- Shall alert the Department of Health agencies in cases of unusual increases in the number of reported organisms known to cause waterborne disease in humans

3.8.1.8 ARSP Sentinel Site Hospitals

3.8.1.8.1 Oversight Committee

Team Leader:	Chief of Clinics
Team Members:	Head, Department of Pediatrics
	Head, Department of Internal Medicine
	Head, Records Department

Responsibilities: To ensure compliance by the physicians in filling up the Foodborne Illness Complaint Worksheet and compliance of all health workers to guidance set up in this Manual of Operations.

Tasks:

- Shall conduct regular meetings with the clinical & laboratory staff concerning food and waterborne disease cases seen in the hospital
- Head of records section shall examine all charts of patients as to completeness of the Foodborne Illness Complaint Worksheet and subsequent return of charts to concerned physicians for completion when necessary
- Shall submit a monthly report to NEC and Food and Waterborne Disease Program thru RESU/LESU of all cases of foodborne and waterborne infections seen in the hospital with laboratory results as to microorganisms involved

3.8.1.8.2 Clinical Staff

Team Leader:	Chief Resident
Team Members:	Medical and Pediatric Residents
	Medical Officers, Medical Specialists
	ER/OPD/Ward Nurses

Responsibilities: To identify and manage patients with acute diarrhea or gastroenteritis for inclusion in the surveillance.

Tasks:

- The examining physician/medical officer shall confirm presence of acute diarrhea/gastroenteritis
- Shall administer Foodborne Illness Complaint Worksheet to cases of acute diarrhoea/acute gastroenteritis/suspected cases of *Salmonella* consulting at the ER, OPD or admitted in the hospital
- Shall fill up laboratory request forms for stool aerobic culture and sensitivity test and other microbiologic and parasitological tests of enrolled patients within 48 hours from admission to the hospital
- Shall assist in the collection of human specimens for laboratory testing

- Nurses shall see to it that specimens are taken and brought to the laboratory on time
- Shall follow up results of laboratory requests
- Shall provide clinical information and diagnosis for patients when available

3.8.1.8.3 Bacteriology Staff

Team Leader: Head, Department of Laboratories
Team Members: Chief Medical Technologist
Laboratory Aide

Responsibilities: Ensure performance of laboratory tests requested by physicians, and prompt delivery of results to requesting physicians.

Tasks:

- Shall perform aerobic culture and sensitivity tests on human specimens from patients with acute diarrhoea/acute gastroenteritis suspected for *Salmonella* and other microbiologic foodborne/waterborne infections from the community
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of food and waterb orne diseases which are transmissible to humans
- Shall refer all isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests
- Shall inform the oversight committee and clinical staff of any unusual trends of foodborne and waterborne cases seen in the hospital

3.8.2 Department of Agriculture Agencies

3.8.2.1 Bureau of Animal Industry (BAI)

(Philippine Animal Health Center and Animal Health Division)

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform aerobic culture and sensitivity tests and other such tests deemed necessary to specimens taken from poultry and livestock, animal feeds and feed ingredients suspected as food vehicles of foodborne disease outbreaks submitted by NEC staff
- Shall perform serological monitoring of food animals to detect presence of agents causing foodborne infections
- Shall coordinate with the NEC/ARSRL in providing the results of laboratory tests/reports on suspected poultry and livestock vehicl es
- Shall continue acquisition of updated laboratory technology
- Shall work towards the establishment of a surveillance of zoonotic agents of food diseases which are transmissible to humans

- Shall alert the Department of Health agencies in cases of unusual increase in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents of foodborne disease to the ARSRL for confirmatory tests
- Shall provide assistance in working out financial plan or proposal for funding for the surveillance
- Shall gather zoo-epidemiologic data for submission to NEC
- Shall submit report of all investigations involving foodborne disease to NEC

3.8.2.2 Bureau of Fisheries & Aquatic Resources

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiological analysis on suspected fish and other seafood products as food vehicles from foodborne disease outbreaks submitted by NEC staff
- Shall coordinate with the NEC/ARSRL the results of laboratory tests/reports on suspected fish and other seafood products as vehicles of infection
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of food and waterborne diseases which are transmissible to humans
- Shall perform microbiologic tests on water samples, fish and aquaculture products in processing plants
- Shall alert the Department of Health agencies in cases of unusual increases in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall assist the NEC staff in investigating foodborne infections originating from fresh, chilled, frozen fish and other aquaculture products.
- Shall gather relevant data for submission to NEC
- Shall submit reports of all investigations to NEC

3.8.2.3 Bureau of Plant Industry

- Shall participate in the implementation of a Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order Administrative Order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases

- Shall perform microbiologic tests on suspected unprocessed fruits and vegetables as food vehicles from foodborne disease outbreaks submitted by NEC staff
- Shall coordinate with NEC/ARSRL the results of laboratory tests/reports on suspect ed fruits and vegetable products as food vehicles
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of foodborne diseases which are transmissible to humans
- Shall alert the Department of Heal th agencies in cases of unusual increases in the number of reported organisms known to cause foodborne diseases in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall assist the NEC staff in investigating foodborne infections originating from fruits and vegetables as food vehicles
- Shall submit reports of all food and waterborne disease outbreak investigations to NEC

3.8.2.4 National Meat Inspection Service

- Shall participate in the implementation of a Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an Administrative Order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak invest igation of food and waterborne diseases
- Shall perform microbiological tests on suspected fresh, chilled, frozen local and imported meat and meat products as food vehicles of food and waterborne diseases outbreaks submitted by NEC staff
- Shall assist the NEC staff in investigating foodborne diseases originating from unprocessed frozen local and imported meat and meat products.
- Shall provide the NEC/ARSRL with results of laboratory tests/reports on suspected meat and meat products as food vehicles
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of foodborne diseases which are transmissible to humans
- Shall alert the Department of Health agencies in cases of unusual increase in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall submit reports of all foodborne disease outbreak investigations to NEC

3.8.2.5 National Dairy Authority

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directive s that

may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases

- Shall perform microbiological tests on suspected raw milk as food vehicles from foodborne disease outbreaks submitted by NEC staff
- Shall assist the NEC staff in investigating foodborne infections originating from raw milk
- Shall provide the NEC/ARSRL with results of laboratory tests/reports on suspected raw milk as food vehicles
- Shall continue acquisition of updated laboratory technol ogy
- Shall undertake surveillance of microbiologic agents of foodborne diseases which are transmissible to humans
- Shall alert Department of Health agencies in cases of unusual increase in the number of reported organisms known to cause foodborne disease i n humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall assist the NEC staff in investigating foodborne infections originating from raw milk as food vehicles
- Shall submit reports of all food and waterborne disease outbreak investigations to NEC

3.8.2.6 Philippine Fisheries Development Authority

Shall implement Standard Sanitation Operating Procedures and good manufacturing practices in government regional fish port complexes, ice plants and cold storage facilities under its administration and/or supervision.

3.8.3 Department of the Interior and Local Government

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be en tered into by concerned national agencies including the Department of the Interior and Local Government (DILG) and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak inv estigation of food and waterborne diseases
- Provide assistance to the DOH if necessary, by issuing directives to local government units (LGUs) to coordinate and collaborate with the DOH in the investigation of cases of food and waterborne diseases in their locality
- Collaborate with the DOH in monitoring cases of food and waterborne diseases at the LGU level

Local government units (Provincial, City, and Municipal Health Officers)

- Shall submit data on food and waterborne diseases periodically to the NDRS
- Shall report significant data gathered to the NEC

SECTION 4: OUTBREAK INVESTIGATION AND RESPONSE

4.1 FOOD-BORNE DISEASE OUTBREAK INVESTIGATION

The following are the main objectives for foodborne disease outbreak investigation and response

- To identify high risk food, food practices and populations for specific pathogens
- Identify emergence of new pathogens
- Guide formulation of food policy and monitor the impact of control measures
- Assess risk and set standards
- Provide information to enable the formulation of health education in food safety

An outbreak is defined as "the occurrence of cases of a disease (illness) above the expected or baseline level, usually over a given period of time, in a geographic area or facility or in a specific population group."[1]

A **foodborne disease outbreak** is defined as an incident in which 2 or more persons experience a similar gastrointestinal illness after ingestion or consumption of a common food or water in the past 4 weeks.

Outbreak Detection

Outbreaks are detected in a variety of ways:

- **Routine surveillance interviews**
  - Some outbreaks are detected through routine surveillance activities that include interviewing all persons who are diagnosed with a reportable disease.
  - An investigation is initiated when multiple cases report a common exposure, such as eating a common food item, eating at a common restaurant, or having contact with an identical water source, daycare or school.
- **Reports of Suspected Foodborne Illness**
  - Local government authorities receive reports of suspected foodborne illness from the general public through local health departments.
  - Healthcare providers may report suspected foodborne illness outbreaks if they see an unexpected number of patients with gastrointestinal illness.
  - Restaurants, daycare providers, schools, and healthcare facilities (i.e., hospitals, long-term care facilities) may also report outbreaks to local government authorities.

4.1.1 Foodborne Outbreak Data Sources

A surveillance system not only helps in detecting outbreaks but even more so in controlling it. With a proper set up of a surveillance system, the etiology and natural epidemiology of a disease can be determined and the disease trend over time can be easily recognized. It is crucial in placing most appropriate and efficient allocation of resources and personnel.

4.1.1.1 The Public

In most instances, the members of the public are often the first to provide information about foodborne disease outbreaks, particularly when it occurred during gatherings. Such reports should never be dismissed without consideration. The following information should be gathered during a reported outbreak:

- person reporting the outbreak
- characteristic of suspected outbreak (signs and symptoms, suspected etiologies, suspected food)
- persons directly affected by the outbreak (epidemiological information)

4.1.1.2 The Media

The media spend considerable resources to detect and report foodborne outbreaks. A community may have known an incident for a time but may be first reported by the media. In some instances, journalists may detect outbreak purposely hidden by local health authorities because of its sensitive nature or because of legal consequences. Electronic editions of news in the internet may provide timely and accurate information. However, their reports should be followed up and verified. Outbreak communications by the public health authorities should be able to control public anxiety caused by outbreak rumors by the media.

4.1.1.3 Reports of clinical cases from health care providers

Clinical cases and unusual health events may be detected by local health providers and reported to the public health authorities. Local health providers include Emergency Room doctors, general practitioner, public health nurse of the community or medical department of a large company. Information of such are often faster and more efficient in early detection of an outbreak. Unless there are very good reasons for the contrary, reports from astute or concerned health care providers should always be followed-up with explanation why there is a need for further investigation.

4.1.1.4 Surveillance data

Surveillance activities conducted at the local (MESU, PESU), regional (RESU, Sentinel sites) and national (Sentinel sites) are important sources of foodborne outbreaks. Reports of death registration may also be a source of surveillance data. Generally, these systems are not the primary source of data for detecting outbreaks and their usefulness will depend on its quality and the circumstance.

Because of changes in the way food is produced and distributed, a new kind of outbreak has appeared. Diffuse and widespread outbreaks involving many counties, states and even nations, are identified more frequently and follow an entirely different scenario. The new scenario is the result of low-level contamination of a widely distributed commercial food product. In most jurisdictions, the increase in cases may be inapparent against the background illness. The outbreak is detected only because of a fortuitous concentration of cases in one location, because the pathogen causing the outbreak is unusual or because laboratory-based subtyping of strains collected over a wide area identifies a diffuse surge in one subtype [1].

Detecting a widespread outbreak requires increased reliance on laboratory subtyping by state public health laboratories [2]. Surveillance data must be rapidly compared over increasingly broad regions. The surveillance tools for this kind of outbreaks have been grafted onto the passive laboratory-based reporting system and, as such, depend on identification of pathogens from clinical samples [3]. One such tool is the *Salmonella* outbreak detection algorithm, which detects increases in *Salmonella* serotypes reported by US state health departments to the Center for Disease Control via the electronic Public Health

Laboratory Information System. The Public Health Laboratory Information System is a computer-based reporting system of electronic entry, analysis, and transmission of reportable disease cases from state public health laboratories. The *Salmonella* outbreak detection algorithm is a computerized algorithm that compares the current weekly count of each *Salmonella* serotype with summary historical data for that serotype by state and region; increases are reported to state epidemiologists. This system has assisted the detection of large, diffuse multi-state outbreaks caused by various *Salmonella* serotypes. Another tool is PulseNet, the national molecular subtyping network for foodborne disease surveillance. PulseNet detects foodborne disease clusters by pulsed-field gel electrophoresis (PFGE) and can facilitate detection of common source outbreak [4]. In addition, surveys of the population, physicians and laboratories measure the proportion of diarrheal diseases that are undiagnosed and unreported so that the true incidence can be estimated. This surveillance is known as FoodNet[1].

In the Philippines, serotyping is done for all cases of *Salmonella* referred to the Antimicrobial Resistance Surveillance Reference Laboratory of RITM. Some isolates undergo PFGE when necessary. A PFGE databank is being developed by the ARSRL.

References:

1. Tauxe R. Emerging Foodborne Diseases: An Evolving Public Health Challenge. Emerging Infectious Diseases October-December 1997; 3(4)
2. Majkowski J. Strategies for Rapid Response to Emerging Foodborne Microbial Hazards. Emerging Infectious Diseases. Special Issue.
   URL:http://www.cdc.gov/ncidod/eid/vol3no4/majkows.htm
   Updated: 09/04/2007 08:23:37
3. Sobel J, Griffin P, Slutsker L, Swerdlow D, Tauxe R, Public Health Reports January/February 2002 117(1):8-19
4. www.**cdc.gov/pulsenet**

4.1.1.5 Other sources

Early detection of outbreak may come from sources created for other sources. These may include increased absenteeism from the workshop, schools or childcare facilities, pharmacy reports about increased drug sales (e.g. of anti-diarrheal medications) or consumer complaints to health departments or food regulators. Outbreaks may also be anticipated after an increased risk of population exposure has been detected. This may occur after contamination of drinking water or contamination of commercially available food product.

4.1.2 Interpretation of data sources

Early detection of outbreaks usually occur when cases share an easily recognized potential source of infection (such as in schools, hospitals, correctional facilities, etc). Health events that are limited to small, well-defined populations the number of ill persons can be quickly established. Verification that an outbreak has indeed occurred and control of spread is given the most emphasis.

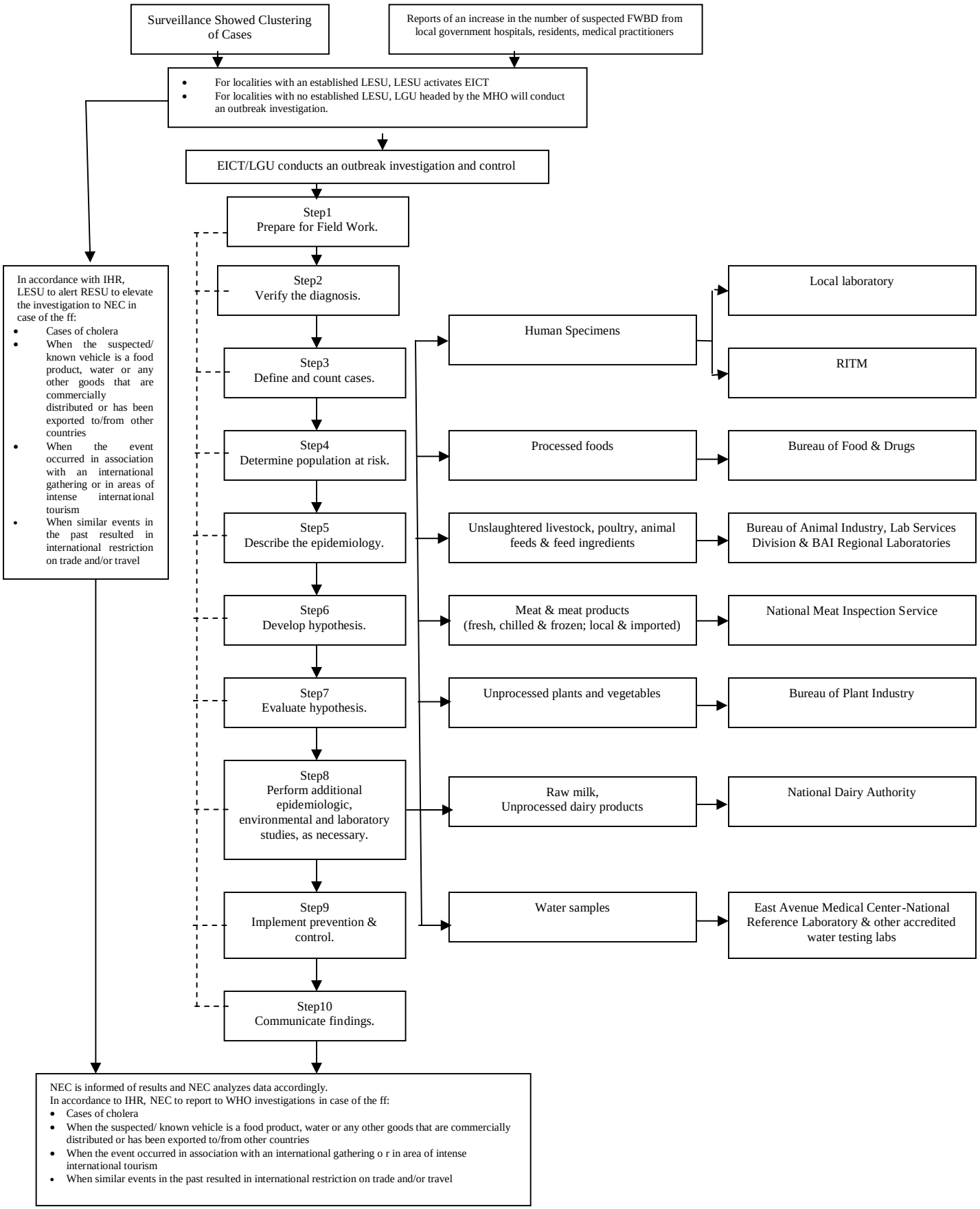
Difficulties in detecting outbreaks from surveillance data include timely collection, analysis and interpretation of whether the number of observed cases exceeds expected numbers. Knowledge of background rates of foodborne disease or traditional disease patterns in a certain population at certain time and place, including typical seasonal changes in disease occurrence are required.

A small local outbreak may be missed by a regional or national surveillance, or conversely, a widespread national outbreak may not be detectable by regional or local surveillance. Small changes in baseline can be difficult to interpret, in comparison to sudden increase in disease occurrence. Even when the total number of cases is relatively small, a steep increase confined to a subgroup in the community or to a particular subtype of pathogen may be significant.

In some instances, a "pseudo-outbreak" may be reported. In such instances, the "increase in cases" may be due to causes other than an outbreak. Examples include:

- changes in reporting procedures
- changes in case definition for reporting a specified disease
- increased interest because of local or national awareness (e.g. Avian flu outbreak)
- changes in diagnostic procedures
- heightened concern among a specific population ("psychogenic outbreaks")
- changes in population size (resort areas, college towns, migrant farming areas)

4.2: Outbreak Investigation Flowchart



4.3 EPIDEMIC INVESTIGATION AND CONTROL TEAM (EICT)

An epidemic investigation and control team may be activated by LESU when:

- The outbreak poses an immediate health hazard to the local population.
- There are many cases.
- The disease is important in terms of its severity or its propensity to spread.
- Cases have occurred over a widespread area without obvious point source.
- Cases have occurred in high establishments (school, day care centers, hospitals, food premises, etc).

The main purpose of the EICT is to coordinate all activities that are conducted during the investigation for immediate outbreak control (see Section 4.2). The health authority in the area who usually first identified and reported the outbreak initiates the proceedings to set up the EICT. In cases where the outbreak crosses administrative boundaries, the EICT should determine the extent of representation and who will act as the chairman. All investigation activities and control measures should be done by the EICT.

Depending on the food involvement and nature of the outbreak, the following may compose the EICT:

- Municipal (MHO)/City Health Officer (CHO)
- Epidemiologist
- Health Program Coordinator
- Clinician
- Laboratory technician
- Sanitation Engineer
- Vector control specialist
- Health educators
- Veterinarian
- Appropriate food related agencies

The MHO/CHO shall automatically be the team leader.

All information should be ensured. All records of all activities performed in the investigation by all sectors and minutes during EICT meetings should be kept with the appropriate level of confidentiality.

4.4 EPIDEMIOLOGIC INVESTIGATION CARRIED OUT BY EICT/MHO

Irrespective of the scale of the outbreak, a full investigation of a foodborne disease outbreak will normally include:

- Epidemiologic investigations
- Environmental and food investigations
- Laboratory investigations

In investigating an outbreak, speed is essential, but getting the right answer is essential, too. To satisfy both requirements, epidemiologists approach investigations systematically, using the following 10 steps[2]:

1. Prepare for field work
2. Establish the existence of an outbreak
3. Verify the diagnosis
4. Define and identify cases
5. Describe and orient the data in terms of time, place and person
6. Develop hypotheses
7. Evaluate hypotheses
8. Refine hypotheses and carry out additional studies
9. Implement control and prevention measures
10. Communicate findings

The steps are presented here in conceptual order. In practice, however, several may be done at the same time, or they may be done in a different order. For example, control measures should be implemented as soon as the source and mode of transmission are known, which may be early or late in any particular outbreak investigation.

4.4.1 Step 1: Prepare for Field Work

Before leaving for the field, you should:

- Research the disease and gather the supplies and equipment you will need
- Make necessary administrative and personal arrangements for such things as travel, and
- Consult with all parties to determine your role in the investigation and who your local contacts will be once you arrive on the scene.

4.4.2 Step 2: Establish the Existence of an Outbreak

LESU or the MHO will evaluate whether the increase in the reported number of cases of FWBDs is due to an outbreak or due to causes other than an outbreak. One of the first tasks of a field investigator is to verify that a suspected outbreak is indeed a real outbreak. Some will turn out to be true outbreaks with a common cause, some will be unrelated cases of the same disease, and others will turn out to be unrelated cases of similar but unrelated diseases. Before an investigator can decide whether a FWBD outbreak exists (i.e., whether the observed number of cases of FWBDs exceeds the expected number), he must first determine the expected number of cases of FWBDs for the area in the given time frame.

The expected number of FWBDs can be determined by comparing the current number of cases with the number from the previous few weeks or months, or from a comparable period during the previous few years. The sources of these data vary:

- For a notifiable disease (one that, by law, must be reported), health department surveillance records may be used.
- For other diseases and conditions, data from local sources such as hospital discharge records, death (mortality) records and cancer or birth defect registries may be used.

- If local data are not available, estimates may be made using data from neighboring provinces or national data, or a telephone survey of physicians may be conducted to determine whether they have seen more cases of the disease than usual. A survey of people in the community to establish the background level of disease may also be conducted.

Even if the current number of reported cases of FWBDs exceeds the expected number, the excess may not necessarily indicate an outbreak. Reporting may rise because of changes in local reporting procedures, changes in the case definition, increased interest because of local or national awareness, or improvements in diagnostic procedures. For example, if a new physician, infection control nurse, or health care facility is reporting FWBD cases more consistently than they were reported in the past, the numbers would go up even though there might be no change in the actual occurrence of the disease. Finally, particularly in areas with sudden changes in population size, such as resort areas, college towns and migrant farming areas, changes in the number of reported cases may simply reflect changes in the size of the population.

Whether or not investigation of an apparent problem should be done is not strictly tied to the verification that an epidemic exists (that is, that the observed number of FWBDs is greater than the number expected). As noted earlier, other factors may come into play, including, for example, the severity of the illness, the potential for spread, political considerations, public relations and the availability of resources.

4.4.3 Step 3: Verify the Diagnosis

In addition to verifying the existence of an outbreak early in the investigation, the investigator must also identify as accurately as possible the specific nature of the disease. The goals in verifying the diagnosis are two-fold. First, it must be ensured that the problem has been properly diagnosed—that it really is a case of FWBD. Second, it must to be made sure that the increase in diagnosed cases is not the result of a mistake in the laboratory.

Verifying the diagnosis requires that the investigator review the clinical findings (the symptoms and features of illness) and laboratory results for the people who are affected. If there is uncertainty about the laboratory findings (e.g., if they are inconsistent with the clinical findings), a laboratory technician may be requested to review the techniques being used. If a specialized laboratory work (e.g., special culturing or DNA analysis) is needed, appropriate specimens, isolates, and other laboratory material from a sufficient number of patients as soon as possible should be obtained as soon as possible.

Finally, people who became ill of FWBD should be visited to verify the diagnosis. It is also best that the investigator talk to some of these patients suspected to have FWBDs in order to gain a better understanding of the disease and those affected by it. In addition, critical information may be gathered by asking the following questions: What were their exposures before becoming ill? What do they think caused their illness? Do they know anyone else with the disease? Do they have anything in common with others who have the disease? Conversations with patients are very helpful in generating hypotheses about the cause, source, and spread of disease. See *Annex 4.4.8A* (Standard Foodborne Outbreak Questionnaire) for information on how patients or people in the community suspected of having FWBD are interviewed.

4.4.4 Step 4: Define and Identify Cases

Establish a case definition. The next task as an investigator is to establish a case definition, or a standard set of criteria for deciding whether, in this investigation, a person should be classified as having the disease or health condition under study. A case definition usually includes four components:

- Based on clinical and laboratory criteria (clinical features should include significant hallmarks)
- Definition of a specific period of time during which cases of illness are considered to be associated with the outbreak
- Restriction by "place" (certain Barangay, gathering, household)
- Restriction by "person" characteristics (persons with no recent diarrheal disease, those greater than one year, etc)

Clinical criteria should be based on simple and objective measures. For FWBDs, criteria could be any of the following: presence of an elevated level of antibody to the disease agent, the presence of a fever of at least 38.3 ºC, three or more loose bowel movements per day, episodes of vomiting and other related symptoms. Regarding the characteristics of people, the definition may be restricted to those who attended a wedding banquet, or ate at a certain restaurant, or swam in the same lake. By time, the criterion might be onset of illness within the past 48 hours; by place, it might be living in a certain barangay or town or working at a particular plant. Whatever the criteria are, they must be applied consistently and without bias to all of the people included in the investigation.

Ideally, the case definition should be broad enough to include most, if not all, of the actual cases, without capturing what are called "false-positive" cases (when the case definition is met, but the person actually does not have the disease in question). Recognizing the uncertainty of some diagnoses, investigators often classify cases as "confirmed," " probable," or "possible."

To be classified as confirmed, a case usually must have laboratory verification. A case classified as probable usually has the typical clinical features of the disease without laboratory confirmation. A possible case usually has fewer of the typical clinical features. For example, in an outbreak of bloody diarrhea and severe kidney disease (hemolytic-uremic syndrome) caused by infection with the bacterium *E. coli* O157:H7, investigators defined cases in the following three classes:

- **Confirmed case:** *E. coli* O157:H7 isolated from a stool culture or development of hemolytic-uremic syndrome in a school-aged child resident of the county and who had gastrointestinal symptoms beginning between Nov. 3 and Nov. 8, 1990;
- **Probable case:** Bloody diarrhea (but no culture), with the same person, place, and time restrictions;
- **Possible case:** Abdominal cramps and diarrhea (at least three stools in a 24-hour period) in a school-age child resident of the county with onset during the same period (CDC, unpublished data, 1991).

Early in an investigation, a loose case definition that includes confirmed, probable, and even possible cases is often used to allow investigators to capture as many cases as possible. Later on, when hypotheses have come into sharper focus, the investigator may tighten the case definition

by dropping the "possible" category. This strategy is particularly useful when you have to travel to different hospitals, homes, or other places to gather information, because it keeps you from having to go back for additional data. This illustrates an important axiom of fi eld epidemiology: "Get it while you can."

Identify and count cases

As noted above, many outbreaks are first recognized and reported by concerned health care providers or citizens. However, the first cases to be recognized usually are only a small proportion of the total number. As a Disease Detective investigating an outbreak, one must therefore "cast the net wide" to determine the true size and geographic extent of the problem.

When identifying cases, the investigator should use as many sources as he can, and he may need to be creative and aggressive in identifying these sources. Initially, the investigator may want to direct his case finding at health care facilities where the diagnosis is likely to be made; these facilities include physicians' offices, cl inics, hospitals, and laboratories. He also may decide to send out a letter describing the situation and asking for reports (passive surveillance); or he may decide to telephone or visit the facilities to collect information (active surveillance).

In some outbreaks, public health officials may decide to alert the public directly, usually through the local media. For example, in outbreaks caused by a contaminated food product such as salmonellosis caused by contaminated milk, announcements in the media have alerted the public to avoid the implicated product and to see a physician if they had symptoms of the disease.

If an outbreak affects a population in a restricted setting, such as a cruise ship, school, or worksite, and if a high proportion of cases are un likely to be diagnosed (if, for example, many cases are mild or asymptomatic), the investigator may want to conduct a survey of the entire population. In such settings, he could administer a questionnaire to determine the true occurrence of clinical symptoms, or he could collect laboratory specimens to determine the number of asymptomatic cases. Finally, he can ask people who are affected if they know anyone else with the same condition.

Regardless of the particular disease that is being investigated, the i nvestigator should collect the following types of information about every person affected:

- **Identifying information:** This may include name, address, and telephone number and allows you and other investigators to contact patients for additional questions an d to notify them of laboratory results and the outcome of the investigation. Addresses will allow mapping of the geographic extent of the problem.
- **Demographic information:** This may include age, sex, race, and occupation and provides the details that are needed to characterize the population at risk.
- **Clinical information:** This information allows the investigator to verify that the case definition has been met. Date of onset allows him to create a graph of the outbreak. Supplementary clinical information may include whether the person was hospitalized or died and will help describe the spectrum of illness.
- **Risk factor information:** Information about risk factors will allow the investigator to tailor his investigation to the specific disease in question. For example, in an investigation of hepatitis A, the investigator would look at exposure to food and water sources.

Traditionally, the information described above are collected on a standard case report form, questionnaire, or data abstraction form. - An example of foodborne disease outbreak questionnaire is in *Annex 4.4.4A* It is important to collect information on food history up to 3 to 5 days prior to illness (commonly in for food pathogens). This is often done using an open -ended question.

Selected critical items are then abstracted in a table called a "line listing." In a line listing, each column represents an important variable, such as name or identification number, age, sex, and case classification, while each row represents a different case, by numbe r. New cases are added to a line listing as they are identified. This simple format allows the investigator to scan key information on every case and update it easily. Even in the era of microcomputers, many epidemiologists still maintain a hand-written line listing of key data items and turn to their computers for more complex manipulations of data. Here is a portion of a line listing that might have been created for an outbreak of hepatitis A.

					Diagnostic									
					Signs and Symptoms									
Case#	**Initials**	**Date of Report**	**Date of Onset**	**Physician Diagnosis**	**N**	**V**	**A**	**F**	**DU**	**J**	**HAIgM**	**Other**	**Age**	**Sex**
1	JG	10/12	12/6	Hep A	+	+	+	+	+	+	+	SGOT ↓	37	M
2	BC	10/12	10/5	Hep A	+	-	+	+	+	+	+	Alt ↓	62	F
3	HP	10/13	10/4	Hep A	±	-	+	+	+	S*	+	SGOT ↓	30	F
4	MC	10/15	10/4	Hep A	-	-	+	+	?	-	+	Hbs/ Ag-	17	F
5	NG	10/15	10/9	NA	-	-	+	-	+	+	NA	NA	32	F
6	RD	10/15	10/8	Hep A	+	+	+	+	+	+	+		38	M
7	KR	10/16	10/13	Hep A	±	-	+	+	+	+	+	SGOT = 240	43	M

S*=Sclera;, N=Nausea; V=Vomiting; A=Anorexia; F=Fever; DU=Dark urine; J=Jaundice; HAIgm=Hepatitis AIgM antibody test

4.4.5 Step 5: Describe and Orient the Data in Terms of Time, Place, and Person

Once you have collected some data, you can begin to characterize an outbreak by time, place, and person. In fact, you may perform this step several times du ring the course of an outbreak. Characterizing an outbreak by these variables is called **descriptive epidemiology**, because you describe what has occurred in the population under study. This step is critical for several reasons. First, by becoming familiar w ith the data, you can learn what information is reliable and informative (e.g., the same unusual exposure reported by many of the people affected) and what may not be as reliable (e.g., many missing or "don't know" responses to a particular question). Second, you provide a comprehensive description of an outbreak by showing its trend over time, its geographic extent (place), and the populations (people) affected by the disease. This description lets you begin to assess the outbreak in light of what is known about the disease (e.g., the usual source, mode of transmission, risk factors, and populations affected) and to develop

causal hypotheses. You can, in turn, test these hypotheses using the techniques of analytic epidemiology described later in **Step 7: Evaluate Hypotheses.**

Note that you should begin descriptive epidemiology early and should update it as you collect additional data. To keep an investigation moving quickly and in the right direction, you must discover both errors and clues in the data as early as possible.

Characterizing by time

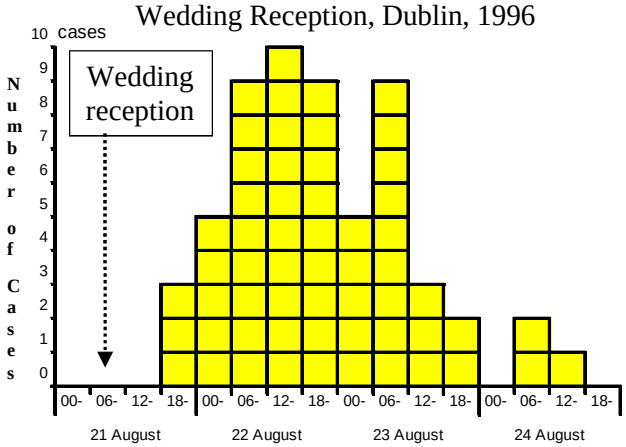
Traditionally, we show the time course of an epidemic by drawing a graph of the number of cases by their date of onset. This graph, called an **epidemic curve**, or "epi curve" for short, gives a simple visual display of the outbreak's magnitude and time trend.

EPI Curve

An epidemic curve provides a great deal of information. First, you will usually be able to tell where you are in the course of the epidemic, and possibly to project its future course. Second, if you have identified the disease and know its usual incubation period, you may be able to estimate a probable time period of exposure and can then develop a questionnaire focusing on that time period. Finally, you may be able to draw inferences about the epidemic pattern—for example, whether it is an outbreak resulting from a common source exposure, from person-to-person spread, or both.

The following represents an epidemic curve during a *Salmonella* outbreak.

Epidemic Curve of among cases, Salmonella Outbreak,
Wedding Reception, Dublin, 1996



Date of onset of illness

How to draw an epidemic curve

To draw an epidemic curve, you first must know the time of onset of illness for each person. For most diseases, date of onset is sufficient; however, for a disease with a very short incubation period, hours of onset may be more suitable. The number of cases is plotted on the *y*-axis of an epi curve; the unit of time, on the *x*-axis. We usually base the units of time on the incubation period of the disease (if known) and the length of time over which cases are distributed. As a rule

of thumb, select a unit that is one-fourth to one-third the length of the incubation period. Thus, for an outbreak of *Clostridium perfringens* food poisoning (usual incubation period 10-12 hours), with cases during a period of only a few days, you could use an *x*-axis unit of 2 or 3 hours. Unfortunately, there will be times when you do not know the specific disease and/or its incubation period. In that circumstance, it is useful to draw several epidemic curves, using different units on the *x*-axes, to find one that seems to show the data best. Finally, show the pre- and post-epidemic period on your graph to illustrate the activity of the disease during those periods.

Interpreting an epidemic curve

The first step in interpreting an epidemic curve is to consider its overall shape, which will be determined by the pattern of the epidemic (e.g., whether it has a common source or person-to-person transmission), the period of time over which susceptible people are exposed, and the minimum, average, and maximum incubation periods for the disease.

An epidemic curve with a steep up slope and a gradual down slope indicates a single source (or "point source") epidemic in which people are exposed to the same source over a relatively brief period. In fact, any sudden rise in the number of cases suggests sudden exposure to a common source. In a point source epidemic, all the cases occur within one incubation period. If the duration of exposure is prolonged, the epidemic is called a "continuous common source epidemic," and the epidemic curve will have a plateau instead of a peak. Person-to-person spread (a "propagated" epidemic) should have a series of progressively taller peaks one incubation period apart.

Cases that stand apart (called "outliers") may be just as informative as the overall pattern. An early case may represent a background (unrelated) case, a source of the epidemic, or a person who was exposed earlier than most of the people affected (e.g., the cook who tasted her dish hours before bringing it to the big picnic). Similarly, late cases may be unrelated to the outbreak, may have especially long incubation periods, may indicate exposure later than most of the people affected, or may be secondary cases (that is, the person may have become ill after being exposed to someone who was part of the initial outbreak). All outliers are worth examining carefully because if they are part of the outbreak, their unusual exposures may point directly to the source. For a disease with a human host such as hepatitis A, for instance, one of the early cases may be in a food handler who is the source of the epidemic.

In a point-source epidemic of a known disease with a known incubation period, you can use the epidemic curve to identify a likely period of exposure. This is critical to asking the right questions to identify the source of the epidemic.

Characterizing by place

Assessment of an outbreak by place provides information on the geographic extent of a problem and may also show clusters or patterns that provide clues to the identity and origins of the problem. A simple and useful technique for looking at geographic patterns is to plot, on a "spot map" of the area, where the affected people live, work, or may have been exposed.

A spot map of cases in a community may show clusters or patterns that reflect water supplies, wind currents, or proximity to a restaurant or grocery store. On a spot map of a hospital, nursing home, or other such facility, clustering usually indicates either a focal source or person-to-person

spread, while the scattering of cases throughout a facility is more consistent with a common source such as a dining hall. In studying an outbreak of surgical wound infections in a hospital, we might plot cases by operating room, recovery room, and ward room to look for clustering.

If the size of the overall population varies between the areas you are comparing, a spot map, because it shows numbers of cases, can be misleading. This is a weakness of spot maps. In such instances, you should show the proportion of people affected in each area (which would also represent the rate of disease or, in the setting of an outbreak, the "attack rate").

Characterizing by person

You determine what populations are at risk for the disease by characterizing an outbreak by person. We usually define such populations by personal characteristics (e.g., age, race, sex, or medical status) or by exposures (e.g., occupation, leisure activities, use of medications, tobacco, drugs). These factors are important because they may be related to susceptibility to the disease and to opportunities for exposure.

Age and sex are usually assessed first, because they are often the characteristics most strongly related to exposure and to the risk of disease. Other characteristics will be more specific to the disease under investigation and the setting of the outbreak. For example, if you were investigating an outbreak of hepatitis B, you should consider the usual high-risk exposures for that infection, such as intravenous drug use, sexual contacts, and health care employment.

Summarizing by time, place, and person

After characterizing an outbreak by time, place, and person, you need to summarize what you know to see whether your initial hypotheses are on track. You may find that you need to develop new hypothesis to explain the outbreak.

4.4.6 Step 6: Develop Hypotheses

In real life, we usually begin to generate hypotheses to explain why and how the outbreak occurred when we first learn about the problem. But at this point in an investigation, after you have interviewed some affected people, spoken with other health officials in the community, and characterized the outbreak by time, place, and person, your hypotheses will be sharpened and more accurately focused. The hypotheses should address the source of the agent, the mode (vehicle or vector) of transmission, and the exposures that caused the disease. Also, the hypotheses should be proposed in a way that can be tested.

You can develop hypotheses in a variety of ways. First, consider what you know about the disease itself: What is the agent's usual reservoir? How is it usually transmitted? What vehicles are commonly implicated? What are the known risk factors? In other words, simply by becoming familiar with the disease, you can, at the very least, "round up the usual suspects."

Another useful way to generate hypotheses is to talk to a few of the people who are ill, as discussed under **Step 3: Verifying the Diagnosis**. Your conversations about possible exposures should be open-ended and wide-ranging and not confined to the known sources and vehicles. Sometimes investigators meet with a group of the affected people as a way to search for common exposures. Investigators have even found it useful to visit the homes of people who became ill and look through their refrigerators and shelves for clues.

Descriptive epidemiology often provides some hypotheses. If the epidemic curve points to a narrow period of exposure, ask what events occurred around that time. If people living in a particular area have the highest attack rates, or if some groups with particular age, sex, or other personal characteristics are at greatest risk, ask why. Such questions about the data should lead to hypotheses that can be tested.

In general, the hypothesis should be:

- Plausible
- Supported by facts established during the epidemiological, laboratory and food investigations
- Able to explain most cases

4.4.7 Step 7: Evaluate Hypotheses

The next step is to evaluate the credibility of your hypotheses. There are two approaches you can use, depending on the nature of your data: 1) comparison of the hypotheses with the established facts and 2) **analytic epidemiology**, which allows you to test your hypotheses.

You would use the first method when your evidence is so strong that the hypothesis does not need to be tested. A 1991 investigation of an outbreak of vitamin D intoxication in Massachusetts is a good example. All of the people affected drank milk delivered to their homes by a local dairy. Investigators hypothesized that the dairy was the source, and the milk was the vehicle of excess vitamin D. When they visited the dairy, they quickly recognized that far more than the recommended dose of vitamin D was inadvertently being added to the milk. No further analysis was necessary.

The second method, analytic epidemiology, is used when the cause is less clear. With this method, you test your hypotheses by using a comparison group to quantify relationships between various exposures and the disease. There are two types of analytic studies: **cohort studies** and **case-control studies**. Cohort studies compare groups of people who have been exposed to suspected risk factors with groups who have not been exposed. Case-control studies compare people with a disease (case-patients) with a group of people without the disease (controls). The nature of the outbreak determines which of these studies you will use.

Cohort studies

A cohort study is the best technique for analyzing an outbreak in a small, well-defined population. For example, you would use a cohort study if an outbreak of gastroenteritis occurred among people who attended a social function, such as a wedding, and a complete list of wedding guests was available. In this situation, you would ask each attendee the same set of questions about potential exposures (e.g., what foods and beverages he or she had consumed at the wedding) and whether he or she had become ill with gastroenteritis.

After collecting this information from each guests, you would be able to calculate an attack rate for people who ate a particular item (were exposed) and an attack rate for those who did not eat that item (were not exposed). For the exposed group, the attack rate is found by dividing the number of people who ate the item and became ill by the total number of people who ate that item. For those who were not exposed, the attack rate is found by dividing the number of people

who did not eat the item but still became ill by the total number of people who did not eat that item.

To identify the source of the outbreak from this information, you would look for an item with:

- a high attack rate among those exposed *and*
- a low attack rate among those not exposed (so the difference or ratio between attack rates for the two exposure groups is high); *in addition*
- most of the people who became ill should have consumed the item, so that the exposure could explain most, if not all, of the cases.

Usually, you would also calculate the mathematical association between exposure (consuming the food or beverage item) and illness for each food and beverage. This is called the **relative risk** and is produced by dividing the attack rate for people who *were exposed* to the item by the attack rate for those who *were not exposed*.

The table below shows the number of cases who were exposed and unexposed to food A and the number of persons who got ill and did not get ill.

Exposure	Ill	Not Ill	Total	Attack rate
Ate food "A"	48	20	68	71%
Did not eat food "A"	2	100	102	2%
Total	50	120	170	29%

In this example, of a total of 68 persons who ate food "A", 48 fell ill (attack rate 48/68 or 71%). The attack rate for those who did not eat food "A" was 2/102 or 2%. Food "A" is a likely risk factor for illness because:

The attack rate is high among those exposed to food "A" (71%) the attack rate is low among those not exposed to food "A" (2%), so the difference (risk difference) between the two attack rates is high (69%). Most cases (48/50 or 96%) were exposed to food "A".

The relative risk (RR) can also be calculated by getting the ratio of the two attacks rates:

$$RR = \frac{\text{Attack rate for those who ate food "A"}}{\text{Attack rate for those who did not eat food "A"}} = \frac{\mathbf{71\%}}{\mathbf{2\%}} = 35.5$$

The relative risk measures the strength of association between exposure and the disease. The RR of 35.5 means that the persons who ate food "A" were 35.5 more likely to develop disease than those who did not. Further calculation can be made to determine the probability that the RR occurred by chance alone (statistical significance).

Case-control studies

In most outbreaks the population is not well defined, and so cohort studies are not feasible. In these instances, you would use the case-control study design. In a case-control study, you ask both case-patients and controls about their exposures. You then can calculate a simple

mathematical measure of association—called an **odds ratio**—to quantify the relationship between exposure and disease. This method does not prove that a particular exposure caused a disease, but it is very helpful and effective in evaluating possible vehicles of disease.

When you design a case-control study, your first, and perhaps most important, decision is who the controls should be. Conceptually, the controls must not have the disease in question, but should be from the same population as the case-patients. In other words, they should be similar to the case-patients except that they do not have the disease. Common control groups consist of neighbors and friends of case-patients and people from the same physician practice or hospital as case-patients.

In general, the more case-patients and controls you have, the easier it will be to find an association. Often, however, you are limited because the outbreak is small. For example, in a hospital, 4 or 5 cases may constitute an outbreak. Fortunately, the number of potential controls will usually be more than you need. In an outbreak of 50 or more cases, 1 control per case-patient will usually suffice. In smaller outbreaks, you might use 2, 3, or 4 controls per case-patient. More than 4 controls per case-patient will rarely be worth your effort.

In a case-control study, you cannot calculate attack rates because you do not know the total number of people in the community who were and were not exposed to the source of the disease under study. Without attack rates, you cannot calculate relative risk; instead, the measure of association you use in a case study is an odds ratio. When preparing to calculate an odds ratio, it is helpful to look at your data in a 2×2 table.

The following table represents an example of table of a case-control study:

Exposure	Cases	Controls	Total
Ate food "A"	48	20	68
Did not eat food "A"	2	100	102
Total	50	120	170
Percent exposed	96%	17%	40%

In this example, 96% of all cases had consumed food "A" compared to only 17% of the controls. This suggests that consumption of food "A" is associated with illness in one way or another. The odds ratio is calculated as the cross-product of a two-by-two table as follows:

$$\text{Odds ratio} = \frac{[48 \times 100]}{[20 \times 2]} = \mathbf{120\ (Odds\ ratio)}$$

The odds ratio is interpreted as the "odds of illness in a person who ate food A". In this case, cases were 120x more likely to have eaten food "A" than those who did not eat them.

Choosing controls is an important decision in a case-control study. Controls must not have the disease in question but should represent the population from which the cases come. The number of controls may be more than the number of cases in some instances. This is most helpful in establishing statistical associations that may need more subjects to be included in the study.

Testing statistical significance

The final step in testing your hypothesis is to determine how likely it is that your study results could have occurred by chance alone. In other words, how likely is it that the exposure your study results point to as the source of the outbreak was not related to the disease after all? A test of statistical significance is used to evaluate this likelihood. Statistical significance is a broad area of study, and we will include only a brief overview here.

The first step in testing for statistical significance is to assume that the exposure is not related to disease. This assumption is known as the **null hypothesis**. Next, you compute a measure of association, such as a relative risk or an odds ratio. These measures are then used in calculating a chi-square test (the statistical test most commonly used in studying an outbreak) or other statistical test. Once you have a value for chi-square, you look up its corresponding p-value (or probability value) in a table of chi-squares.

In interpreting p-values, you set in advance a cutoff point beyond which you will consider that chance is a factor. A common cutoff point is .05. When a p-value is below the predetermined cutoff point, the finding is considered "statistically significant," and you may reject the null hypothesis in favor of the **alternative hypothesis**, that is you may conclude that the exposure is associated with disease. The smaller the p-value, the stronger the evidence that your finding is statistically significant.

4.4.8 Step 8: Refine Hypotheses and Carry Out Additional Studies

4.4.8.1 Additional epidemiological studies

When analytic epidemiological studies do not confirm your hypotheses, you need to reconsider your hypotheses and look for new vehicles or modes of transmission. This is the time to meet with case-patients to look for common links and to visit their homes to look at the products on their shelves.

An investigation of an outbreak of *Salmonella muenchen* in Ohio during 1981 illustrates this point. A case-control study failed to turn up a food source as a common vehicle. Interestingly, people 15 to 35 years of age lived in all of the households with cases, but in only 41% of control households. This difference caused the investigators to consider vehicles of transmission to which young adults might be exposed. By asking about drug use in a second case-control study, the investigators found that illegal use of marijuana was the likely vehicle. Laboratory analysts subsequently isolated the outbreak strain of *S. muenchen* from several samples of marijuana provided by case-patients.

Even when your analytic study identifies an association between an exposure and a disease, you often will need to refine your hypotheses. Sometimes you will need to obtain more specific exposure histories or a more specific control group. For example, in a large community outbreak of botulism in Illinois, investigators used three sequential case-control studies to identify the vehicle. In the first study, investigators compared exposures of case-patients and controls from the general public and implicated a restaurant. In a second study, they compared the menu items eaten by the case-patients with those eaten by healthy restaurant patrons and identified a specific menu item, a meat and cheese sandwich. In a third study, appeals were broadcast over radio to identify healthy restaurant patrons who had eaten the sandwich. It turned out that controls were less likely than case-patients to have eaten the

onions that came with the sandwich. Type A *Clostridium botulinum* was then identified from a pan of leftover sautéed onions used only to make that particular sandwich.

When an outbreak occurs, whether it is routine or unusual, you should consider what questions remain unanswered about the disease and what kind of study you might use in the particular setting to answer some of these questions. The circumstances may allow you to learn more about the disease, its modes of transmission, the characteristics of the agent, and host factors.

4.4.8.2 Laboratory and environmental studies

While epidemiology can implicate vehicles and guide appropriate public health action, laboratory evidence can clinch the findings. The laboratory was essential in the outbreak of *Salmonellosis* linked to use of contaminated marijuana. Environmental studies often help explain why an outbreak occurred and may be very important in some settings. For example, in an investigation of an outbreak of shigellosis among swimmers in the Mississippi River, a local sewage plant was identified as the cause of the outbreak.

References:

1. Tuberculosis Control Branch, California Department of Health, California, USA
2. http://www.cdc.gov/excite/classroom/outbreak/steps.htm

4.4.8.2.1 Laboratory testing

Overview

Most outbreaks of foodborne disease are microbiological in origin and their investigation will usually require a microbiology laboratory. However, if there is a possibility of a chemical cause of the outbreak, a chemical laboratory should be consulted.

4.4.8.2.2 Microbiology and Parasitology Tests for Human Specimens in Foodborne Outbreaks

Below are the description of specimen collection, storage, transport, and the laboratory tests to be done in cases of FWBDs:

4.4.8.2.2.1 Bacterial Etiologic Agents

The following table provides guidelines for specimen collection and transport to identify **bacterial** etiologic agents of foodborne diseases:

Table 4.4.8.2.2.1 Guidelines for specimen collection and transport to identify **bacterial** etiologic agents of foodborne diseases

Clinical Syndrome	Etiologic Agents	Specimen	Quantity	Container/ Transport medium	Transit Time/ Temperature
I- Diarrhea	*Vibrio cholerae* Other Vibrios Diarrheagenic *E. coli* *Shigella spp* *Salmonella spp* *Yersinia* *Aeromonas* *Pleisiomonas* *Campylobacter spp*	Fresh stool Rectal swab 	2-5 ml/ pea-sized 2-swabs with visible fecal matter	Clean, wide-mouthed, screw-capped container Cary-blair transport medium in autoclavable container	Within 1-2 hours (room temperature) 3-6 hours (4^{o}C) within a week (at room temperature or 4^{o}C)
II-Food Poisoning/ Intoxication	Vibrio parahemolyticus Other Vibrios Diarrheagenic E. Coli *Salmonella* spp Yersinia Campylobacter Bacillus cereus Staphylococcus aureus Listeria	Fresh stool Rectal swab Vomitus (immediately refrigerate) Incriminated food (immediately refrigerate)	2-5 ml/ pea-sized 2-swabs with visible fecal matter 10-15 ml at least 50 grams	Clean, wide-mouthed, screw-capped container Cary-blair transport medium in autoclavable container Clean, wide-mouthed, screw-capped container Clean, sealed plastic container (ziplock)	With-in 1-2 hours (room temperature) 3-6 hours (4oC) within a week (at room temperature or 4oC) 3-6 hours (4^{o}C) if can not be transported immediately, freeze at -20oC until transport with packed ice
III-Typhoid Suspects	*Salmonella* Typhi Other *Salmonella*	Fresh stool Rectal swab Blood	2-5 ml/ pea-sized 2-swabs with visible fecal matter 1:10 ratio of blood with BCB	Clean, wide-mouthed, screw-capped container Cary-blair transport medium in autoclavable container Blood culture broth (BCB)	With-in 1-2 hours (room temperature) 3-6 hours (4oC) within a week (at room temperature or 4oC) within 3 days after collection at room temperature

Every specimen should be accompanied by an appropriately fil led up Bacteriology Request Form (*Annex 4.4.8*)

4.4.8.2.2.2 Viral Etiologic Agents

The following are the Guidelines in Specimen Collection, Storage, and Handling of stool specimens suspected to be secondary to a Viral Etiology:

1. Collect stool within 2 days from date of onset. Stool specimen volume should be as big as the size of an adult's thumb; if diarrheic/ watery stool, fill up ¾ of the container.
2. Place specimen in a dry, clean, sealed and leak-proof container.
3. Label specimen properly with the *name and date of collection*. The information on the label must be legible and should match in the information written on the Request Form.(*Annex 4.4.8A*)
4. While awaiting transport to RITM, store specimen in a refrigerator (4 -8 °C).
5. Clinical specimens from suspected foodborne outbreaks should be submitted to the nearest ARSP sentinel site laboratory in the region or the National Reference Laboratory for Bacterial Enteric Diseases, Research Institute for Tropical Medicine.

Guidelines in Stool Specimen Transport

1. Wrap stool sample with cotton. Place in a zip-locked plastic bag.
2. Place the Request Form in a separate plastic bag to prevent it from being contaminated.
3. Transport specimen using the provided carrier box (yellow box) with 4 frozen ice packs inside to maintain cold temperature. Put laboratory request form (*Annex 4.4.8A*) and specimen in upright position in between the ice packs.
4. Ship the specimen carrier to the Research Institute for Tropical Medicine to the Virology Department, Research Institute for Tropic al Medicine.

It is recommended that specimens be collected during the first 3 days of illness and should arrive at RITM within 3 days from date of collection and that weekend arrival of specimens be avoided.

4.4.8.2.2.3 Parasitic Etiologic Agents

4.4.8.2.2.3.1 Guidelines for Specimen Collection, Transport and confirmation of parasites

Specimen Collection

- Collect the stool in a dry, clean, wide mouthed, leakproof container.
- Make sure no urine, water, soil or other material gets in the container.
- Fresh stool should be examined, processed, or preserved immediately.

Specimen collection may need to be repeated if the first examination is negative. If possible, three specimens passed at intervals of 2 -3 days should be examined.

4.4.8.2.2.3.2 Amount of fecal material needed

- Formed specimen - size of a large walnut (20 to 40 g)
- Watery stools - 5 to 6 table spoons (routine examination)

4.4.8.2.2.3.3 Time factor in examination

- Watery - 30 minutes from the time of passage
- Formed - within the day

Certain drugs and compounds will render the stool specimens unsatisfactory for examination. The specimens should be collected before these substances are administered, or collection must be delayed until after the effects have passed. Such substances include: antacids, kaolin, mineral oil and other oily materials, non-absorbable anti-diarrheal preparations, barium or bismuth (7-10 days needed for clearance of effects), antimicrobial agents (2-3 weeks), and gallbladder dyes (3 weeks).

4.4.8.2.2.3.4 Stool preservation and transport

Preservation of specimens is necessary when stool specimens cannot be examined within the prescribed time interval. Preserve the specimen as soon as possible. If using a commercial collection kit, follow the kit's instructions. If kits are not available, the specimen should be divided and stored in two different preservatives, 10% formalin and PVA (polyvinyl-alcohol), using suitable containers. Add one volume of the stool specimen to three volumes of the preservative. Insure that the specimen is mixed well with the preservative. Formed stool needs to be well broken up. Insure that the specimen containers are sealed well. Reinforce with parafilm or other suitable material. Insert the container in a plastic bag.

Specimens kept under refrigeration when preservatives are not available are suitable for antigen testing only.

Various preservatives are available (see table), with the two most commonly used being 10% aqueous formalin and PVA (polyvinyl-alcohol).

Table 4.4.8.2.2.3A General Preservatives for Stool Specimens from patients suspected to have parasitic infections

Preservative	Advantages	Disadvantages
10% Formalin	• All purpose fixative • Easy to prepare • Long shelf life • Good preservation of morphology of helminth eggs, larvae, protozoan cysts, and coccidian • Suitable for concentration procedures and UV fluorescence microscopy	• Not suitable for some permanent smears stained with trichrome • Inadequate preservation of morphology of protozoan trophozoites • Can interfere with PCR, specially after extended fixation time
MIF (merthiolate-iodine-formaldehyde)	• Components both fix and stain organisms • Easy to prepare • Long shelf life • Useful for field surveys • Suitable for concentration procedures	• Not suitable for some permanent smears stained with trichrome • Inadequate preservation of morphology of protozoan trophozoites • Iodine interferes with other stains and fluorescence • Iodine may cause distortion of protozoa
LV-PVA (low viscosity polyvinyl-alcohol)	• Good preservation of morphology of protozoan trophozoites and cysts • Easy preparation of permanent smears stained with such as trichrome (solution both preserves organisms and makes them adhere to slides) • Preserved samples remain stable for several months	• Inadequate preservation of morphology of helminth eggs and larvae, coccidia, and microsporidia • Contains mercuric chloride • Difficult and expensive to dispose • Difficult to prepare in the laboratory • Not suitable for concentration procedures • Cannot be used with immunoassay kits • Not suitable for acid-fast, safranin and chromotrope stains

Because 10% formalin and PVA have complementary advantages, it is recommended that the specimen be divided and preserved in both types of

preservatives (add one volume of stool to three volumes of the preservative). Preserved specimens can be stored for several months.

PVA fixative – component of commercial fecal parasite collection kit

1) Isopropanol, 30%
2) Mercuric chloride, 4.5%
3) Glacial acetic acid, 5%
4) Glycerol, 2%
5) Polyvinyl alcohol, 5%
6) Purified water, 52.5%
7) If the PVA has gelled, heat in a 50°C water bath until clear and fluid

Table 4.4.8.2.2.3B. Guidelines for confirmation of food and waterborne parasites

Etiologic Agent	Incubation Period	Clinical syndrome	Confirmation
Cryptosporidium spp.	1-12 days	Immunocompetent: Majority are asymptomatic Diarrhea - Mild to severe, self - limiting	• identification of oocysts in stool specimens by light microscopy • Acid-fast staining methods (with or without stool concentration) • immunofluorescence microscopy • enzyme immunoassays
Cyclospora cayetanensis	Ave. incubation period of 1 week	• watery diarrhea, which can be severe. • Anorexia • weight loss • abdominal pain • nausea and vomiting • Myalgias • low-grade fever • Fatigue • Untreated infections typically last for 10-12 weeks and may follow a relapsing course.	• identification of oocysts in stool specimens by light microscopy • Acid-fast staining methods (with or without stool concentration) • immunofluorescence microscopy

Etiologic Agent	Incubation Period	Clinical syndrome	Confirmation
Giardia intestinalis	5 to 6 days and usually lasts 1 to 3 weeks	• Diarrhea • abdominal pain • Bloating • Nausea • Vomiting In chronic giardiasis symptoms are recurrent and malabsorption and debilitation may occur.	• identification of cysts or trophozoites in the feces • direct mounts / concentration procedures • immunofluorescence microscopy • enzyme immunoassays
Trichinella spp.		• Light infections - asymptomatic • Intestinal invasion • gastrointestinal symptoms (diarrhea, abdominal pain, vomiting) • Larval migration into muscle tissues (one week after infection) • periorbital and facial edema, conjunctivitis, fever, myalgias, splinter hemorrhages, rashes, and blood eosinophilia. • Occasional life-threatening manifestations include myocarditis, central nervous system involvement, and pneumonitis • Larval encystment in the muscles causes myalgia and weakness, followed by subsidence of symptoms.	• clinical symptoms • eosinophilia • antibody detection • muscle biopsy

Specimen Transport: Ship the specimen carrier to the Parasitology Department, Research Institute for Tropical Medicine and fill up appropriate Parasitology Request Form (*Annex 4.4.8B*).

References:

1. Ash, L.R. and T.C. Orihel. 1987. *Parasites: A Guide to Laboratory Procedures and Identification*., p.37-44. ASCP Press, Chicago, Il.
2. CDC; *DPDx Laboratory Identification of Parasites of Public Health Concern* . Second Edition, 2003

4.4.8.2.3 Food and environmental investigations

As was mentioned earlier, environmental studies often help explain why an outbreak occurred and may be very important in some settings. Below is a description of procedures for food and environmental investigation.

Procedure for undertaking investigation of food establishments

Annex 4.4.8C (Sanitary Inspection of Food Establishment) shall be used for the purpose of inspection/evaluation.

As stated in Section 4 of the -Implementing Rules and Regulations of Chapter (IRR) III "Food Establishments" of the Code on Sanitation of the Philippin es (P.D. 856), it shall be the duty of the Provincial, City, Municipal Health Officer to cause an inspection and evaluation of every food establishment requiring a sanitary permit for its operations, at least every six (6) months and shall cause as many ad ditional inspections and re-inspections and evaluation to be made as are necessary for the enforcement of the provisions of the IRR.

In an outbreak situation, food and environmental investigations are conducted in coordination with epidemiologic and labora tory investigations, to find out how and why an outbreak occurred, and most importantly, to institute corrective action to avoid similar occurrences in the future. The specific objectives of a food and environmental investigation during a foodborne disease outbreak include:

- to identify the source, mode and extent of the food contamination
- to assess the likelihood that pathogens survived processes designed to kill them or reduce their numbers
- to assess the potential for growth of pathogens during processing , handling or storage
- to identify and implement corrective interventions

During such investigations, efforts should be made to understand actual conditions at the time the suspected foods were prepared (i.e. prior to the outbreak), rather than simply observing current conditions. A thorough investigation should be done on each suspected food item that has been (or could be) implicated in the outbreak.

Investigations should be guided by what is already known about an outbreak from epidemiologic and laborat ory investigations, and the known reservoirs for the suspected agent. If a food has been incriminated epidemiologically, efforts should focus on how this particular food became contaminated. If laboratory investigations have identified a pathogen, efforts may focus on foods and conditions known to be associated with the particular pathogen.

During a food-borne disease outbreak, investigation of a food establishment requires:

4.4.8.2.3.1 Review of records

Review the records of the establishment pertaining to the sanitary permit, SSRS and food certificates of the food handlers.

The food establishment should have a valid sanitary permit issued by the city/municipal health office. The permit is valid for one (1) year, ending on the last day of December of each year, and is renewable every year. While the rating of the SSRS posted in the establishment depend on the latest inspection report of the Sanitation Inspector.

All food handlers in the establishment should have valid health certificates. The certificate is renewable at least every year or as often as required by local ordinance.

Aside from the health certificate, it is advisable for the establishment owner/operator to forge a Food Employee Reporting Agreement (see *Annex 4.4.8D*) to ensure that Food Employe es notify the person in charge when they experience any

of the conditions listed (in said Annex) so that the Person in Charge can take appropriate steps to preclude the transmission of foodborne illness. Should this record be available in the establishment, this is also to be reviewed.

4.4.8.2.3.2 Inspection of food establishment

Inspection of the food establishment should be carried out to determine compliance of its sanitation requirements. The following inquiries are some of the important points to consider:

Aspect of Sanitation	Query/Action
1. Water supply	Is the water potable? Does it have latest Certificate of Potability issued by local health office? Does the water come from the approved source? Is the quantity adequate? In case of contaminated water, an assessment of the water system and supply is required to further determine the source of contamination inside and outside the premises of the establishment. The Sanitation Inspector under the local health office and the water provider/s can provide assistance to this action.
2. Toilet facility	Is the toilet and lavatory facility adequate? Are there provisions of soap, toilet paper? Is it clean and in good maintenance? Is it free from odor?
3. Food storage	Is there a separate storage of wet and dry, hot and cold? Is there adequate space? Is there absence of insects? Is there absence of rats?
4. Equipment and utensils	Is it washed with detergent? Rinsed? Sanitized? Is there proper storage? Table and table cloth always clean?
5. Solid Waste Management	Are there adequate receptacles? With tight covers? Cleaned? Drains cleaned? No stagnant waste water?
6. Insect and utensils	Absence of flies? Cockroaches? Ants? Rats?
7. General inspection of kitchen, dining hall, toilet, storage and outside premises	Proper repair? Proper cleanliness? Proper ventilation? Proper lighting?

4.4.8.2.3.3 Food and environmental sampling

During outbreak, conduct of food and environmental samples should be undertaken as early as possible for examination by the accredited l aboratory facility. It is advisable to notify the laboratory before collecting samples to determine information like the sampling materials (the type of specimens to be collected), their quantity, storage, packing and transport.

Information on methods of laboratory tests of different categories of food with corresponding name of concerned laborat ory is found in *Annex 4.4.8E*.

4.4.8.2.3.3.1 Food sampling

Food sampling for laboratory analysis is necessary to determine microbial or chemical contamination. Ex amples of food samples which may be appropriate for collection and testing include the following:

- ingredients used to prepare incriminated foods
- leftover foods from a suspect meal
- foods from a menu that has been incriminated epidemiologically
- foods known to be associated with the pathogen in question
- foods in an environment which may have permitted the survival or growth of micro-organisms

However, before proceeding to the outbreak site, be sure to check the items needed (see *Annex 4.4.8F*) in the collection of food sample/s. The Foodborne Outbreak Investigation Checklist (see *Annex 4.4.8G*) is a very valuable tool in investigating an outbreak.

If a packaged food item is suspected of being involved in an outbreak, it is particularly important to collect unopened packages of that food from the same lot, if available. This can help determine whether the food was contaminated prior to receipt at the site of preparation. If there are no foods left from a suspect meal, samples of items that were prepared subse quently but in a similar manner may be collected instead, although findings from these tests must be interpreted carefully. If ingredients and raw items are still available they should also be sampled. Storage areas should be checked for items that may ha ve been overlooked. Even food retrieved from garbage containers may provide information useful in an investigation.

The protocol for the collection of all samples for food testing is as follows :

- Use aseptic sampling techniques if collecting samples for microbiological analysis.
- Complete the Sample Collection Protocol Form (see *Annex 4.4.8H*)
- Follow the proper chain of custody procedures in order to maintain the integrity of the sample from collection to analysis. This requires sealing the sample at the time of collection, writing in the correct date, time and

condition of sample and obtaining the appropriate signatures as indicated in the chain of custody section on the Sample Collection Form whenever the samples changes hands.

The general methods for Collection of Food Samples are shown in the table below.

Table 4.4.8.2.3.1 General Methods for Collection of Specimens and Samples

Specimen or Sample	Quantity	Method of Collection	Transport and Shipment
Animal carcass or raw meat, poultry	Swab or 200 grams	Moisten swab with buffered distilled water or .01% peptone water. Swab entire carcass or large potion of meat. Put swab in enrichment broth. With sterile plastic gloves, wipe gauze in enrichment broth. Aseptically cut potions of meat from different parts of the carcass. Put in sterile plastic bag or jar.	Label. Pack refrigerant around container (do not freeze or use dry ice). Swabs or gauze samples in enrichment broth do not need to be refrigerated. Insulate chilled foods with absorbent materials, pack in double containers. Enclose identifying information.
Food, solid	200 grams	With sterile implement, cut or pick up food and aseptically transfer it into sterile plastic bags or wide-mouth jars. Take sample from several sites if food cannot be mixed.	As above
Food, liquid	200 ml	Mix or shake. With sterile implement, ladle or pipet, transfer food into container. Immerse Moore swab into vat or pipe. Put Moore swab into enrichment or pre-enrichment broth. If not viscous, pass 1 to 12 liters through membrane filter. Put filter pad in tube or enrichment broth.	As above
Food, frozen	200 grams	Small volumes of frozen foods are sent intact. For large volumes of food, such as 5 gallons of frozen eggs, drill from the top at one side of a container diagonally through center to the bottom of container, at opposite side, repeat from one side of container until sufficient materials is obtained. Use a sterile, large diameter bit for this type of sample.	Keep frozen, ship in insulated boxes.
Food, dry	200 grams	As above, but use sterile hollow tubes instead of drills.	Ship in protected containers. Enclose identifying information.

4.4.8.2.3.3.1.1 Investigation of a suspect food

When investigating the role of a suspect food, its complete processing and preparation history should be reviewed, including sources and ingredients, persons who handled the items, procedures and equipment used, potential sources of contamination, and time-and-temperature conditions to which foods were exposed. The following procedures should be undertaken in conducting an investigation of a suspect food:

- **Product description –** all raw materials and ingredients used, sources of the ingredients, physical and chemical characteristics (including pH, water activity [A_w]), use of returned, reworked or leftover foods in processing, intended use (e.g. home use, catering, for immediate consumption, for vulnerable groups).

- **Observation of procedures from receipt to finish.** Observations must cover the entire range of procedures, focus on actual processes and work practices and include cleaning methods, schedules, personal hygiene of food handlers and other relevant information. The temperature history (temperature and duration) of the suspect food should be recorded as completely as possible, including while the food was stored, transported, prepared, cooked, heat-processed, held warm, chilled or re-heated.

- **Interviewing food handlers.** All food handlers who were directly involved in producing, preparing or handling suspect foods should be interviewed. Information should be obtained on the exact flow of the suspect food, its condition when received by the worker, the manner it was prepared or handled, and about unusual circumstances or practices during that time. Recent illnesses of food handlers (including before, during or after the date of the outbreak exposure) and times of absence from work should also be noted. Specimens from ill food handlers should be obtained for microbial analysis. If any employee is found to be infected with the agent of concern, it is very important to differentiate whether he or she is infected because of having eaten the same food or he or she is a potential source of the problem. At every step of the process, data should be evaluated with respect to contamination, growth/proliferation, and survival factors associated with the suspected pathogen(s).

- **Making appropriate measurements.** Product temperatures during processing and storage and time sequences of operations should be measured and recorded as appropriate.

- **Drawing a flow diagram of the operations.** The flow chart should be based on actual practices at the time of the outbreak and, as applicable, show the exact flow of operations for the suspect food(s), name of persons performing operations, equipment used, results of measurements taken, other relevant information.

- **Conducting an "outbreak hazard analysis".** Hazard analysis in an outbreak situation should address the following questions at each step of the processing of potentially implicated foods:
  - Could pathogens have been introduced at any stage?
  - Could pathogens already present have been able to grow at any stage?
  - Could pathogens have survived processes designed to kill the m?

  This should also include observation of the foodhandling environment, including assessing such things as the location and availability of sinks and appropriate handwashing facilities, and determining whether separate areas are maintained for the preparation of raw and ready-to-eat foods.

4.4.8.2.3.3.2 Environmental sampling

The purpose of collecting environmental samples is to trace the sources and the extent of contamination that may have led to the outbreak. Samples may be taken from working surfac es, food contact surface of utensils and equipment, containers or other surfaces such as refrigerators, door handles, etc. Environmental samples may also include clinical specimens (such as fecal specimens, blood or nasal swabs) from food workers, and wate r used for food processing.

4.4.8.2.3.3.2.1 Utensils and equipment sampling

Swabs can also be taken from tables, cutting boards, grinders, slicing machines and other utensils that had contact with the suspect food. However, as these pathogens are often present in such raw products, their detection does not automatically imply that they were the cause of the outbreak. Raw poultry, pork, beef and other meats are often contaminated with *Salmonella, C. jejuni, Y. enterocolitica, C. perfringens, S. aureus, E. coli* O157 and other pathogens by the time they come into kitchens. If any of these agents are suspected in an outbreak, meat scraps, drippings on refrigerator floors and deposits on saws or other equipment can be helpful in tracing the source of contamination.

The following points are helpful if sampling utensils are are to be examined:

- Include at least glasses, cups and spoons, if used, and at least 4 of each shall be selected at random from the shelves or other places where clean utensils are stored.
- If a direct check of the dishwashing methods is desired, utensils should be selected from those recently washed.
- Care shall be taken to prevent contamination by handling during sampling.

- Use one swab for each group of 4 or more similar utensils
- Swabs should be taken at significant surface of the utensils which consists of the upper half-inch of the inner and outer rims of cups and glasses and the entire inner and outer surface of the bowls and spoons. For forks and surfaces of dishes, the area to be swabbed should include the entire inner and outer surface of the tins or forks and inner surface of plates and bowls.

4.4.8.2.3.3.2.2 Food handlers

Food handlers can be a source of foodborne contamination. Stool specimens or rectal swabs may be collected from food handlers for laboratory analysis to identify potential carriers or sources of contamination. The local health office can assist in this action.

Swabbing in certain parts of the body is also one way of examining a food handler. For toxin-producing strains of *S. aureus*, these are to be carried in the nostrils, on the skin and occasionally in faeces of many healthy persons. If *S. aureus* intoxication is suspected, swabbing of the lower half-inch of the nostrils of food handlers can be performed. Swabs should also be taken from skin lesions (pimples, boils, infected cuts, burns, etc) and on unclothed areas of the body. There should be an arrangement for workers to be examined by a medical practitioner as appropriate. If hepatitis A virus (HAV) is suspected, blood from foodservice workers can be tested for IgM antibodies against HAV, which is an indication of acute infection (Heymann, 2004 in WHO).

If ill food handlers are identified, an immediate decision will need to be made about excluding those people from work until symptoms have resolved or additional investigations have been done.

During a foodborne outbreak investigation, the form to be used for interviewing the food handlers is shown in *Annex 4.4.8I.*

4.4.8.2.3.3.2.3 Water sampling

The conduct of water sampling is done to determine the quality of water through on-site or water laboratory analysis. On-site analysis using portable test kit is preferred for routine monitoring however, any significant result above the maximum permissible level noted should be verified for water laboratory analysis for confirmation.

The collection of water samples from drinking water supply sources should be in accordance with the procedures of sampling provided in the latest Philippine National Standard for Drinking Water (PNSDW) or from the accredited laboratory where sample/s will be brought.

The result of water examination from the laboratory should be collected as soon as possible and results be interpreted by referring to "Remarks" of the laboratory form. The laboratory result is to be referred to the latest PNSDW. Then the concerned persons or agencies have to be

informed about the results at the earliest possible time to institute precautionary measures immediately.

References:

1. Department of Health. Implementi ng Rules and Regulations of Chapter III Food Establishments of the Code on Sanitation of the Philippines. 1995
2. Department of Health. Implementing Rules and Regulations of Chapter II Water Supply of the Code on Sanitation of the Philippines. 1995
3. Department of Health. Operational Manual for Sanitary Inspectors and other Related Workers.
4. Rhode Island Department of Health. Guidelines for Investigating Foodborne Illness Outbreaks. 2004
5. WHO. Guidelines for the Investigation and Control of Foodborne Diseases Outbreaks. Geneva

4.4.8.2.4 Roles of the laboratory divisions of participating Institutions in the investigation of suspected vehicle specimen in an Outbreak Investigation

In the food and environmental investigation during outbreaks, the participating institutions may be involved via two processes, namely: (A) processing of specimens suspected to be vehicles of the outbreak that are submitted by investigators and (B) trace back. Public health agencies conduct trace back activities to determine the source and distribution of the implicated product associated with the outbreak and to subsequently identify potential points where contamination could have occurred. This action helps prevent additional illnesses by providing a foundation for recalls of contaminated food remaining in the marketplace and identifying haz ardous practices or violations.

The succeeding section will describe involvement of the participating laboratories in the environmental and food investigation in a food - and water-borne outbreak investigation.

4.4.8.2.4.1 Processed Food samples (BFAD)

BFAD shall perform microbiologic tests on suspected **processed food vehicles** and **bottled water** during FWBDs outbreaks. Prior to acceptance of processed food samples for laboratory analysis, the laboratory personnel concerned will conduct an interview or review the investigation documents submitted to determine the probable cause of a foodborne outbreak. The person who submits the sample is requested to fill up the request for Microbiological Analysis (Collected & complaint sample forms)(*Annex 4.4.8J & K*) For Complaint samples, if person affected was examined by a physician, a Medical Certificate/Report is also required for submission to support/help the investigation.

Microbiological analysis will be conducted based on official method stated in the B.C.01-A series 2004 - Guidelines for the Assessment of Microbiological Quality of Processed Foods (*Annex 4.4.8L& M*) and based on signs & symptoms of the patie nt.

4.4.8.2.4.1.1 Food Sample Collection[4]

A. Samples for microbiological analysis are to be collected following aseptic techniques**.**

- Wash hands before and after collecting sample(s)
- Wear gloves during sample collection. Do not handle specimens with bare hands
- Use **sterile containers**. Sterile sample containers include: Plastic bags, Whirlpack or Zip- lock (500 mL container) and Plastic jars with screw caps (250 mL container).
- Make sure container covers are tight, to prevent leakage.
- Use sterile utensils, tongs, spatula, spoons, etc.
- Do not handle or touch the inside of the container.
- Try not to use Whirlpack bags or zip- lock type bags for liquids, which can leak and spill easily.
- Whirlpack bags or zip- lock type bags may be used for solid foods, such as dry milk, meat, etc
- Collect a sufficient amount of sample, at 200g or 200 mL., for bottled water, at least 250 mL (about one glassful in amount).
- Do not fill sample containers more than three quarters full.
- Packaged foods should be taken to the laboratory in original containers.

B. Labels

- Write clearly with waterproof marker or ballpoint pen.
- Clearly write the name of the product, date, time, sample
- Number and name of inspector on the label
- Place the sample label on the container or plastic bag.

C. Transportation

- Use dry ice, if available from the Lab, for ice cream or frozen food samples. If dry ice is not available, prompt delivery is the key to not compromising frozen samples or use plain ice but ensure that package of food does not get mixed with melting ice.
- Place the sample with pre- frozen ice packs in an insulated cooler.

D. Delivery

- Notify the DOH designated Laboratory prior to obtaining samples related to foodborne illness complaints (see laboratory contact numbers).
- Transport foodborne illness complaint samples to the Lab immediately.
- Upon arrival at the laboratory, bring samples to the receiving area where they will be assigned a lab number.
- Laboratory personnel will take the temperature of the sample(s), upon their receipt by the laboratory.
- Samples will be placed immediately into the lab refrigerator once removed from the insulated cooler.
- Samples must be clearly labeled, identified, and numbered before being placed in the refrigerator.
- If samples are not delivered in the Laboratory immediately, it should be kept in an appropriate storage condition.

E. **Sampling Equipment**[4]

1. Sterile sample containers
   - Plastic bags, Whirlpack or Zip-lock (500 mL container)
   - Plastic jars with screw caps (250 mL container)
2. Sterile and wrapped sample collection implements
   - Spoons, ladles, scoops, spatulas, tongs
3. Supporting equipment
   - Waterproof marker, sample forms, thermometer
4. Sterilizing and Sanitizing Agents
   - Alcohol wipes
5. Refrigerants
   - Ice packs, insulated containers
6. Clothing
   - Laboratory coat, head caps, disposable plastic gloves

4.4.8.2.4.1.2 Handling Samples Resulting from Consumer Complaints[4]

4.4.8.2.4.1.2.1 For food with suspected criminal implications, the consumer should be advised to contact the appropriate agency/ies such as the National Bureau of Investigation (NBI).

4.4.8.2.4.1.2.2 Readily identifiable **foreign objects** such as hair, glass, metal objects (nails, screws, etc), band-aids, cockroaches, or rodents will not be taken to the Lab for analysis. Obtain control food samples of the same lot/code from a container of commercially processed food. These will be used to determine if there is an isolated or broader public health issue. Control food samples, if collected, will be taken to the lab for analysis.

4.4.8.2.4.1.2.3 Samples not accepted by BFAD laboratory can be referred to outside laboratories (please refer to list of BFAD recognized laboratories (Section 5 of this Manual or BFAD/DOH web site). Food Chemistry will only handle samples accepted through the Office of LSD Chief. The procedure for filing a request for laboratory analysis of complaint sample is found in *Annex 4.4.8N*

4.4.8.2.4.1.3 **Protocol to Determine if a Sample(s) needs to be accepted from Consumers by the Office of LSD Chief.** [4]

4.4.8.2.4.1.3.1 The investigator submits the specimen directly to BFAD:

A laboratory analyst or his/her supervisor will interview the complainant before the Office of the LSD Chief can accept any sample. If, after interviewing the complainant, the analyst decides to accept the sample, the following paperwork will need to be completed. **The necessary paper work includes the following:**

4.4.8.2.4.1.3.1.1 A **request for Microbiological analysis of complaint sample form**. See *Annex 4.4.8K*. The interviewer must see to it that the complainant fill out this form accurately and completely. The laboratory analyst or his/her supervisor will determine the type(s) of testing that needs to be performed on the submitted and accepted food sample(s). For **specific questions** relating to chemical testing, contact the Food Chemistry Laboratory for assistance. Please note that if the type(s) of testing required is not specified, the laboratory will not be able to accept the sample.

NOTE: If person/s affected was/were examined by a physician, Medical /certificate should be submitted.

Criteria for non-acceptance of Samples;

1. Spoiled/ rotten sample
2. Presence of foreign object, insect or rodent
3. Improper storage/transport condition
4. Insufficient sample (Sufficient amount is 200 mg or 200 ml.)

4.4.8.2.4.1.6.1.2 A **request for microbiological analysis of collected sample form** must be filled out accurately and completely for each sample submitted. Check for the desired examination/test per sample.

4.4.8.2.4.1.3.2 The specimen is to be delivered or shipped to BFAD:

Delivery of samples to the DOH/BFAD Laboratories for analysis:

1. Samples must be delivered directly to the LSD Chief. Assistance from the appropriate Lab supervisor or designated lab personnel (Food Chemistry or Food Microbiology) is requested when needed. The duplicate/receiving copy is given to consumer and the original copy is given to lab personnel in the receiving area.

2. A **request for Microbiological analysis of complaint/collected sample form** must accompany the sample submitted.

3. Results of laboratory analysis **Turnaround Time of Samples** (samples submitted directly to the Laboratory) - This includes minimum time to complete microbiological testing from receipt of sample to test result. (working days only)

Food Testing Turnaround Times

Microorganism	Positive	Negative (Minimum)
Salmonella	12 days	96 hrs
C. perfringens	5 days	72 hrs
Bacillus cereus	5 days	72 hrs
S. aureus	5 days	72 hrs
Listeria monocytogenes	5 days	72 hrs
Escherichia coli and the Coliform Bacteria	5 days	72 hrs
Vibrio parahaemolyticus	5 days	72 hrs

4.4.8.2.4.1.4 Where to claim Laboratory Test Result

The laboratory test results should be claimed at the Public Assistance Information and Compliance Section (PAICS) - BFAD releasing section

4.4.8.2.4.1.5 **Responding To A Consumer Complaint By Phone.**

4.4.8.2.4.1.5.1 A Laboratory Analyst or his/her supervisor must interview the complainant before the Office of LSD Chief can accept any sample.

4.4.8.2.4.1.5.2 If the interviewer decides to accept the sample, the complainant will then be asked to bring the sample to the Office (**Refer to Section 4.4.8.2.4.1.6 "Protocol to Determine if a Sample(s) needs to be accepted from Consumers by the Office of LSD Chief"**). If the interviewer is unsure of accepting the sample, he or she should consult the Chief of the LSD.

REFERENCES:

1. WHO/DFS/06.6. Guidelines for the investigation and control of foodborne disease outbreaks. p57 p150 (appendix 9), p53
2. Bacteriological Analytical Manual (BAM)
3. Compendium of Methods for the Microbiological Examination of Foods (APHA)
4. Guidelines for Investigating Foodborne Illness Outbreaks, Rhode Island Department of Health p 34, p 35, p 29, p30

4.4.8.2.4.2 **Laboratory Investigation for Unprocessed Foods:**

4.4.8.2.4.2.1 Laboratory testing for outbreak specimens – **National Dairy Authority**

The NDA shall perform microbiological tests on suspected raw milk as food vehicles from foodborne disease outbreaks submitted by NEC staff

4.4.8.2.4.2.1.1 Specimen collection procedure

One hundred ml samples of raw milk taken from suppliers are collected aseptically according to the following procedures:

4.4.8.2.4.2.1.1.1 Aseptic Sampling Techniques

Particular care should be taken when collecting samples for microbiological analysis to avoid contamination of bacteria. The technique of collecting samples without introducing contaminant bacteria and keeping sterile surfaces free of bacteria is called "aseptic" technique. During outbreaks, NDA collects samples for total plate count and coliform count and sends to BFAD for work-up for etiologic agents.

4.4.8.2.4.2.1.1.2 Equipment and media

a. Stainless steel dipper - long enough to adequately and thoroughly agitate the milk inside its container
b. 70% alcohol - ethanol or methylated spirits
c. Clean, disposable tissues or wipes
d. Sterile sample container
e. Cooler - maintained at 5 ± 2°C

4.4.8.2.4.2.1.1.3 Method

a. Label the sample container with the supplier's number or code, date of receipt, and any other required information.
b. As soon as possible after the milk is received, stir the milk thoroughly with the stainless steel dipper, which has first been sanitized by wiping with a tissue soaked in 70% alcohol and allowed to air dry.
c. Prior to taking the sample, remove the lid of the sterile sample container, taking care not to touch the lip of the container or the inside of the container lid. Do not leave the sample container open for longer than necessary when adding the sample.
d. Remove a small amount of milk and gently pour it into the sample container without touching or contaminating the inner surface of the sample container or lid.
e. Replace the lid tightly and immediately place the sample container into a container with ice/water mixture or place it in the refrigerator.
f. Dispatch the samples to the designated laboratory on the same day of sampling in an ice-box or other thermal container filled with an ice/water mixture.

- Please see *Annex 4.4.8O* for request form to be used

4.4.8.2.4.2.1.2 Specimen transport procedures

Guidelines on the collection, transport and storage of samples prior to testing in the laboratory.

Instructions

a. Label all samples clearly and indelibly.
b. Collect all samples aseptically, unless it is stated specifically that samples are required for chemical testing only.
c. If it is permitted to add a preservative to samples, this will be specified in the description of the analytical method by which the samples are to be tested.
d. Particular attention should be given to maintaining the temperatures specified for transport and storage of samples.
e. Check cold rooms and refrigerators regularly to ensure that they maintain samples at the temperature of 5 ± 2°C, without freezing.
f. If an insulated box or other container is used to transport or store samples, freeze-bricks, crushed ice or a mixture of ice and water will be required to maintain samples at 5 ± 2°C
g. Protect samples from contamination with ice or water by choice of suitable sample bottles and good design of sample containers.
h. It is recommended to include a "pilot" sample of product (or water) with each batch of samples to monitor the temperature of microbiological samples. Shake any sample before its temperature is measured.
i. Wherever possible, measure and record the temperature of pilot samples both at the time of collection and upon receipt at the laboratory. This will aid the design and maintenance of good transport systems.
j. Deliver all samples to the testing laboratory promptly, and test all samples within 24 hours of sampling (unless samples have been added with preservative).

4.4.8.2.4.2.1.3 Guidelines in the use of preservatives in the preparation of milk samples.

Instructions

Preservative

Either Bronopol or Myacide (both have the chemical composition: 2 - bromo-2-nitro-1, 3-propanediol) or potassium dichromate may be used as a preservative for composite milk samples. While Bronopol and Myacide are less toxic, care should be taken when handling any of these preservatives as all have been known to cause dermatitis.

a. Bronopol or Myacide

Add sufficient Bronopol or Myacide solution (20% m/v) solution, with methylene blue added as an indicator for safety reasons, to the composite bottle to give a final concentration of 0.1% (v/v). For example, 0.2 ml Bronopol/Myacide solution is required for every 200 ml of milk sample.

NOTE: Commercially available tablets of Bronopol have been found unsuitable for use with some IR milk testing instruments.

b. **Potassium dichromate**
One or more tablets of potassium dichromate, or the chemical in the powder form, are to be added to each composite bottle to give a concentration in the final volume of milk of not less than 0.6 mg/ml but not more than 1.25 mg/ml.

NOTE: Gloves should be worn when handling potassium dichromate as it is highly toxic and it may also have a dermatitic e ffect on the skin.

4.4.8.2.4.2.1.4 Designated laboratory to perform tests - All BFAD accredited laboratories are listed in Section 5 of this manual.

4.4.8.2.4.2.1.5 Types of tests to perform including reference for methods to be used- include list of available tests and planned future tests

1. dye reduction test (methylene blue reduction method) or
2. standard plate count (pour plate/petri film)
3. Coliform/*E. coli* count (pour plate/petri film)
4. Planned Future tests
   - *Staphylococcus aureus*
   - *Salmonella*
   - *Listeria*
   - *Pseudomonas*
   - *Bacillus cereus*
   - *Clostridium perfingens*
   - *Campylobacter jejuni*
   - *Yersinia enterocolitica*
   - Hepatitis type A
   - *Norovirus*

4.4.8.2.4.2.1.6 Turnaround time for test results

- Three days from sample submission.
- Fifteen days for commercial sterility test (c/o BFAD)

4.4.8.2.4.2.1.7 Recording of test results

- Collect and arrange results for analysis.
- Review findings of preliminary investigations.

4.4.8.2.4.2.1.8 Reporting of test results

- Work with appropriate regulatory agencies to keep them informed, coordinate actions and analysis and report relevant data when available.
- Assess potential severity of incident/food safety risk.

- Assess regulatory compliance issues.
- Assess quality issues.
- Obtain concurrence from legal on next steps.

4.4.8.2.4.2.1.9 Procedures for unused specimens disposal

After completion of analysis determine if food product is safe to return to distribution and use, or must be destroyed. If food is to be destroyed, it must be done with oversight and auditing to make sure product is not sold into black market.

References

1. Dairy Test Manual, 2004. Prepared by Su O'Hoy Herrera for Philippines – National Dairy 2. Authority Milk Quality Systems Development Project.
3. IDF Standard 50B : 1985 – Milk and milk products – Methods of Sampling
4. IDF Standard 50C : 1985– Milk and milk products – Guidance on Sampling

4.4.8.2.4.2.2 **National Meat Inspection Services**

NMIS shall perform microbiological tests on suspected fresh, chilled, frozen local and imported meat and meat products as food vehicles fro m FWBD outbreaks submitted by NEC staff or designated agency.

4.4.8.2.4.2.2.1 Sampling Procedures

4.4.8.2.4.2.2.1.1 Documentary requirements

Attentiveness to the documentary requirements such as but not limited to International Veterinary Certificate (IV C); Veterinary Quarantine and Meat Inspection and Laboratory Certificate (VQMILC) Section 8 AO 26 S 2005shall be given per shipment of imported meat or meat products

4.4.8.2.4.2.2.1.2 Labeling requirements (Chapter 7 Sect 37-42 of RA 9296)

The immediate container shall be marked with the following minimum mandatory information:

a. Name of the product
b. Net quantity
c. Name and address of the manufacturer, packer/distributor and country of origin
d. Establishment accreditation number
e. Date of preparation or production
f. Consume before date

g. Lot identification
h. Inspection Stamp
i. Safe handling instruction
j. Other information: The words “For export to the Philippines” should also be marked on the box

4.4.8.2.4.2.2.1.3 Collection

4.4.8.2.4.2.2.1.3.1 Imported meat and meat products

In order to obtain the required representative sample from each shipment of meat and meat products the following procedures shall be applied:

1. Determine the size of the container van and the total volume of the product population per shipment;
2. Check the production date or product code;
3. Determine the sampling size based on ISO 2859 Section III
4. Group the boxes according to the processing date;
5. If the production date of the products falls on the same date divide the product population into three (3) groups then get four (4) to five (5) boxes from each group;
6. When the batches comprising the lot have different production date they shall be regrouped in accordance with the product description to facilitate sampling size determination;
7. Samples shall be randomly collected
8. Identified sampling size boxes shall be properly marked with the use of permanent marker;
9. Bring the marked boxes in the sampling room for hygienic and aseptic physical evaluation;
10. After conducting physical examination, if the imported i tems met the NMIS documentary and labeling requirements and found to be safe and wholesome for human consumption, the inspector may allow the immediate use or distribution in commerce of the imported meat and or meat products;
11. If the inspector has doubt on his or her judgment, cut Five Hundred (500) grams of meat samples. Ban saw blade should be sterilized with the use of 70% alcohol before and after cutting each sample;
12. All boxes where samples were taken shall be marked, taped and set aside in case a second sampling is required.
13. For packed or canned meat products, one small pack or can shall represent one sample unit;
14. Each cut sample should be placed in sterile plastic bag, sealed and properly labeled.

4.4.8.2.4.2.2.1.3.2 Local

4.4.8.2.4.2.2.1.3.2.1 Frequency of sample collection

a. Samples shall be collected from accredited “AAA” meat plants twice annually – one (1) pre-accreditation sampling, collected by meat plant officer and one (1) unannounced sampling done by NMIS laboratory representative – and shall be submitted to NMIS for laboratory examination.

b. Weekly monitoring shall be done by the meat establishment laboratory.

c. Results shall be verified by the NMIS laboratory during the HACCP audit.

d. Sample collection in “AA” and “A” meat establishments shall be on a quarterly basis, collected by the meat plant officer.

e. All samples collected should be properly identified as to the name of the owner/dealer and source or origin for traceability purposes.

f. Samples shall be collected by a meat plant officer for laboratory examination. If the result is non-compliant to international standards, the importer shall be immediately informed for proper disposition of the products.

g. Laboratory results shall be released within the period of four to five (4-5) days to importers through MIEAD.

4.4.8.2.4.2.2.1.3.2.2 Monitoring program in accredited meat establishments

4.4.8.2.4.2.2.1.3.2.2.1 Water contaminants

- Three (3) water samples shall be collected before operation every second month of each quarter.

- Water sample (100 ml) shall be collected from different sources in the meat establishment [water tank, faucet (source: from a water company or deep well)].

- Crushed/cube ice samples (100 ml when melted) used in meat plants should also be submitted for laboratory examination.

- Use a wide mouth sterile glass bottle in collecting water sample.

4.4.8.2.4.2.2.1.3.2.2 Pathogen Reduction/Hygiene & Sanitation

- Meat Plant Facilities
- Five (5) swab samples from meat plant facilities shall be collected before operation every third month of each quarter.

Abattoir swab samples

1. Butcher's Hands
2. Dehairing table
3. Scalding vat
4. Meat hook
5. Butcher's knife

Poultry Dressing Plant swab samples

1. Leg hanger
2. Crates
3. Fingers of dehairing machine
4. Draining/Sorting table
5. Worker's hands

Meat Processing Plant swab samples

1. Cutting machine
2. Stuffing machine
3. Mixing bowl
4. Grinding machine
5. Worker's hands

- Carcass and Poultry

1. Five (5) carcass swab samples shall be collected before loading.

2. Five (5) poultry carcass swab samples shall be collected after chilling.

3. Swab sample is placed in a sterile test tube with transport media.

4.4.8.2.4.2.2.1.4 Packaging

a. Samples should be individually placed in sterile plastic bags or b ottles and sealed with complete label for identification.
b. Packaging material shall be hygienic and strong to protect the product from any physical damage.

4.4.8.2.4.2.2.1.5 Transport

a. The samples shall be transported in an insulated box and maintained at temperature of not less than 5°C.
b. Samples shall be brought to the NMIS laboratory within the following period:

    1. Six (6) hours for samples transported in cooler box with ice refrigerant
    2. 24 hours for frozen samples transported in a freezer van

4.4.8.2.4.2.2.2 Laboratory Procedures

4.4.8.2.4.2.2.2.1 Submission and Receiving

1. Concerned NMIS Field Officer should fill in the DA NMIS Laboratory Request Form(*Annex 4.4.8P-S*) in duplicate copies.
2. The said request shall be recommended for laboratory analyses by the Head of DA NMIS Laboratory Services Division.

4.4.8.2.4.2.2.2.2 Storage

1. One-half of the sample collected shall be used for the analysis.
2. The other half shall be stored as legal sample for a period of 6 months. Where there are legal questions involved, the legal sample shall be stored for a period of one year.

4.4.8.2.4.2.2.2.3 Laboratory Test

4.4.8.2.4.2.2.2.3.1 Laboratory examination of meat and meat products – The NMIS is capable of performing the following laboratory tests:

A. Water Analysis
    1. Standard Plate Count
    2. Coliform Count

B. Microbiological Identification/Isolation
    1. *Salmonella*
    2. *Staphylococcus aureus*
    3. *E. Coli*
    4. *Clostridium*/Sporeformers
    5. *Streptococcus*
    6. Yeast and Molds

C. Canned products
1. Sterility Test
2. Aerobic Bacterial Isolation
3. Anaerobic Bacterial Isolation
4. External/Internal Condition of can

D. Chemical Examination
1. pH

4.4.8.2.4.2.2.2.3.2 Submitted sample shall be examined within 24 hours from the submission of sample in the laboratory.

4.4.8.2.4.2.2.2.4 Laboratory Results

1. Issuance of laboratory results shall be within five days upon the receipt of samples;
2. No issuance of Laboratory results through phone-calls or text messages. Results can be obtained from the Laboratory Services Division (LSD).
3. LSD to interpret the results and POID and MIEAID for the adoption of corrective measures if necessary;

4.4.8.2.4.2.2.2.5 Disposal

1. Meat found unfit for human consumption after laboratory examination must be properly disposed.
2. Holding time of samples for legal purpose is one (1) month.
3. Confiscated meat and meat products/carcasses are considered as government property and if fit for human consumption shall be donated to the charitable institutions (DA AO No. 5).
4. Legal bases: RA 7394 (Consumer Act of the Philippines)

REFERENCES:

1. American Public health Association, 1992, Compedium of methods for the Microbiological Examination of Foods, 3rd ed, APHA, Washington, DC
2. Bacteriology textbook by Bryan
3. Compedium of Methods for the Microbiological Examination of Foods, 4th Edition, Edited by: Frances Pouch Downes Keith Ito, APHA
4. British Standard Method for Microbiological Examination of Foods and Animal Stuff
5. Bacteriological Analytical Manual, September 2001 Edition, Chapter 4
6. Collins, C and P M Lyne. 1976. microbiological Methods. 4th edition Butterworths, London and Toronto
7. Bacteriological Analytical Manual, September 2001 edition, American Public health Association. 1992. Compedium of Methods for the Microbiological examination of Foods, 3rd ed. APHA, Washington DC
8. Microbiological Analyses of Foods, National Science research Institute
9. International Commission on Microbiological Specifications for Foods (ICMSF)
10. AOAC International.2000. Official Methods of Analysis, 17th ed, methods 967.25-967.28,978.24, 989.12,991.13,994.04 and 995.20. AOAC International, Gaithersburg, MD

4.4.8.2.4.2.3 National Reference Laboratory For Environmental And Occupational Health Toxicology And Micronutrie nt Assay

(EAST AVENUE MEDICAL CENTER)

The National Reference Laboratory-East Avenue Medical Center (NRL-EAMC) is mandated to be the technical arm of the DOH in the implementation of its various programs related to Environmental and Occupational Health, Toxicology and Micronutrient Assay. Thus, in the event that there are outbreaks or waterborne disease complaints, NRL will be directly involve d in the analysis of water sample suspected to be the cause of the outbreak/complaint. However, it is the **NEC** and **CHD** who will be responsible in referring samples to NRL including sample collection in the area of responsibility. There are designated personnel in the CHD level who are knowledgeable when it comes to water sample collection (i.e. Sanitary Inspectors, Labor atory personnel from a designated water laboratory). In case there are no personnel to undertake this particular task, they may request NRL to conduct water sampling. Laboratory results will be submitted to the requesting party (CHD or NEC) for data handli ng and analysis.

4.4.8.2.4.2.3.1 Specimen Collection:

Methods of Water Sample Collection Including Preparation of Sampling Bottle

4.4.8.2.4.2.3.1.1 Preparation of Sampling Bottles:

For bacteriological samples, the use of 120 ml capacity sterilized bottles, preferably wide-mouthed and of resistant glass is recommended. Before sterilization, cover tops and necks of sample bottl es with aluminum foil or heavy Kraft paper.

1. Laboratory Equipments/Chemicals/Supplies And Materials

1.1 Equipments
- 1.1.1 Autoclave
- 1.1.2 Top Loading Balance
- 1.1.3 Distilling Apparatus
- 1.1.4 Magnetic stirrer
- 1.1.5 Waterbath
- 1.1.6 Incubator
- 1.1.7 Chlorine Comparator Kit

1.2 Chemicals/Media
- 1.2.1 Sodium Thiosulfate, 3% $Na_2S_2O_3.5H_20$
- 1.2.2 Distilled water
- 1.2.3 Lauryl Tryptose Broth
- 1.2.4 BGLB

1.2.5 EC media
1.2.6 Nutrient agar

1.3 Glassware(s)
1.3.1 Beaker, 500, 250, 100, 50ml
1.3.2 Pipettes, measuring, 10, 5 and 1ml
1.3.3 Reagent bottle, 250 mL
1.3.4 Wire baskets
1.3.5 Sample bottles, clear, 120ml capacity with plastic screw cap.

1.4 Supplies and materials
1.4.1 Brown paper
1.4.2 Scissor
1.4.3 Cotton twine
1.4.4 Paper cover
1.4.5 Marking pen, water proof
1.4.6 Autoclave tape

1.5 Quality Control
1.5.1 Pure culture *E. coli*
1.5.2 Pure culture *Enterobacter aerogenes*

2. Procedure

2.1 Preparation of Reagent
2.1.1 SODIUM THIOSULFATE ($Na_2S_2O_3$), 3%
2.1.1.1 Weigh 3grams of sodium thiosulfate in a clean 250 ml capacity beaker.
2.1.1.2 Add 100ml distilled water
2.1.1.3 Mix in the magnetic stirrer until complete solution is obtained.
2.1.1.4 Transfer and label reagent bottle.

2.2 Preparation of sampling bottle
2.2.1 For treated water sample
2.2.1.1 Arrange uncap, clean sampling bottle in a clean table.
2.2.1.2 Add 1 to 2 drops of 3% sodium thiosulfate to each bottle.
2.2.1.3 Cap the bottle and place a paper cover on the cap.
2.2.1.4 Tie a cotton twine on the covered cap
2.2.1.5 Mark “X” on the cap of the bottle.
2.2.1.6 Place in a wire basket.
2.2.1.7 Cover with brown paper and put an autoclave tape.
2.2.1.8 Sterilize for 15 minutes at 15 lbs pressure.
2.2.1.9 Cool bottles and store in a secured area.

2.2.2 For untreated water sample

2.2.2.1 Arrange and cap clean sampling bottle in a clean table.

2.2.2.2 Cover with paper and tie with cotton twine.

2.2.2.3 Place in a wire basket.

2.2.2.4 Cover with brown paper and put an autoclave tape

2.2.2.5 Sterilize for 15 minutes at 15 lbs pressure.

2.2.2.6 Cool bottles and store in a secured area.

3. Sterilization procedure for sampling bottles for ground water without the use of an autoclave.

3.1 Equipments

- Stove
- Sterilizer / Kettle for boiling

3.2 Chemicals: Not applicable

3.3 Glassware:

Specimen bottles with cover

- must be glass, wide-mouth bottles
- must have a capacity of 100 ml
- must be heat resistant.
- must be clear/transparent

3.4 Procedure:

- Wash the specimen bottles thoroughly with suitable detergents.
- Rinse well with tap water to remove traces of residual washing compounds.
- Arrange the specimen bottles in the sterilizer with water and boil (approximately 100°C) and continue boiling until 10 minutes.
- Drain to remove all the water inside the bottles.
- Cover the specimen bottles immediately to avoid contamination.
- Remove the cover when ready for water sample collection.

4.4.8.2.4.2.3.1.2 Collection of Water Sample:

The tap should be cleaned and free from attachments and fully opened with water allowed to run to waste for a sufficient time to permit the flushing/clearing of the service lines. Flaming is not necessary. Taps with a history of previous contamination may be disinfected with hypochlorite solution (NaOCl 100 mg/L). No samples shall be taken from leaking taps.

Sterilized glass bottles provided with either ground glass stoppers or plastic screw caps should be used for collection of samples. A paper or thin aluminum foil cover should protect both the stopper and neck of the bottle. For waters that have been chlorinated, bottles containing 0.1 mL of a 3% solution of Sodium Thiosulfate for every 100 mL of water sample should be used.

The bottles should be kept unopened until it is ready for filling. It should be filled without rinsing and ample space (at least 2.5 cm) must be left for mixing samples. The stopper or cap should be replaced with a protective cover for additional protection.

Sampling methods for bacteriological testing

An appropriate collection form should accompany all samples. When water samples are collected for analysis, care should be taken to ensure that there is no external contamination of the samples. Unless valid samples are collected, the results of the subsequent analysis may be misleading.

Sampling containers and its preparation

Several types of bottle may be used for sampling, but glass bottles are best. These should have securely fitting stoppers or caps with nontoxic liners, and both bottles and stoppers should be sterilized. Each cap should have a metal sleeve clear of the screw thread to ensure that the risk of contaminating the water sample is minimized. Cotton wool plugs and paper caps should be avoided, as they tend to fall off during and after sampling and increase the risk of contamination. The bottles should hold at least 200 ml of water. Whenever chlorine is used for disinfection, chlorine residual may be present in the water after sampling and will continue to act on any bacteria in the sample; the results of the microbiological analysis may therefore not be indicative of the true bacteriological content of the water. To overcome this difficulty, it is common procedure to add sodium thiosulfate to the sample, which immediately inactivates any residual chlorine but does not affect the microorganisms that may be present. The sodium thiosulfate should be added to the sample bottles before they are sterilized. For 200-ml samples, four or five drops of aqueous sodium thiosulfate solution (100 g/liter) should be added to each clean sample bottle. The stopper is loosely inserted into the bottle, and a brown paper or aluminum foil cover is tied to the neck of the bottle to prevent dust from entering. The bottle is then sterilized in an autoclave at 121 °C for 15 minutes at 15 PSI. If no other facilities are available, a portable sterilizer or pressure cooker can be used, but sterilization will then take 30–45 minutes. To prevent the stopper from getting stuck during sterilization, a strip of brown paper (75 to 10 mm) should be inserted between the stopper and the neck of the bottle. For reasons of cost, bottles should be reused. After

the samples have been analyzed in the regional or central laboratory, bottles should be re-sterilized and, if possible, returned to the sender.

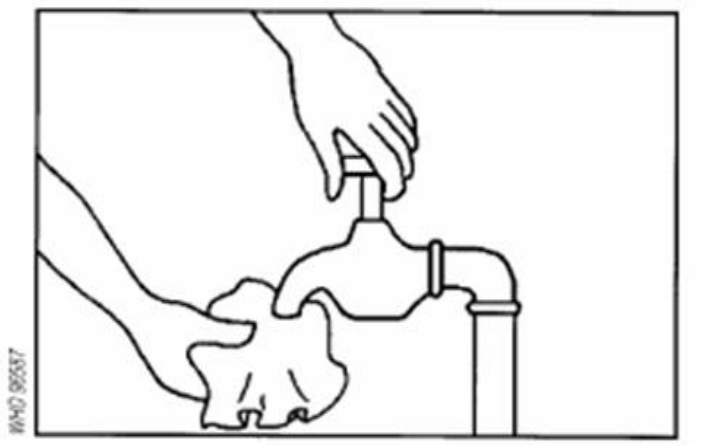
Water can be divided into three basic types for the purp ose of sampling:

1. Water from a tap in a distribution system or from a fixed pump outlet, etc.
2. Water from a watercourse (river, lake, etc.) or a tank
3. Water from a dug well, etc., where sampling is more difficult than from an open watercourse.

1. Sampling from a tap or pump outlet

A. Clean the tap

Remove from the tap any attachments that may cause splashing. Using a clean cloth, wipe the outlet to remove any dirt.



B. Open the tap

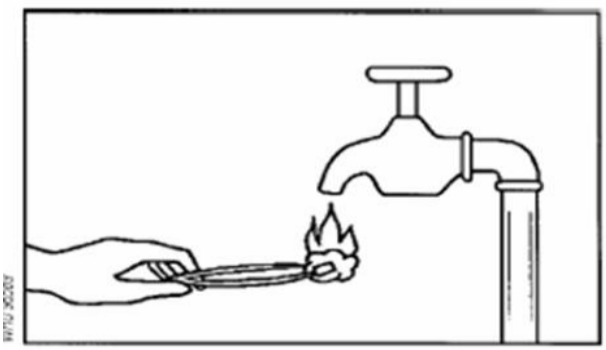
Turn on the tap at maximum flow and let the water run for 1–2 minutes.

Note: Some investigators do not continue to stages C and D but take the sample at this stage; in this case, the tap should not be adjusted or turned off, but left to run at maximum flow. The results obtained in this way will provide information on the quality of the water as consumed. If the procedure is continued to stages C and D, however, the results represent the

quality of the water excluding contamination by the tap.

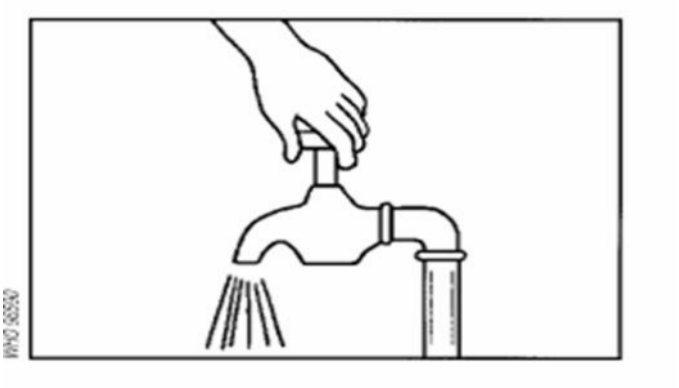
C. Sterilize the tap

Sterilize the tap for a minute with the flame from a gas burner, cigarette lighter, or an ignited alcohol-soaked cotton-wool swab. For plastic tap, sterilize with cotton swab soaked in Chlorox or 100 mg/L sodium hypochlorite solutions



D. Open the tap before Sampling

Carefully turn on the tap and allow the water to flow for 1–2 minutes at a medium flow rate. Do not adjust the flow after it has been set.

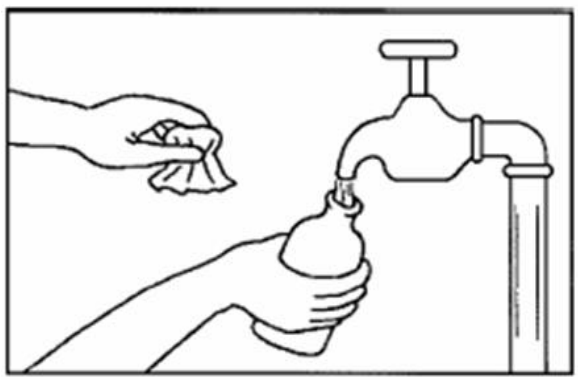


E. Open the sterilized bottle

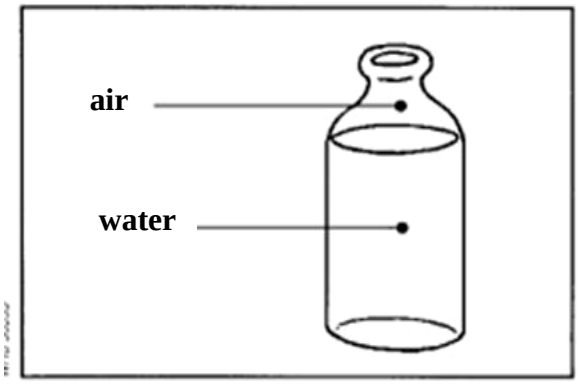
Take out a bottle and carefully unscrew the cap or pull out the stopper.

F. Fill the bottle

While holding the cap and with the protective cover facing downwards (to prevent entry of dust, which may contaminate the sample), immediately hold the bottle under the water jet, and fill.

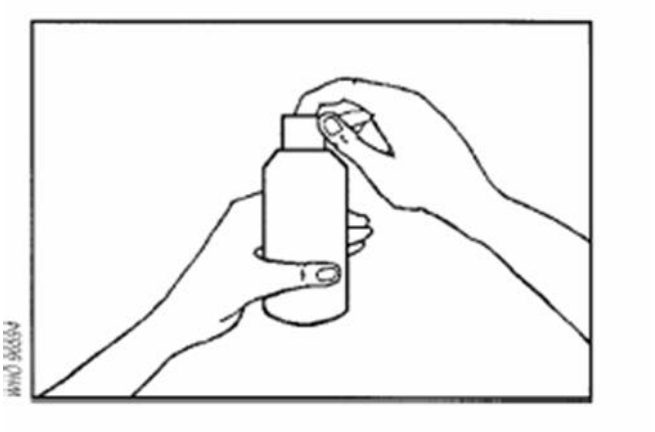


A small air space should be left to make shaking before analysis easier.



G. Stopper or cap the bottle

Place the stopper in the bottle or screw on the cap and fix the brown paper protective cover in place with the string. A small air space should be left to make shaking before analysis easier.

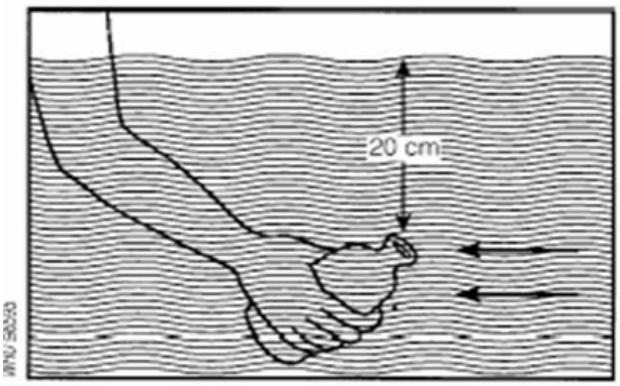


2. Sampling from a watercourse or reservoir

A. Open the sterilized bottle as described in section.1.

B. Fill the bottle

Holding the bottle by the lower part, submerge it to a depth of about 20cm, with the mouth facing slightly upwards. If there is a current, the bottle mouth should face towards the current. The bottle should then be capped or stopper as described previously.



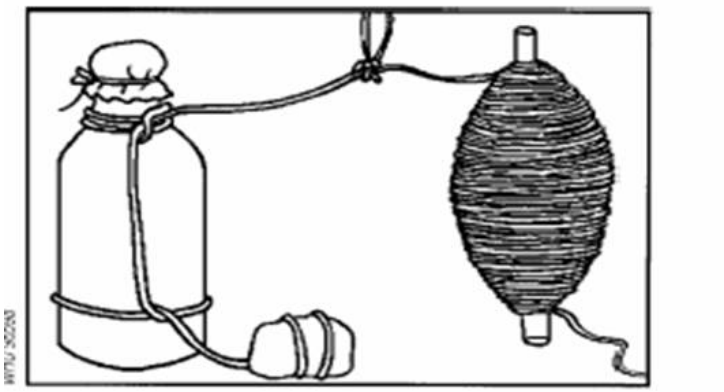
3. Sampling from dug wells and similar sources

A. Prepare the bottle

With a piece of string, attach a clean weight to the sampling bottle.

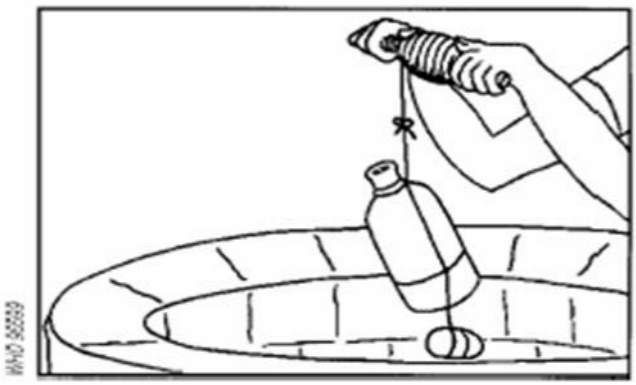
B. Attach the bottle to the String

Take a 20-m length of clean string rolled around a stick and tie it to the bottle string. Open the bottle as described in section 1.



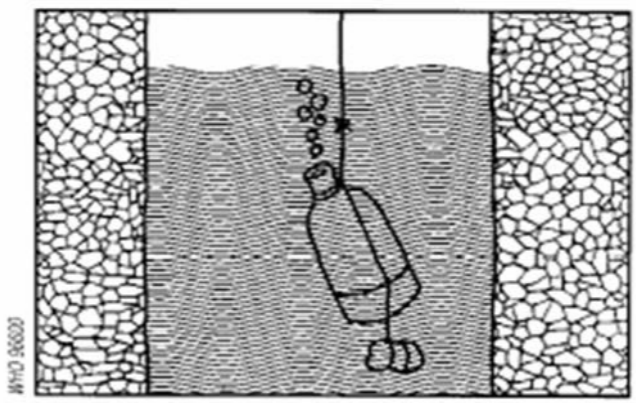
C. Lower the bottle

Lower the bottle, weighed down by the weight, into the well, unwinding the string slowly. Do not allow the bottle to touch the sides of the well.



D. Fill the bottle

Immerse the bottle completely in the water and lower it well below the surface without hitting the bottom or disturbing any sediment.



E. Raise the bottle

4.4.8.2.4.2.3.2 Forms to Fill Up: Refer to *Annex 4.4.8 T* (Request Form/Instruction)

4.4.8.2.4.2.3.3 Specimen/Sample Handling, Transport and Storage

The bacteriological analysis of water samples collected should be initiated promptly after collection to avoid unpredictable changes.

If samples cannot be processed within six (6) hours after collection, the use of ice coolers for storage of water samples during transport to the laboratory is recommended. The time elapsed between collection and processing should in no case exceed 24 hours. The time and temperature of storage of all samples should be considered in the interpretation of data.

4.4.8.2.4.2.3.4 Designated Laboratory to Perform the Tests:

- *National Reference Laboratory-EAMC*
- *Accredited Water Laboratories Nationwide: Regional/Provincial/District Level (Please refer to List of Accredited Water Laboratories by BHFS - DOH)*

4.4.8.2.4.2.3.5 Types of Tests to Perform including reference for methods to be used.

(Refer to Methods of Analysis for MTFT, MFT and Colilert for details)

Test	Method	Reference
Present Capability: • Total Coliform Organisms • Fecal Coliform Organisms	▪ Multiple Tube Fermentation Technique (MTFT) ▪ Heterotrophic Plate Count (HPC) ▪ Primary Health Care (PHC) (Screening test only)	• Standard Methods for the Examination of Water and Wastewater 19th Edition 1995 • Philippine National Standards for Drinking Water (PNSDW)
Planned/Future Tests: • Fecal *Streptococcus* and *Enterococcus* Group • *Pseudomonas aeruginosa* • Speciation of Total Coliform Organisms thru Biochemical Testing	▪ Membrane Filter Technique (MFT) ▪ Chromogenic substrate (Rapid Test) ▪ Biochemical test	• Standard Methods for the Examination of Water and Wastewater 19th Edition 1995 • Philippine National Standards for Drinking Water (PNSDW)

4.4.8.2.4.2.3.6 Turnaround Time for Test Results:

Laboratory test results are ready for release to requesting party after five (5) working days upon receipt of samples by NRL -EAMC.

4.4.8.2.4.2.3.7 Recording of Test Results:

- Laboratory analyst in-charge of submitted sample records the results of tests in a raw data sheet (Pls. Refer to *Annex 4.4.8U*)

- Final results of analysis is then logged in the results logbook (Pls. Refer to *Annex 4.4.8V*)

4.4.8.2.4.2.3.8 Reporting of Test Results:

- Format of Test Results (Please refer to *Annex 4.4.8W* & *Annex 4.4.8 X*)
- Two copies of water laboratory test results are prepared. One copy will be released to the client/requesting party and the remaining copy will serve as the receiving copy for filing in the laboratory.

4.4.8.2.4.2.3.9 Procedures for disposal of unused specimen

- There shall be a plan that should address the proper transport, storage, treatment and disposal of hazardous wastes. Waste treatment methods include thermal, chemical, physical and biological treatment, and combinations of these methods.

- Water samples received in the laboratory are disposed one (1) week after the release of results to the client. With extreme caution, it may be permissible to dispose of limited quantities of laboratory wastes to the sanitary sewer system.

- Used culture broths, media, agar plates, as well as disposable glasswares are sterilized through autoclaving (thermal treatment) prior to final disposal.

4.4.8.2.4.2.4 **Bureau of Animal Industry**

4.4.8.2.4.2.4.1 Specimen collection procedures for laboratory usage

- Specimen should be taken from living or recently dead animals by a qualified and authorized person.
- Samples should be taken from the affected site as early as possible following the onset of clinical signs.
- Collect samples from clinical cases and in contact animals. It should be obtained from the edge of lesions and include some macroscopically normal tissues.
- Samples are collected as aseptically as possible and before any antibiotic treatment has commenced.

- In case of housed poultry flocks, environmental samples, specimens such as litter and dust or drag or boot swabs from floor surfaces can be collected.
- For smaller animal species, it may be preferable to submit a representative number of sick or recently sick animal to the laboratory.
- In case of feedstuffs, collect duplicate samples not less than 250 - 500grams from random-sampled unopened bags. Each sample must be properly labeled according to the tag attached to the feed containers where it was taken.
- Sample must be submitted individually in separate containers or screw-capped jars that are clearly marked indicating the tissue enclosed, animal identification and the date of collection.
- 1 liter of water sample should be aseptically collected and tested on the day of submission.

4.4.8.2.4.2.4.2 A copy of BAI complaint sheet is found in *Annex 4.4.8Y*.

4.4.8.2.4.2.4.3 Specimen transport procedures

- Packages should be kept cool and accompanied by adequate information.
- If transportation to the laboratory is delayed most samples should be refrigerated at 4^{o}C and not frozen.

4.4.8.2.4.2.4.4 Designated laboratory to perform tests
- Philippine Animal Health Center
- Regional Animal Disease Diagnostic Laboratories (RADDL) Regions 2,3,4,7,8,9,10,11,12

4.4.8.2.4.2.4.5 Types of test to perform
- Conventional culture method
- Conventional biochemical screening and identification method
- Biochemical screening and identification using Analytical Profile Index (API)
- Planned Future Tests (Serology, Elisa, FA, PCR)

4.4.8.2.4.2.4.6 Turnaround time for test results
- 1 week upon the receipt of samples

4.4.8.2.4.2.4.7 Recording of test results
- Log book
- Soft and hard copies

4.4.8.2.4.2.4.8 Reporting of test results
- Issuance of laboratory results shall be within 1 week upon the receipt of samples
- Laboratory results will not be issued by phone
- Results can be obtained in the Laboratory Diagnostic Investigation and Evaluation Section (LaDIES)

4.4.8.2.4.2.4.9 Procedures for unused specimens disposal

- Holding time of samples for legal purposes is 3 months .
- Unused specimens are disinfected by autoclaving.
- Unused specimen may also be incinerated.

References:

1. OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 5 th edition 2004
2. Clinical Veterinary Microbiology
3. The Merk Veterinary Manual 8th edition
4. Bacteriological Analytical Manual online Chapter 5 *Salmonella*
5. Guidelines for Confirmation of Foodborne Disease Outbreaks, CDC
6. Animal Industry Administrative Order No. 35 Sept . 23, 1975

4.4.8.2.4.2.5 **Bureau of Fisheries and Aquatic Resources (BFAR)**

The sale and distribution of fish are generally dominated by middlemen, wholesalers and retailers. At the auction hall, the fish are received by the middlemen/wholesalers who, in turn sell fish to the fish processors, retailers and consumers.

BFAR shall assist designated agencies in investigating foodborne infections originating from fresh, chilled, & frozen fish and aquaculture products.

BFAR shall perform microbiological analysis on suspected fish and other seafood products as food vehicles from foodborne disease outbreaks submitted by NEC staff.

4.4.8.2.4.2.5.1 Types of Specimen to Collect

The sample should be representative of the lot. Contamination during collection and before examination shall be avoided.

A copy of the sampling collection form is included as *Annex 4.4.8Z*.

The range of product types that can be accepted for testing shall include the following:

1) Fresh Chilled Fishery Products

   a) Tuna & tuna-like fishes (Scombroid species)

   b) lapu-lapu; grouper, snapper, parrot fish, barracuda, etc.

2) Frozen Fishery Products

a) Tuna and tuna loins

b) Octopus

c) Aquaculture products (milkfish, Shrimps, tilapia)

3) Canned Tuna & Sardines

4) Bottled Fish Paste Products (Anchovy Paste)

5) Pasteurized/ bottled salted shrimp paste

6) Other processed fishery/aquaculture products (eg. smoked, dried, marinated, etc.)

4.4.8.2.4.2.5.2 Raw Material Requirement: 1.0 to 1.5 Kg of specimen for testing.

4.4.8.2.4.2.5.3 Handling of samples from site to the laboratory

A. Fish and Aquaculture products will be taken from site to the laboratory

B. Newly harvested fish and aquaculture products will be packed in polyethylene bags and placed in styropore boxes with ic e, and maintained at 0 to 4 degrees Celsius during transport.

4.4.8.2.4.2.5.4 Sampling Analysis for Bacteriological Quality

In order to determine whether fish is safe or acceptable for human consumption, samples shall be subjected to the following bacte riological tests:

1. Aerobic plate count or total plate count
2. Culture for *Escherichia coli*
3. Culture for *Salmonella*
4. Culture for *Shigella*
5. Culture for *Staphylococcus aureus*
6. Yeast and mold count

4.4.8.2.4.2.5.5 Turnaround time for test results

1. All laboratory results are available within one week or 5 working days upon receipt of the samples.

2. Health certificate shall be issued only if product was found to meet the requirements for fish and aquaculture products.

4.4.8.2.4.2.5.6 Recording of test results

- The laboratory results are prepared by the technical laboratory staff of the BFAR Fisheries Product Testing Laboratory and at the Regional Fish Quality Control laboratories where the samples originate. Copy of Laboratory results from the region is forwarded to the BFAR-CO as necessary.

4.4.8.2.4.2.5.7 Reporting of test results

- Format: See *Annex 4.4.8Z1*

- Three (3) copies are prepared - one (1) original, one (1) marked duplicate copy, provided to client and one (1) marked laboratory copy maintained in the BFAR files.

- The resulting data are interpreted and recorded based on the requirements specified under Section 2 of Fisheries Administrative Order No. 210 series of 2001 and FOO No. 313 series of 2006. Supplemental Requirements Amending FAO No. 210.

4.4.8.2.4.2.5.8 Procedures for disposal of unused specimens

- Samples are disposed in the laboratory within 2 weeks after release of laboratory results.

- All microbial cultures, agar plates and contaminated equipment are autoclaved or otherwise sterilized before being discarded.

4.4.8.2.4.2.6 **Bureau of Plant Industry**

BPI shall assist NEC in investigating food-borne infections originating from fruits and vegetables as food vehicles. It shall assist NEC in undertaking trace back of suspected fruit and vegetable products as food vehicles of infection to include visits to sources of contamination.

4.4.8.2.4.2.6.1 Food Borne Outbreak Investigation

The roles of the laboratory in food borne disease outbreak investigation are the following:

- Give advise on appropriate sampling procedures/methodology to be taken from food
- Perform appropriate laboratory analysis of the food to identify the suspected pathogen
- Give advise on further sampling when specific agent is found in food
- Conduct collaborative work/activities with clinical laboratories

- Support epidemiological and environmental investigation in detecting the pathogen in food

4.4.8.2.4.2.6.2 Laboratory Tests

BPI shall perform microbiologic tests on suspected unprocessed fruits and vegetables as food vehicles from foodborne disease outbreaks submitted by NEC staff.

1. Request Order Form (see *Annex 4.4.8AA*)
2. Types of specimen to be collected
   - Fruits and Vegetables
     - Fresh and Minimally Processed

Example of food samples which maybe appropriate for collection and testing:

- Ingredients used to prepare the suspected meal.
- Leftover foods from a suspect meal
- Suspected food from the menu
- Foods known to be associated with pathogen
- Food in an environment which may have permitted the growth of the microorganism
- Unopened packages if available

3. Type of Test

Specific Pathogen	Method	Reference
Salmonella	Conventional Method (Culture, Biochemical Screening and Identification)	Bacteriological Analytical Manual on line Chapter 5 *Salmonella*

4. Raw Material Requirement:
   - One (1) kilogram

5. Transport of Sample

   Samples will be packed in polyethylene bags and stored in the freezer of the vehicle from the sampling site to the laboratory.

6. Specific Types of Data to be Generated
   - Presence or absence of *Salmonella* in the suspected food
   - Origin of sample

7. Action to be taken
   - Send isolates of *Salmonella* to the ARSRL for confirmatory test and subtyping.

- Assist NEC in undertaking traceback of suspected fruit and vegetable products as food vehicles of infection to include visits to sources of contamination.

8. Results of testing will be indicated in a Certificate of Analysis Form (*Annex 4.4.8BB*).

4.4.8.3 Traceback

Food traceback is defined as tracing of the implicated food backwards through its distribution and production channels to its manufacturing plant. The following are purposes of traceback investigations:

- Identify the source and distribution of foods in order to alert the public and remove contaminated product from the marketplace
- Distinguish between two or more vehicles
- Compare distribution of illness and distribution of product in order to strengthen an epidemiologic association. This is referred to as an "epi" traceback
- Determine route or source of contamination by evaluating common distribution sites, processors or growers

Food traceback may be initiated if a food investigation fails to identify a source of contamination at the place of preparation and if there is a possibility that contamination may have occurred before the food or ingredient arrived at the establishment. (i.e. primary contamination especially among raw foods). Food traceback requires review of detailed data on dates, quantities, sources and conditions of foods received, collection of original shipping containers and labels or other documentation, and information on lot numbers, involved facilities, and production dates. This kind of resource-intensive investigations requires coordination of multiple investigations from several agencies and organizations to be thorough, complete and accurate.

Consider the following factors before initiating a traceback investigation:

- Adequate epidemiologic, laboratory and environmental evidence
- Disease severity
- Risk of ongoing exposure
- Reliable exposure information (date and place)
- Availability of shipping records
- Availability of resources for conducting traceback investigation

Food traceback involves agencies which have the jurisdiction of the food involved. *Annex 4.4.8CC*. With the request for food traceback is a filled-up Foodborne Outbreak Template (*Annex 4.4.8DD*) to be given to the agency with jurisdiction on the food involved with a written epidemiologic summary of the outbreak. Food traceback protocols by each agency are then adapted.

4.4.8.3.1 Processed Food samples - Bureau of Food and Drugs (BFAD)

BFAD shall take the lead in undertaking a traceback of suspected processed food/water vehicles in cooperation with other agencies and NEC.

Procedures to be undertaken by BFAD during traceback

Upon receipt of the complaints, letter, or order as endorsed from the Office of the Director, Deputy Director and or other divisions, the assigned Food Drug Regulation Officer (FDRO) shall verify if establishment is licensed and the food product involved has a valid Certificate of Product Registration (CPR).

FDRO conducts inspection, investigation of the establishment/warehouse giving importance on the manner of storage, as required; and checking the records to determine the level of distribution of the product involved.

Sampling Plan - Traceback

FDRO collects samples at random of the suspected lot/batch of the product following the minimum required quantity. Samples of different lots/batches may be included in the sampling of product.

Sampling Sites:

a. From establishment - sampling may be done either from the retention and warehouse where applicable
b. From different outlets specifically from wide distribution channels like supermarkets, groceries, etc.

In case of samples collected from outlets, FDRO shall require proof of evidence from the outlet where the suspect product was purchased or outsourced.

FDRO prepares and forwards the request for laboratory analysis together with the samples collected to the Laboratory Services Division (LSD).

Should result of laboratory analysis show non-conformance to the product specifications or has failed in the analysis tests conducted, a Report of Violation is prepared and a recommendation for appropriate sanctions to the Legal Information and Compliance Division (LICD) is made.

For products with GMP-related issues, FDRO prepares referral to RDII for inspection/validation.

4.4.8.3.2 National Dairy Authority

The NDA shall assist designated local government agency in undertaking trace back of raw milk as food vehicles of foodborne infections.

Procedures to be undertaken by the NDA during trace back

- Team Leader
  1. Verifies if information is true; gathers all the facts.
  2. Works very closely with COMMUNICATIONS. Ensures immediate contact with NDA top management. Informs them of potential situation and steps he is taking to address the situation.
  3. Handles the press: does not speculate, or make promises, simply states that NDA is aware of the situation and is investigating.
  4. Organizes NDA team to deal with event.
  5. Reviews event and investigation findings.
  6. Assesses type and severity of hazard and probable cause of action
  7. Determines if Recall/Withdraw or other action is required.
  8. Develops Incident Management needs.
  9. Develops Incident Management plan.
  10. Develops public notification (if needed).

- Post-incident
  1. Issues Closing Report
  2. Drafts Closing letter (cleared by legal)
  3. Sends closing letter to Regulatory agency
  4. Notifies Top Management of closure
  5. Disbands Incident Management Team
  6. Recaps lessons learned

- Plant Manager Involved

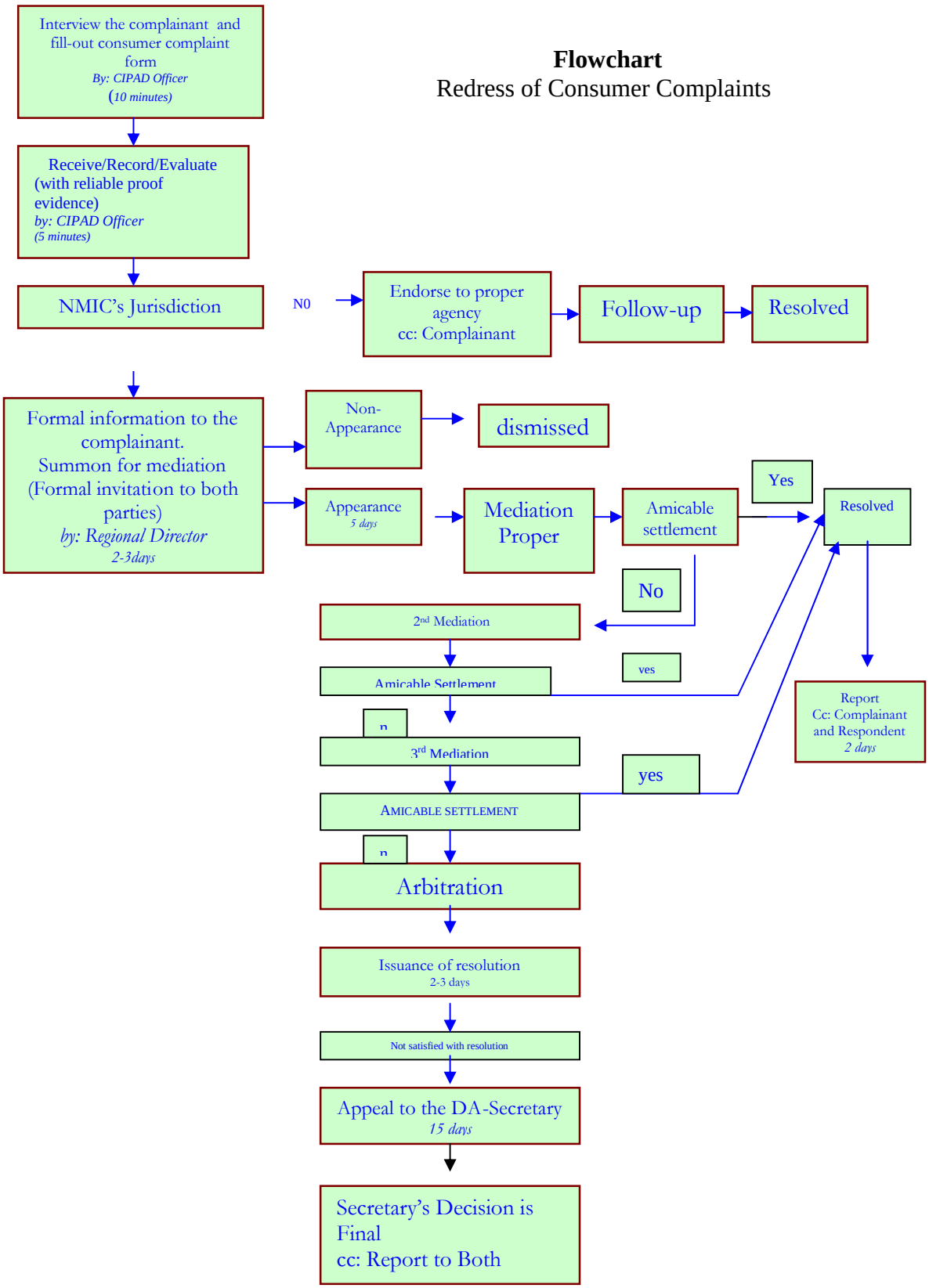
  1. Locates and lists the names of children and schools affected
  2. Reports detailed symptoms and treatments
  3. Identifies source of potential food product as to product codes, dates, sources
  4. Identifies type and details of code involved and process history
  5. Identifies volume produced
  6. Tests and releases documents
  7. Describes distribution history (what product went where)
  8. Links consumer and production data
  9. Determines follow up needed with consumer, customer, plant
  10. Places product on "HOLD" and initiates trace as needed
  11. Develops most likely scenario for mode of failure and assess scope of incident
  12. Communicates all this information to the TEAM

4.4.8.3.3 National Meat Inspection Service

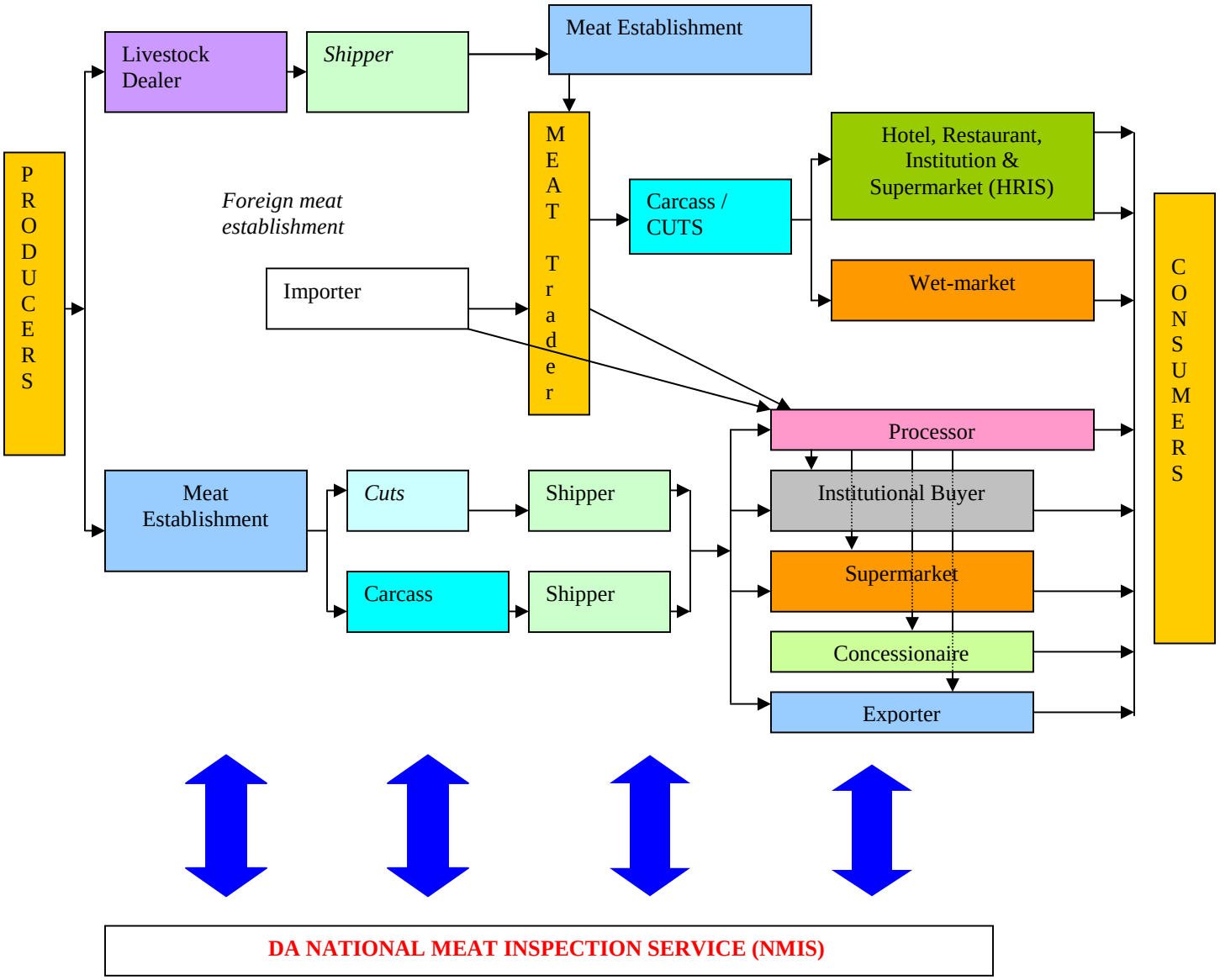
The NMIS shall assist NEC and other designated agencies in undertaking traceback of suspected fresh, chilled, frozen, local and imported meat and meat products as food vehicles of infection to include visits to sources of contamination.

4.4.8.3.3A Agency's response policy to complaints relating to food and waterborne disease (for DOH) and/or requests for traceback (for DOH and DA agenci es)

Flowchart
Redress of Consumer Complaints



4.4.8.3.3B Traceback Mechanism of Meat and Meat Products



Traceability is a system by which the history of the food, its use and location can be recovered by means of registered codes. The purpose is to be able to have quick access to the food information throughout the entire nutrition chain.

Traceability today in pork, beef and poultry is not fully formed. But there are animals like pigs from commercial farms with distinct identification marks (e.g. ear tags, tattoo marks and/or ear notch). There is no official database for cattle which provides an exhaustive control of each animal from its birth until its slaughter in the abattoir. There is no regulation that obliges the pork industry to publish that information in a label for the consumer's benefit.

4.4.8.3.4 National Reference Laboratory For Environmental And Occupational Health Toxicology And Micronutrient Assay

(EAST AVENUE MEDICAL CENTER)

Persons Designated to be involved in trace back for waterborne diseases:

A. NEC-DOH:

- Provides technical assistance to CHD/RESU on epidemiology, particularly on disease prevention and control
- Conducts epidemiologic studies including outbreak investigations, surveys, and program evaluation
- Trains Local Health Personnel on data collection, analysis and presentation
- Collects, processes, analyzes, and disseminates information on vital health statistics and programs

B. CHD/RESU:

- Provides technical assistance to LGU's on epidemiology, particularly on disease prevention and control
- Conducts epidemiologic studies including outbreak investigations, surveys, and program evaluation
- Trains Local Health Personnel on data collection, analysis and presentation
- Collects, processes, analyzes, and disseminates information on vital health statistics and programs
- Maintains a library of relevant articles, books, and other materials on public health

Reference: Department Circular No. 11 s. 1993
Subject: Establishment of Regional Epidemiology Units in Regional Health Offices

C. MMDWQMC:

- Directs member agencies with water laboratory capability to conduct joint sampling in cases of complaints
- Provides consultative and advisory services.
- Makes regular pronouncement regarding Sanitary Quality of Water in Metro Manila

The following are the agencies/personnel involved:

1. Center for Health Development MM –
   Welfareville Compound,, Brgy. Addition Hills, Mandaluyong City

2. Manager, Water Quality Control Department
   MWSS-RO – Katipunan Rd., Balara, Quezon City 1105

3. Manager, Quality and Regulation Department
   Maynilad Water Company, Inc. (MWCI) – Central Lab. Bldg, MWSS Cpd

4. Manager, Central Laboratory
   Maynilad Water Services, Inc. (MWSI)

5. Head, NRL-EAMC
   East Avenue Medical Center, East Avenue, Diliman, Quezon City

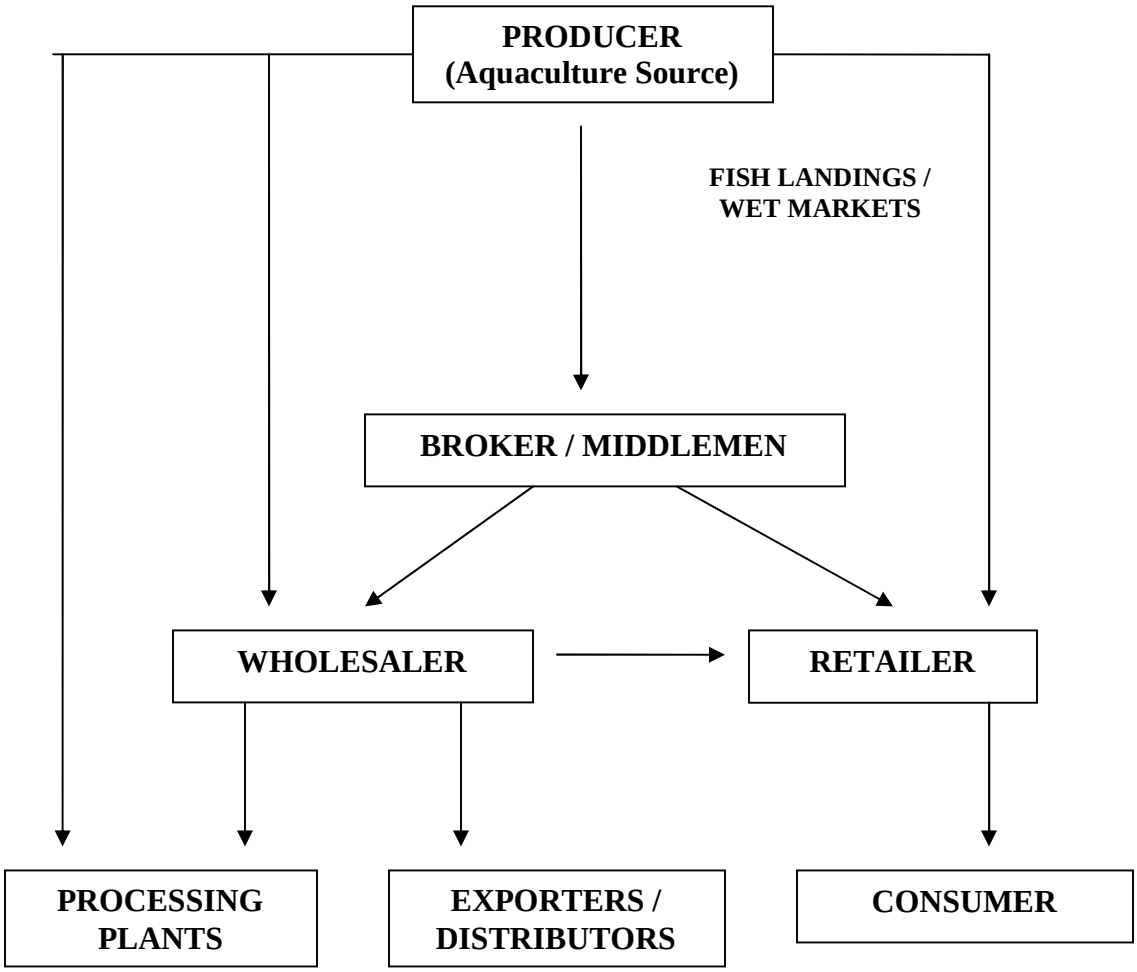
6. Chemist In-Charge
   East Avenue Medical Center, East Avenue, Diliman, Quezon City
   Tel. Nos.: 435-71-36 / 433-06-73 / 928-06-11 loc. 601

D. NRL and other government water laboratories

- Provides sample collection materials to requesting party including necessary forms and instruction to be filled up prior to the conduct of examination.
- Collects water sample in the designated area upon request by NEC
- Receives sample collected by members of surveillance team (NEC/CHD)
- Verifies the integrity of the sample collected (checks if protocol for proper sample collection has been followed)
- Conducts examination on the sample submitted
- Prepares laboratory results
- Releases results to requesting party

4.4.8.3.5 BFAR Traceback Mechanism

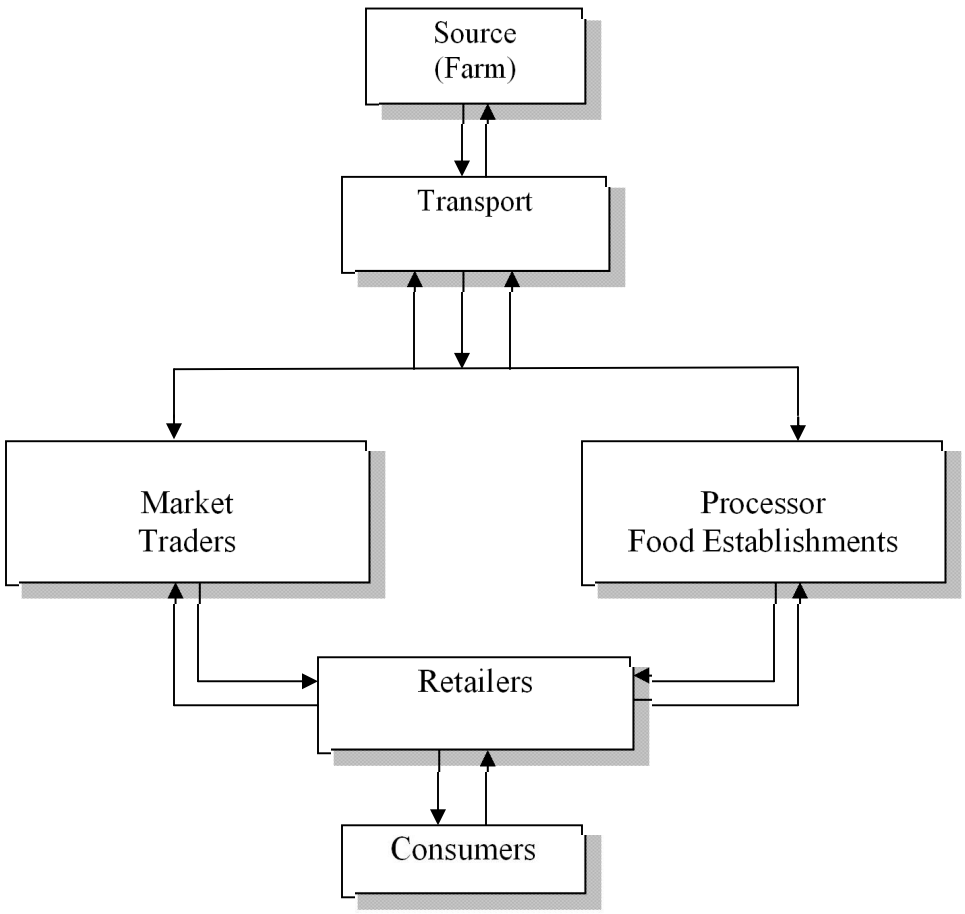
BFAR shall assist NEC and other designated agencies in undertaking traceback of suspected fresh, chilled, & frozen fish and aquaculture products.



4.4.8.3.6 BPI Traceback Mechanism

The following diagram illustrates flow of traceback for investigating suspect fruits and vegetables:

FLOW CHART FOR FOOD TRACEABILITY OF FRUITS AND VEGETABLES



4.4.9 Step 9: Implementing Control and Prevention Measures

Even though implementing control and prevention measures is listed as Step 9, in a real investigation you should do this as soon as possible. Control measures, which can be implemented early if you know the source of an outbreak, should be aimed at specific links in the chain of infection, the agent, the source, or the reservoir. For example, an outbreak might be controlled by destroying contaminated foods, sterilizing contaminated water, or requiring an infectious food handler to stay away from work until he or she is well .

In other situations, you might direct control measures at interrupting transmission or exposure. Finally, in some outbreaks, you would direct control measures at reducing susceptibility. One such example is immunization against typhoid for travelers.

4.4.9.1 Control measures

The primary goal of outbreak investigations is to control ongoing public health threats and to prevent future outbreaks. This section provides information on specific interventions.

Control of source

Once investigations have identified that food or environmental factor/s is associated with transmission of the suspected pathogen, measures should be taken to control the source. Measures may include:

4.4.9.1.1 Measures at food premises

If on site inspections reveal a situation that poses a continuing health risk to consumers, it is advisable to close the premises until the problem has been solved. The health officer of the city or municipality may cause to be served on the holder of the permit, the manager or the occupier, a Sanitary Order requiring him/her, within the time (grace period) stated in the notice, to take such remedial measures as may be specified therein.

Once a premise has been closed, the responsible authorities (ie local government units) should monitor the premises and ensure that they remain closed until reopening is authorized by appropriate authorities. Criteria for reopening of establishments may involve input from various agencies like the EICT involved in the investigation and control of the outbreak.

4.4.9.1.2 Measures at water source

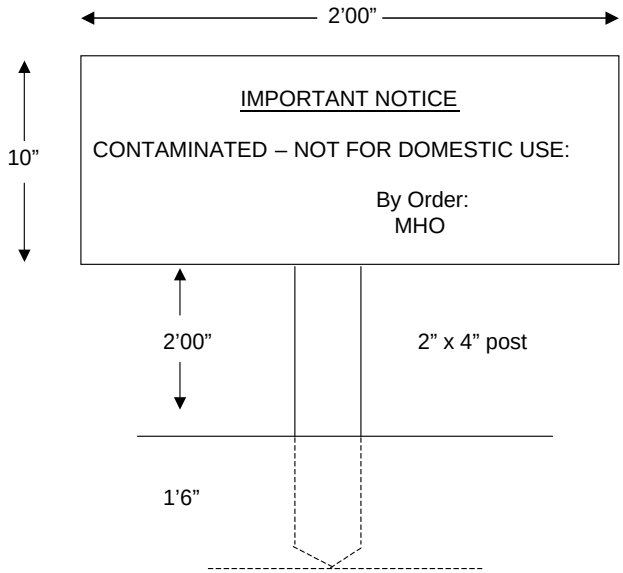
After appropriate water sampling has been conducted by the Local Drinking Water Quality Committee or appropriate authorities, and reveals that water is not potable, the EICT recommends prohibition of access to contaminated source until such time that water has been declared safe to use with the Certificate of Potability issued by the Local Health Office.

One of the control measures is the disinfection of contaminated water source/s or the source/s of water supply with positive bacteriological results. *Annex 4.4.9A* shows the disinfection procedures of water sources (i.e. well) and water containers.

However, when contamination of a well water source has been confirmed by the laboratory test for three consecutive sampling and the source of contamination is definitely known but cannot be removed, condemn, relocate and/or prohibit the well for domestic use, the following steps should be done:

1. Dismantle pump
2. Remove the casing. If casing cannot be removed, cover or fill up well opening with concrete or other similar materials
3. Put marker “Condemned Well”
4. Find suitable new well site
5. Construct a new well

6. Put a signboard, about 10 inches wide by 2 feet long, informing consumers not to use the condemned well for drinking purposes. Figure below illustrates size of signboard.



4.4.9.1.3 Measures for food handlers

After appropriate physical and medical examination of food handlers by the local health office or authorized institutions and found that the food handler is unfit to work, a temporary suspension should be imposed until such time he/she is free from symptoms/illness.

The food handler/s must also attend the food handlers class/training given by the CHO/MHO or authorized group/institution prior to the issuance of a health certificate.

4.4.9.1.4 Removing implicated foods from the market or any food establishment

The objective of food recall and food seizure is to remove implicated foods as efficiently, rapidly and completely as possible from the market.

A food recall is to be initiated by the business itself or upon the request of an appropriate health authority or could be undertaken by a business that manufactures, wholesales, distributes or retails the suspect food, for example large corporations, partnerships, or family owned businesses. While in food seizure, an appropriate authority removes a food product from the market if the business does not comply with a recall.

The more time passes between a food's appearance and its identification as a potential source, the less likely is its recovery considering the following factors:

- The shelf life of a food product will affect how much of it will be recovered. Most establishments will ship fresh products (fresh meat, poultry, milk, etc.) to distributors on the day that they produce it, and distributors will quickly pass it

on to hotels, institutions, retail stores, and restaurants. The product is generally consumed within 3-7 days of production and the likelihood of recovery is poor.

- Frozen or shelf stable food products (e.g. cans, dried foods, packaged foods) have a higher probability of being recovered as there is less urgency to move them through the system. Thus, if these types of products are recalled, there is a good possibility that they will still be with distributors or retailers or on the consumers' shelves.

4.4.9.1.4.1 Procedure in recalling products

Once investigations incriminate a suspect food a decision needs to be made as to whether or not this product should be removed from the food establishment (i.e. market). The decision should be taken from the EICT, or involve other bodies concerned with food safety. Such group must decide:

- if the information available justifies removal of the food from a food establishment
- if the product is still on the food establishment
- if the product is likely to be in the homes of the consumers even though sold out at retail level
- if there is an ongoing risk to the consumers
- how likely it is that the product can be recovered.

Once the EICT and other involved appropriate authorities have decided to recall a food product they should:

- communicate with and ensure the cooperation of the business(es) involved in the recall
- directly advise local health authorities of the recall and any enforcement action required
- ensure appropriate public notification
- monitor the progress of the recall and its effectiveness
- ensure that corrective actions are taken by the recalling business

The recalling business is usually responsible for conducting the actual recall. The extent of recall will depend on the potential risk to the consumer. A business may conduct a recall to the retail level, or, if the public health is seriously jeopardized, to the individual consumer. Means of notifying will depend on the urgency of the situation and may include press releases, fax, telephone, radio, television or letters.

Efficient recall of a widely distributed product requires that a manufacturer can identify a product by production date or lot number and that distribution records for finished products are maintained for a period of time that exceeds the shelf life of the product.

4.4.9.1.4.2 Communication with the public

The EICT itself may decide to notify the public. Preferably this is done on the same day when the decision is taken to recall a food product. Information to the public should include:

- actions consumers should take to prevent further exposure and illness
- name and brand of the food product (including labeling) recalled
- problem with product, reason for recall, and how the problem was discovered
- name and location of the producing establishment and point of contact
- locations where product is likely to be found
- numbers, amounts, and distribution
- means of notification, i.e., how the establishment is recalling the product
- a description of common symptoms of illness associated with the suspected pathogen
- appropriate food handling information for consumers
- actions consumers should take if illness occurs

4.4.9.1.4.3 Post-recall reporting by the business

After the implementation of a recall the business should provide the EICT or other appropriate authorities with an interim and a final report about the recall. The reports should contain the following information:

- copy of recall notice, letters to customers, retailers, etc.
- circumstances leading to recall
- action taken by the business
- extent of distribution of relevant batch of food which was recalled
- result of recall (percentage of stock recovered or accounted for)
- method of disposal or re-processing of recovered stock
- difficulties experienced during recall
- action proposed for the future to prevent a recurrence of the problem

The interim and final reports give information about the effectiveness of the recall. If they are unsatisfactory, or evidence of corrective action is inadequate, further recall action may need to be considered.

4.4.9.1.5 Modifying a food production / preparation process

Once food investigations identify faults in production or preparation processes that may have contributed to the outbreak, corrective action must be taken immediately to avoid recurrences. Examples of corrective actions are modification of a recipe, change in a process, re-organization of working practices, change in storage temperatures, or modification of instructions to consumers.

References:

1. WHO. Guidelines for the Investigation and Control of Foodborne Diseases Outbreaks. Geneva
2. Department of Health. Implementing Rules and Regulations of Chapter III Food Establishments of the Code on Sanitation of the Philippines. 1995
3. Department of Health. Implementing Rules and Regulations of Chapter II Water Supply of the Code on Sanitation of the Philippines. 1995
4. Department of Health. Operational Manual for Sanitary Inspectors and other Related Workers

4.4.10 Step 10: Communicate Findings

Your final task in an investigation is to communicate your findings to others who need to know. This communication usually takes two forms: 1) an oral briefing for local health authorities and 2) a written report.

Your oral briefing should be attended by the local health authorities and people responsible for implementing control and prevention measures. This presentation is an opportunity for you to describe what you did, what you found, and what you think should be done about it. You should present your findings in a scientifically objective fashion, and you should be able to defend your conclusions and recommendations.

You should also provide a written report that follows the usual scientific format of introduction, background, methods, results, discussion, and recommendations. By formally presenting recommendations, the report provides a blueprint for action. It also serves as a record of performance, a document for potential legal issues, and a reference if the health department encounters a similar situation in the future. Finally, a report that finds its way into the public health literature serves the broader purpose of contributing to the scientific knowledge base of epidemiology and public health.

Recommendations on Press Release/s in an Outbreak Situation

1. Press releases must be issued in a uniform way that ensures clarity, accuracy, and appropriate distribution. It must promote departmental consistency and internal awareness of the news messages disseminated to the media.

2. The guiding principle for a press release is that the message informs the public in order to guide them in an outbreak situation.

3. The messages must be understandable to the general public. Each press release communicates a Single Overriding Health Communication Objective – the message that must register with the reader.

4. Press release content must be factually supportable and readily defensible under inquiry. It must identify the appropriate contact person by name, title, and phone numbers.

5. Press releases are conceived and prepared primarily as a message from the Authorized Officer. Press releases should typically incorporate quotations from the Authorized Official stating or reinforcing key points of the message. All quotations must be reviewed and approved by the person being quoted.

6. As a general rule, press releases are prepared under the direction and approval of the Authorized Official. Variations to this procedure may be authorized in advance by the Authorized Official when the circumstances require the dissemination of information in so rapid a fashion that a normal sequence of review and release is not possible.

4.5 TASKS AND RESPONSIBILITIES OF THE PARTICIPATING INSTITUTIONS IN A FOOD AND WATERBORNE DISEASE OUTBREAK INVESTIGATION

4.5.1 Department of Health Institutions

4.5.1.1 National Epidemiology Center

- Shall determine if a food and waterborne disease outbreak has occurred and if an investigation is needed
- Shall serve as lead investigator in a food and waterborne disease outbreak investigation
- Shall investigate cases of laboratory confirmed *Salmonella* and other food and waterborne disease **outbreaks** not covered by RESUS and LESUS
- Shall provide technical, statistical, and overall support to a food and waterborne disease outbreak investigation
- Shall maintain communication channels between the Departments of Health, Agriculture and such other agencies that may play a role in the investigation and resolution of an outbreak.
- Shall assist the BFAD/DA in undertaking trace back of suspected food/water vehicle and other agencies as necessary to include visits to sources of food and water contamination
- Shall implement control and prevention measures to stop food and waterborne disease outbreak from spreading
- Shall disseminate urgent information/bulletins on occurrence of *Salmonella* and other food and waterborne infections to appropriate agencies of DOH, local health care providers, media and the general public in consultation with the Secretary of Health
- Shall decide when a food and waterborne disease outbreak is deemed ended and prepares and submits a final report of an outbreak investigation to the appropriate authorities.

4.5.1.2 RESU

- Shall inform the NEC of possible food and waterborne disease outbreak occurrence
- Shall determine if a food and waterborne disease outbreak has occurred in the region and if an investigation is needed
- Shall maintain correspondence with local healthcare professionals
- Shall serve as lead investigator or primary coordinator in a food and waterborne disease outbreak investigation (Food and waterborne disease outbreak Investigation Team) in the region
- Shall facilitate and guide the steps in a food and waterborne disease outbreak investigation in the region.
- Shall fill up laboratory request forms and submit appropriately labeled specimens from patients and samples of suspected food/water vehicles to the appropriate DOH or DA laboratory for culture and susceptibility tests

- Shall provide technical, statistical, and overall support to a food and waterborne disease outbreak investigation in the region or municipality, province or ci ty as the case may be.
- Shall assist the BFAD/DA or its regional offices in undertaking trace back of suspected food/water vehicle in cooperation with other agencies as necessary to include visits to sources of food and water contamination.
- Shall implement control and preventive measures to stop food and waterborne disease outbreak from spreading.
- Shall decide when a food and waterborne disease outbreak is deemed ended and produces a final report on the outbreak investigation to be submitted to the NEC and o ther appropriate authorities.

4.5.1.3 LESU

- Shall determine if a food and waterborne disease outbreak has occurred in the LGU and if an investigation is needed
- Shall inform the RESU of possible food and waterborne disease outbreak occurrences.
- Shall serve as lead investigator in a food and waterborne disease outbreak investigation in the LGU
- Shall provide technical, statistical, and overall support to a food and waterborne disease outbreak investigation in the LGU
- Shall administer case finding and inter views with persons associated with food and waterborne disease outbreaks in the LGU
- Shall maintain communication channels between the Department of Health and different agencies of the Department of Agriculture and DILG in relation to the outbreak.
- Shall assist the BFAD or DA as necessary in trace back of suspected food/water vehicle to include visits to sources of food and water contamination
- Shall implement control and preventive measures to stop food and waterborne disease outbreak from spreading
- Shall decide when a food and waterborne disease outbreak is deemed ended at the LGU and produces a final report on the outbreak investigation to be submitted to the RESU and other appropriate authorities

4.5.1.4 National Center for Disease Prevention and Contro l

In the light of devolution of health services to LGUs, most of the activities in the surveillance and outbreak investigation shall be coordinated to the LGU concerned. NCDPC shall facilitate in coordination with LGUs the following:

- Shall coordinate with the RESU/NEC in establishing presence of a food and waterborne disease outbreak
- Shall help in case finding and interviews of persons associated with food and waterborne disease outbreaks

- Shall identify the source, mode and extent of food contamination
- Shall assess the potential for growth of pathogens during processing, handling or storage of foods
- Shall identify and implement corrective interventions
- Shall investigate food establishments, food handlers and food suspects in close coordination with the Local Government Unit (LGU) concerned
- Shall coordinate with water providers and the National Reference Laboratory for Water and other accredited water testing laboratories in cases of water contamination
- Shall interview managers and food handlers about any illness experienced
- Shall obtain menus of food items served during an occasion where food contamination is suspected
- Shall collect food and environmental samples as well as specimens from suspected food handlers for laboratory testing and analysis
- Shall ensure timely and proper collection of samples and prompt delivery to appropriate laboratory
- Shall assist the BFAD/DA/NEC in undertaking trace back of suspected food/water vehicle in cooperation with other concerned agencies as necessary to include visits to sources of food and water contamination
- Shall recommend appropriate control measures to prevent further spread of the infection
- Shall take action for the removal of contaminated food
- Shall exclude and restrict persons who are at high risk of spreading ill ness, including food handlers, day care attendees and providers, and persons involved with patient care
- Shall promote good hand washing practices.
- Shall close a food establishment, if implicated in an outbreak when necessary
- Shall enforce restriction and exclusion regulations related to food handlers
- Shall submit report of all investigations to RESU/NEC

4.5.1.5 Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL)

- Shall conduct further subtyping or laboratory analysis of outbreak isolates, i f appropriate
- Shall perform confirmatory tests of all isolates referred by the National Reference Laboratory for Bacterial Enteric Diseases.
- Shall provide the NEC and the National Reference Laboratory for Bacterial Enteric Diseases and other referring laboratory results of confirmatory tests

4.5.1.6 National Reference Laboratory for Bacterial Enteric Diseases

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that

may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases

- Shall perform aerobic culture and sensitivity tests and serotyping of *Salmonella* and other microbiologic agents of foodborne diseases from human specimens from food/waterborne disease outbreaks submitted by NEC staff
- Shall provide transport media for stool to NEC, RESU and LESU staff
- Shall provide NEC and ARSRL results of aerobic culture, antimicrobial sensitivity tests and *Salmonella* serotyping, and other relevant results for inclusion in the laboratory database
- Shall refer all isolates of nonserotypable *Salmonella* and those with unusual antimicrobial susceptibility patterns to ARSRL for confirmatory tests
- Shall continue acquisition of updated laboratory technology
- Shall cooperate with the ARSRL in its laboratory activities related to the surveillance

4.5.1.7 Parasitology Laboratory (RITM)

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform confirmatory tests on suspected parasitic agents of foodborne diseases from human specimens from food/waterborne disease outbreaks submitted by NEC staff
- Shall provide NEC and ARSRL results of confirmatory tests, and other relevant results for inclusion in the laboratory database
- Shall continue acquisition of updated laboratory technology

4.5.1.8 Virology Department (RITM)

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform virologic laboratory tests on suspected agents of foodborne diseases from human specimens from food/waterborne disease outbreaks submitted by NEC staff
- Shall provide virus transport medium for rectal swab samples to NEC, RESU and LESU staff
- Shall provide NEC and ARSRL results of virologic tests and other relevant results for inclusion in the laboratory database
- Shall continue acquisition of updated laboratory technology

4.5.1.9 Bureau of Food and Drugs (BFAD)

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/dire ctives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiologic tests on suspected **processed** food vehicles and bottled water from food and waterborne disease outb reaks submitted by NEC
- Shall provide the NEC/ARSRL with results of laboratory tests on suspected food/waterborne vehicles
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests/ subtyping.
- Shall continue acquis ition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of food and waterborne diseases which are transmissible to humans
- Shall take the lead in undertaking a trace back of suspected processed food/water vehicles in cooperation with other agencies and NEC as necessary to include visits to sources of food and water contamination
- Shall alert Department of Health agencies in cases of unusual increases in the number of reported organisms known to cause foodborne disease in h umans
- Shall cooperate with the ARSRL in implementing laboratory activities related to the surveillance
- Shall submit report of all investigations to NEC

4.5.1.10 National Reference Laboratory for Water

- Shall perform microbiologic tests on water samples submitted by NEC
- Shall provide the NEC/ARSRL with results of laboratory tests on water samples submitted
- Shall continue acquisition of updated laboratory technology
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests
- Shall coordinate with water providers and Local Government Unit (LGU) concerned in cases of water contamination
- Shall cooperate with the ARSRL in implementing laboratory activities related to the surveillance
- Shall submit report of all investi gations to NEC

4.5.1.11 ARSP Sentinel Site Hospitals

4.5.1.11.1 Oversight Committee

Team Leader: Chief of Clinics
Team Members: Head, Department of Pediatrics
Head, Department of Internal Medicine
Head, Records Department

Responsibilities: To ensure compliance by the physicians in filling up the Foodborne Illness Complaint Worksheet and compliance of all health workers to guidance set up in this Manual of Operations.

Tasks:

- Shall inform NEC and Food and Waterborne Disease Program thru RESU/LESU of unusual trends of foodborne and waterborne disease cases seen in the hospital
- Shall enforce laws and regulations related to the health supervision of residents, investigation of causes of disease, and prevention of spread of diseases wit hin the area
- Shall report notifiable diseases, including food and waterborne disease outbreaks, to local or provincial health departments.
- Shall inform the local government authority of any occurrence of a food/waterborne disease outbreak

4.5.1.11.2 Clinical Staff

Team Leader: Chief Resident
Team Members: Medical and Pediatric Residents
Medical Officers, Medical Specialists
ER/OPD/Ward Nurses

Responsibilities: To identify and manage patients with acute diarrhea or gastroenteritis for inclusion in the surveillance.

Tasks:

- Shall inform the oversight committee of any unusual trends of foodborne and waterborne cases seen in the hospital
- Shall assist the NEC staff during food and waterborne disease outbreak investigation and provide necessary patien t demographics when needed

4.5.1.11.3 Bacteriology Staff

Team Leader: Head, Department of Laboratories
Team Members: Chief Medical Technologist
Laboratory Aide

Responsibilites: Ensure performance of laboratory tests requested by physicians, and prompt delivery of results to requesting physicians.

Tasks:

- Shall assist the NEC staff in sample collection and storage of isolates that will be sent to National Reference Laboratory for Bacterial Enteric Diseases. and the ARSRL

4.5.2 Department of Agriculture (DA) Institutions

4.5.2.1 Bureau of Animal Industry (BAI) (Philippine Animal Health Center and Animal Health Division)

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered in to by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform aerobic culture and sensitivity tests and other such tests deemed necessary from specimens taken from poultry and livestock, animal feeds and feed ingredients suspected as food vehicles of foodborne disease outbreaks submitted by NEC staff
- Shall perform serological monitoring of food animals to detect presence of agents causing foodborne infections
- Shall coordinate with the NEC/ARSRL in providing the results of laboratory tests/reports on suspected poultry and livestock vehicles
- Shall continue acquisition of updated laboratory technology
- Shall alert the Department of Health agencies in cases of unusual increase in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents of foodborne disease to the ARSRL for confirmatory tests
- Shall provide assistance in working out financial plan or proposal for funding for the surveillance
- Shall assist NEC in undertaking trace back of suspected livestock and poultry products as vehicle of infection to include visits to sources of food and water contamination
- Shall gather zoo-epidemiologic data for submission to NEC
- Shall submit report of all investigations involving foodborne disease to NEC

4.5.2.2 Bureau of Fisheries & Aquatic Resources

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiological analysis on suspected fish and other seafood products as food vehicles from foodborne disease outbreaks submitted by NEC staff
- Shall coordinate with the NEC/ARSRL the results of laboratory tests/reports on suspected fish and other seafood products as vehicles of infection
- Shall continue acquisition of updated laboratory technology
- Shall perform microbiologic tests on water samples from fish and aquaculture products in processing plants

- Shall alert the Department of Health agencies in cases of unusual increases in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall assist the NEC staff in investigating foodborne infections originating from fresh, chilled, frozen fish & other aquaculture product.
- Shall assist NEC in undertaking trace back of suspected fresh, chilled, frozen fish and other aquaculture products as vehicle of infection to include visits to sources of contamination
- Shall gather relevant data for submission to NEC
- Shall submit reports of all investigations to NEC

4.5.2.3 Bureau of Plant Industry

- Shall participate in the implementation of a Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order Administrative Order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiologic tests on suspected unprocessed fruits and vegetables as food vehicles from foodborne disease outbreaks submitted by NEC staff
- Shall coordinate with NEC/ARSRL the results of laboratory tests/reports on suspected fruits and vegetable products as food vehicles
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of foodborne diseases which are transmissible to humans
- Shall alert the Department of Health agencies in cases of unusual increases in the number of reported organisms known to cause foodborne diseases in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall assist the NEC staff in investigating foodborne infections originating from fruits and vegetables as food vehicles
- Shall assist NEC in undertaking trace back of suspected fruit and vegetable products as food vehicles of infection to include visits to sources of contamination
- Shall submit reports of all food and waterborne disease outbreak investigations to NEC

4.5.2.4 National Meat Inspection Service

- Shall participate in the implementation of a Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an Administrative Order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne dise ases

- Shall perform microbiological tests on suspected fresh, chilled, frozen local and imported meat and meat products as food vehicles of food and waterborne diseases outbreaks submitted by NEC staff
- Shall assist the NEC staff in investigating foodborne diseases originating from unprocessed and processed frozen local and imported meat and meat products.
- Shall provide the NEC/ARSRL with results of laboratory tests/reports on suspected meat and meat products as food vehicles
- Shall continue acquisition of up dated laboratory technology
- Shall undertake surveillance of microbiologic agents of foodborne diseases which are transmissible to humans
- Shall alert the Department of Health agencies in cases of unusual increase in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to the ARSRL for confirmatory tests and subtyping
- Shall assist NEC in undertaking traceback of suspected fresh, chilled, frozen local and imported meat and meat products as food vehicles of infection to include visits to sources of contamination
- Shall submit reports of all foodborne disease outbreak investigations to NEC

4.5.2.5 National Dairy Authority

- Shall participate in the implementation of a Memora ndum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Shall perform microbiological tests on suspected raw milk as food vehicles from foodborne disease outbreaks submitted by NEC staff
- Shall assist the NEC staff in investigating foodborne infections originating f rom raw milk
- Shall provide the NEC/ARSRL with results of laboratory tests/reports on suspected raw milk as food vehicles
- Shall continue acquisition of updated laboratory technology
- Shall undertake surveillance of microbiologic agents of foodborne diseases which are transmissible to humans
- Shall alert Department of Health agencies in cases of unusual increase in the number of reported organisms known to cause foodborne disease in humans
- Shall send isolates of *Salmonella* and other microbiologic agents to th e ARSRL for confirmatory tests and subtyping
- Shall assist the NEC staff in investigating foodborne infections originating from raw milk as food vehicles

- Shall assist NEC in undertaking trace back of raw milk as food vehicles of infection to include visits to sources of contamination
- Shall submit reports of all food and waterborne disease outbreak investigations to NEC

4.5.2.6 Philippine Fisheries Development Authority

Shall implement Standard Sanitation Operating Procedures and good manufacturing practices in government regional fish port complexes, ice plants and cold storage facilities under its administration and/or supervision

4.5.3 Department of the Interior and Local Government

- Shall participate in the implementation of a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) that may be entered into by concerned national agencies including the Department of the Interior and Local Government (DILG) and/or implementation of an administrative order (AO)/directives that may be issued by concerned agencies regarding surveillance and outbreak investigation of food and waterborne diseases
- Provide assistance to the DOH if necessary, by issuing directives to local government units (LGUs) to coordinate and collaborate with the DOH in the investigation of cases of food and waterborne diseases in their locality
- Collaborate with the DOH in monitoring cases of food and waterborne diseases at the LGU level

Local government units (Provincial, City, and Municipal Health Officers)

- Shall determine if a food and waterborne disease outbreak has occurred and if an investigation is needed at the level of the local government
- Shall serve as primary coordinator/lead agency in food and waterborne disease outbreak investigation (Epidemic Investigation and Control Team (EICT) at the local government (provincial/municipal/ city) level
- Shall conduct epidemiologic investigation of food and waterborne disease epidemics (suspected or confirmed) and establish surveillance in the affected area.
- Shall implement an epidemic response plan at the local government level
- Shall identify sources of additional human and material resources for managing the outbreak
- Shall ensure the use of standard treatment protocols for the disease and trains health workers if necessary.
- Shall oversee the implementation of control measures.
- Shall provide regular feedback to the community, LGU, PHO, CHD, and DOH regarding ongoing outbreak investigations.
- Shall coordinate with other agencies and NGOs.
- Requests assistance when necessary to respond to an outbreak

- Shall participate in trace back of suspected food/water vehicle in cooperation with NEC/DA and other agencies as necessary to include visits to sources of food and water contamination
- Shall provide assistance to the DOH, DA, BFAD, and other agencies during food and waterborne disease outbreak investigations
- Shall implement control and preventive measures to stop food and waterborne disease outbreak from spreading
- Shall decide when a food and waterborne disease outbreak is deemed ended with submission of a formal report to the RESU and other appropriate authorities

SECTION 5: PARTICIPATING INSTITUTIONS

5.1 List of Participating Institutions

Below is the list of participating agencies/hospitals in the sur veillance and outbreak investigation of FWBDs. The tasks of each participating institution in reference to Surveillance and Outbreak Investigation are described in Sections 3 and 4 respectively.

5.1.1 Department of Health (DOH) Institutions

1. National Epidemiology Center (NEC)
2. Regional Epidemiology Surveillance Units (RESU)
3. Local Epidemiology Surveillance Units (LESU)
4. National Center for Disease Prevention and Control (NCDPC)
5. Antimicrobial Resistance Surveillance Reference Lab. (RITM-ARSL)
6. National Reference Laboratory for Bacterial Enteric Diseases (NRL -BED) (*)
7. Parasitology Laboratory, RITM(*)
8. Virology Laboratory, RITM (*)
9. Bureau of Food & Drug (BFAD)
10. National Reference Laboratory for Water (NRL -East Avenue)
11. ARSP Sentinel Site Hospitals

Note: (*) Participates only in Outbreak Investigation

5.1.2 Department of Agriculture (DA) Institutions

1. Bureau of Animal Industry (BAI)
2. Bureau of Fisheries & Aquatic Resources (BFAR)
3. Bureau of Plant Industry (BPI)
4. National Meat Inspection Services (NMIS)
5. National Dairy Authority (NDA)

5.1.3 Department of the Interior and Local Government

5.2 Contact Numbers of the Participating Institutions

5.2.1 Departments of Health, Agriculture and the Interior and Local Government Central Offices

AGENCY/ADDRESS	OFFICE	TELEPHONE NO.
Department of Health		
Bureau of Food and Drugs	Office of the Director	(02)807-0721 ; Fax No. (02)807-0751
FCC, Alabang, Muntinlupa City	Legal Information & Compliance Division	(02)807-8386; (02)842-4592
	Laboratory Services Division	(02)842-4625
	Policy Planning and Advocacy Division	(02)8425606
	Product Services Division	(02)807-0700; (02)842-4538
	Public Assistance Information and Compliance Section	(02)8070700
	Regulation Division I	(02)807-8275; (02)807-0725
	Regulation Division II	(02)807-0701; (02)807-2843
	Davao Satellite Lab	(084)218-70-20 cel # 09274825222 wysiwyg2815@yahoo.com
National Center for Disease Prevention and Control	Director	(02)711-7846
DOH Compound	Head, Food and Waterborne Disease Program	(02)732-9966
National Epidemiology Center	Director	(02)743-8301 loc 1900
San Lazaro Compound, Sta. Cruz, Manila		(02)743-8301 loc 1906
National Water Reference Laboratory		(02) 928-06-11
East Avenue Medical Center, Quezon City	Administrative Office	(02)435-71-36
	Chemist In-Charge	(02)435-71-36/ (02) 928-06-11 loc 601
	Bacteriology Section	(02)433-06-73

AGENCY/ADDRESS	OFFICE	TELEPHONE NO.
Research Institute for Tropical Medicine,	Office of the Director	(02)809-7599; (02)8072628-32 local 235
Filinvest Corporate City, Alabang Muntinlupa City, Metro Manila	Antimicrobial Resistance Surveillance Reference Laboratory (RITM ARSRL)	(02)809-97-63; (02)807-2628 local 609
	National Reference Laboratory for Bacterial Enteric Diseases(NRL BED)	(02)807-2628 local 604
	Virology Department	(02)809-2628 loc 605
	Parasitology Department	(02)807-2628 loc 227
Department of Agriculture	Director's Office	(02)926-6883
Bureau of Animal Industry	Consumer Assistance	(02)920-3906
Visayas Avenue, Q. C.	Head, Bacteriology Lab	(02)928-2177
	Assistant Head	(02)920-0429
	Chief, Animal Health division	(02)928-2743, (02)928-2836
Bureau of Fisheries & Aquatic Resources	Director	(02)929-2957
PCA Bldg., Elliptical Road corner M. Marcos Avenue, Q.C.	Chief, Fish Product Testing Laboratory	372-5059
Bureau of Plant Industry	Director	(02)525-7857
692 San Andres St., Malate, Manila	OIC Laboratory Division	(02)524-0708
	Microbiology Section	(02)524-0779
National Dairy Authority	Administrator's Office	(02)926-0733 to 35 loc 213
NDA Bldg., BAI Compd., Visayas Ave., Diliman, Quezon City	Laboratory	(02)926-0733 loc 204
National Meat Inspection Service	Executive Director	(02)924-3119 loc 15
Visayas Avenue, Q. C.	Microbiological Section, Laboratory Services Division	(02)924-3119 loc 28 (02)924-3119 loc 28,29,30
	Consumers' Assistance Desk	(02)924-3119 loc 14 (02)921-4473 loc 14
Philippine Fishport Development Authority	Manager	(02)925-6138
PCA Bldg., Elliptical Road, Quezon City	Assistant Port Manager	(02)283-1181

AGENCY/ADDRESS	OFFICE	TELEPHONE NO.
Department of the Interior and Local Government	Director	(02)927-7852
Bureau of Local Government Development (DILG)		(02)925-71-37
Francisco Gold Condominium, EDSA, Diliman, Quezon City		
Others		
National Bureau of Investigation		(02)5238231

5.2.2 Regional Epidemiology Surveillance Units (RESUs), Provincial Epidemiology Surveillance Units (PESUs), City Epidemiology Surveillance Units (CESU), DOH

Region	CHD Office Address	Contact Number/e-Mail
I	CHD- Ilocos, Parian, San Fernando, La Union	072-242-4592 chd_ilocos@yahoo.com
II	CHD-Cagayan Valley, Carig, Tuguegarao City	078-844-6523 dohreg@yahoo.com
	PHO-Isabela	078-622-2395 c_aumentado@yahoo.com
	PHO-Nueva Vizcaya	078-805-7955 jan_tugadi20042yahoo.com
CAR	CHD-CAR, GH Cmpd., Baguio City	074-444-5255 jalcalamd@yahoo.com
III	CHD-Central Luzon, Maimpis, San Fernando, Pampanga	045-861-3427 mo1kata@yahoo.com
	PHO-Tarlac	445-982-1872 cecille_0930@yahoo.com
	PHO-Nueva Ecija	044-463-8289
NCR	CHD-NCR, Welfareville Cmpd., Addition Hills, Mandaluyong City	(02)535-4529 anthonysanjuan@yahoo.com
	MHO-Malabon	(02)281-3429 drbillyg@ispx.com
	CHO-Quezon City	(02)926-4237 irenegrafil@yahoo.com
	CHO-Valenzuela City	(02)445-2759 drmapue@yahoo.co.uk
	CHO-Makati City	(02)899-8916
IV-A	CHD-CALABARZON, QMMC Cmpd., Project 4, Quezon City	(02)912-9985 herminia_leyva@yahoo.com
	PHO-Cavite	046-419-0123 dugong_kabite@yahoo.com
	PHO-Quezon City	0917-850-5038 nimrodv_ph@yahoo.com

Region	CHD Office Address	Contact Number/e-Mail
IV-B	CHD-MIMAROPA, QMMC Cmpd., Project 4, Quezon City	(02)912-9951 drtetcastillo@yahoo.com
V	CHD-Bicol, Legazpi City, Albay	052-824-0371 audaluro@yahoo.com
	MHO-Buhi Camarines Sur	0918-559-7533 docbatoy@yahoo.com
VI	CHD-Western Visayas, Manduriao, Iloilo City	033-321-2158 resu6_doh@yahoo.com
VII	CHD-Central Visayas, Osmeña Blvd., Cebu City	032-418-7629 rennancc@yahoo.com
	CHO-Cebu City	032-232-6848 ilya91663@yahoo.com
VIII	CHD-Estern Visayas, Government Center, Cadahug, Palo, Leyte	053-323-5515 nbbautistajr@yahoo.com
	CHO-Calbayog City	055-209-3460
	MHO-Motiong, West Samar	055-325-7684 epidoc_sheila@yahoo.com
IX	CHD-Western Mindanao, Upper Calarian, Zamboanga City	062-983-0933 resunueve@yahoo.com
X	CHD-Northern Mindanao, Carmen, Cagayan de Oro City	088-350-4322 dmmd_459@yahoo.com
	CHO-Cagayan de Oro City	0882-272-1189 ambuman_419@yahoo.com
XI	CHD-Southern Mindanao, J.P. Laurel Ave., Bajada, Davao City	082-305-1909 rpenera@yahoo.com
XII	CHD-Central Mindanao, Govenrment Center, Cotabato City	064-421-4583 vingno_md@yahoo.com
	PHO-Sulatan Kudarat	0927-352-5181 rantenor@itech.com
ARMM	CHD-ARMM, Government Center, Cotabato City	064-421-6842 resu_armm@yahoo.com
CARAGA	CHD-CARAGA, Pizarro St., cor. Narra Rd. Butuan City	085-342-5208 loc 102 gernamayas@yahoo.com
DOH Central	National Epidemiology Center, SLH Cmpd., Sta Cruz, Manila	(02)743-8301,Local 1900–1907 nec_doh@yahoo.com

5.2.3 DOH - Regional Field Offices and Bureau of Food and Drugs Field Offices Telephone And Fax Numbers			
REGION		**TEL. NO.**	**FAX NO.**
Region 1	Center for Health	(072)242-47-78	(072)242-53-15
	Development for Ilocos	(072)242-47-78	(072)242-47-74
	San Fernando City	(072)242-47-73	
	2500 La Union		
	(Northern Luzon)		
Region 2	Center for Health Dev't.	(078)844-17-48	(078)844-43-68
	for Cagayan Valley	(078)446-17-48	(078)846-72-40
	3500 Tuguegarao, Cagayan	(078)844-37-89	(078)846-72-30
		(078)844-70-97	
		(BFAD)	
Region 3	Center for Health Dev't.	(045)961-38-02	(045)961-38-60
	for Central Luzon, Maimpis		(045)961-35-808*
	2000 San Fernando	(045)961-38-44	
	Pampanga	(045)961-20-99	
		BFAD	
Region 4	Center for Health Dev't.	(02)912-99-85	(02)913-08-64
A	for Southern Tagalog	(02)913-45-27	(02)913-46-54
	Quirino Mem'l. Med'l. Center	(02)913-46-54	(02)913-08-57
	J.P Rizal St. cor. P. Tuazon	(02)913-47-04	
	1109 Project 4, Quezon City	(02)913-08-57	
		Licensing	
Region 4	Center for Health Dev't.	(02)631-93-55	
B	MIMAROPA	(02)631-17-15	
Region 5	Center for Health Dev't.	(052)824-09-98	(052)245-52-47
	for Bicol	(052)483-06-92	(052)483-03-72
	4500 Legaspi City	(052)483-06-91	(052)247-76-44
		(052)483-08-40	
		loc.521(BFAD)	
Region 6	Center for Health Dev't.	(033)321-21-58	(033)321-10-36
	for Western Visayas	(033)335-03-67	(033)321-02-04
	5000 Iloilo City		
Region 7	Center for Health Dev't.	(032)418-76-34	(032)254-10-80
	for Central Visayas	BFAD	(032)253-63-55
	6000 Cebu City	(032)253-45-80	
		(032)254-01-08	
		(032)564-25-65	
		satellite lab.	
Region 8	Center for Health Dev't.	(053)323-50-44	(053)323-50-69
	for Eastern Visayas	(053)323-50-69	
	6500 Tacloban City	(053)323-30-56	
		(053)323-55-15	(053)323-61-96
			BFAD

REGION		TEL. NO.	FAX NO.
Region 9	Center for Health Dev't. for Western Mindanao 7000 Zamboanga City	(062)991-19-95 (062)991-13-13	(062)991-33-80
Region 10	Center for Health Dev't. for Northern Mindanao 9000 Carmen, Cagayan de Oro City P.o. Box 159	(088) or (08822) (+) Tel.No 858-40-01 727-400	 (+) Tel.No 858-71-30 854-40-02
Region 11	Center for Health Dev't. for Southern Mindanao 8000 Davao City	(082)227-39-76 (082)227-59-03 (082)226-24-93 (082)305-19-02 telefax	(082)221-63-20 (082)224-30-11* (082)221-63-20 (082)227-44-22
Region 12	Center for Health Dev't. for Central Mindanao 9600 Cotabato City	(062)421-45-83 (062)421-23-73 (062)421-74-36	(062)421-21-96 (062)421-45-83 (062)421-23-73
CAR	Center for Health Dev't. for Cordillera 2600 Baguio City	(074)442-80-96 (074)442-80-97 (074)442-75-91 (074)442-80-98	(074)442-75-91 (074)442-48-58 telefax
ARMM	Center for Health Dev't. for ARMM 9600 Cotabato City	(064)421-68-42 (064)421-12-27	(064)421-39-88 (064)421-68-42
CARAGA	Center for Health Dev't. for CARAGA Pizarro St. cor. Narra Rd., 8600 Butuan City	(085)342-75-12	(085)342-76-34 (085)342-75-12 (085)342-52-08 trunk line BFAD#7 (085)225-29-70
NCR	Center for Health Dev't. for Metro Manila Welfareville Compound Addition Hills, 1501 Mandaluyong City	(02) 718-30-98 (02)535-46-95 (02)535-46-04	

5.2.4 Antimicrobial Resistance Surveillance Program Sentinel Sites

Hosp. Code	Hospital Name/Address	Contact Number
BGH	Baguio General Hospital	Tel:074-442-6230 loc 358
	Governor Pack Road, Baguio City	Fax: 074-443-8342
BRT	Bicol Regional Training and Teaching Hospital	Tel:'052-483-1089 loc 427
	San Antonio St. Zone III Libon Albay 4507	Fax: 052-483-0016
		Cell:'0919-639-1325
CMC	Cotabato Medical Center	Tel:'064-421-2340 loc
	Cotabato City	Fax: 064-421-2192 loc 116
		Cell:'0928-773-5387
DMC	Davao Medical Center	Cell:'0927-677-2643
	J.P. Laurel Avenue, Davao City, Davao Del Sur 8000	Fax: 082-221-7029
EVR	Eastern Visayas Regional Medical Center	Tel: '053-321-3136
	Tacloban City	Fax: 053-321-8724
FEU	Far Eastern University Hospital	Tel: (02) 427-5755
	Regalado St., cor. Dahlia St. West Fairview, Quezon City	Cell:'0918-459-6889
GMH	Celestino Gallares Memorial Hospital	Tel:(038) 411-4869 loc 220
	Tagbilaran, City	Cell: 0906-607-7737
LCP	Lung Center of the Philippines	Tel: (02) 924-6101 loc286
	Quezon Avenue, Diliman Quezon City	Fax: (02) 928-8125
MMH	Corazon Locsin Montelibano Memorial Hospital	Tel:(034) 435-1591
	Bacolod city	Fax: 034-433-2697
		Cell:'0917-301-7833
NKI	National Kidney and Transplant Institute	Tel: (02)924-3601 loc 1048
	East Avenue, Quezon City	Fax: (02)924-3601 loc 1061
PGH	Philippine General Hospital	Tel: (02)521-8450 loc 3206
	Taft Avenue, Manila	Telefax Infection Control: (02)526-1705

Hosp. Code	Hospital Name/Address	Contact Number
PPH	Pangasinan Provincial Hospital	Tel:'0927-432-8998
	San Carlos City,Pangasinan	Fax:075-532-2603
RMC	Rizal Medical Center	Tel: (02)671-9740-43 loc 103
	Shaw Boulevard Extension, Pasig City	Fax: (02)671-9617
RTH	Dr. Rafael S. Tumbokon Memorial Hospital	Tel: '0920-419-6348
	Kalibo, Aklan	Fax: 036-268-8579
RITM	Research Institute for Tropical Medicine	(02)807-2628 loc 604
	FCC Alabang, Muntinlupa, City	
SLH	San Lazaro Hospital	Tel: (02)309-9528 to 29
	Sta. Cruz, Manila	Cell: '0917-887-4008
	Chief of Clinics Office	Tel: (02)732-3777/3776 loc 476
	STD-AIDS Central Cooperative Laboratory(SACCL)	Telefax: (02)711-4117
STU	Sto. Tomas University Hospital	731-3001 local 2427
	España Manila	Fax: 731-1985
VSM	Vicente Sotto Memorial Medical Center	Tel: '032-253-9891 local 102
	B. Rodriguez St., Cebu City	Cell: '0926-634-4545
ZMC	Zamboanga Medical Center	Tel: '062-991-2934 local 146
	Zamboanga City	Fax: 062-991-0573
		09217123870
ZPH	Zamboanga del Norte Provincial Hospital	Cell:'0920-903-2969
		Fax: 065-212-2975

5.2.5 National Reference Laboratory for Testing Water Quality –East Avenue Medical Center

Office	Address	Contact Number
Head, NRL-EAMC	East Avenue Medical Center, East Avenue, Diliman, Quezon City	Tel. Nos. (02)435-71-36 / (02)433-06-73 /(02)928-06-11 loc. 601
Chemist In-Charge	East Avenue Medical Center, East Avenue, Diliman, Quezon City	Tel.Nos.(02)435-71-36/ (02)433-06-73 / (02)928-06-11 loc. 601

5.2.6 Address and Contact Numbers of Agencies Involved (Metro Manila Drinking Water Quality Monitoring Committee, MMDWQMC):

Office	Address	Contact Number
Chairman, MMDWQMC	CHD MM - Welfareville Compound,, Brgy. Addition Hills,Mandaluyong City	(02) 718-3098; (02) 5354521
Manager, WQCD	MWSS-RO – Katipunan Rd., Balara, Quezon City 1105	Telefax No.: (632) 435-89-04
Manager, Quality and Regulation Department	Manila Water Company, Inc. (MWCI) – Central Lab. Bldg, MWSS Cpd., 489 Katipunan Rd., Balara, Quezon City	Telefax: (02) 9818146
Manager, Central Laboratory	Maynilad Water Services, Inc. (MWSI) – Central Laboratory, La Mesa Treatment Plant 1, La Mesa Dam Compound, Fairview, Quezon City	(02)430-2928 (02)430-2923

5.2.7 BUREAU OF HEALTH FACILITIES AND SERVICES - List of Accredited Water Testing Laboratories

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
CAR				
BENGUET				
STO. NIÑO HOSPITAL OF PHILEX MINING CORPORATION	Padcal, Tuba, Benguet	Philex Mining Corporation	HB	129
BAGUIO WATER DISTRICT LABORATORY	Military Cut Off Road, Baguio City	Baguio Water District	FS	131
PUBLIC HEALTH LABORATORY	T. Alonso St., Baguio City	Baguio Health Department	FS	001
MT. PROVINCE				
BAUKO RURAL HEALTH UNIT LABORATORY	Poblacion, Bauko, Mt. Province	Bauko Local Gov't Unit	FS	210
REGION I				
ILOCOS NORTE				
ILOCOS NORTE WATER DISTRICT LABORATORY	Ermilla Hill, Laoag City	Ilocos Norte Water District	FS	153
CDCB WATER ANALYSIS LABORATORY	Brgy. 40, Buyon, Bacarra	Crystal Dew Bottling Corporation	FS	209
LA UNION				
ILOCOS TRAINING & REGIONAL MEDICAL CENTER	Parian, San Fernando City	Ilocos Training & Regional Medical Center	HB	093

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
PANGASINAN				
REGION I MEDICAL CENTER WATER LABORATORY	Arellano St., Dagupan City	Region I Medical Center	HB	063
REGION II				
NUEVA VIZCAYA				
PROVINCIAL HEALTH PUBLIC LABORATORY	Capitol Compound, Bayombong Nueva Vizcaya	PHO	FS	010
REGION III				
PAMPANGA				
CLARK WATER LABORATORY	Depot 1901, Bicentennial Hill Clark Field, Pampanga	Clark Water Corporation	FS	080
COLLABORATING CENTER FOR DISEASE PREVENTION & CONTROL	CHD 3, Maimpis, City of San Fernando Pampanga	CCDPC, CHD 3	FS	182
PROVINCIAL HEALTH OFFICE WATER ANALYSIS LABORATORY	Guagua, Pampanga	PHO	FS	198
ANGELES CITY WATER DISTRICT LABORATORY	Friendship Hi-way, Angeles City	Angeles City Water District	FS	189
ZAMBALES				
SUBIC WATER FREEPORT WATER ANALYSIS LABORATORY	Bldg. 1855 Binictican, Subic Bay, Freeport Zone, Olongapo City	Subic Water and Sewerage Co., Inc.	FS	128

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
SUBIC WATER MABAYUAN WATER LABORATORY	#1 Otero Ave., Mabayuan, Olongapo City	Subic Water and Sewerage Co., Inc.	FS	185
REGION IV				
BATANGAS				
BATANGAS CITY WATER DIST. LABORATORY	Km. 4, National Highway, Alangilan Batangas City	Batangas City Water District	FS	149
PHO WATER ANALYSIS LABORATORY	Kumintang Ibaba, Batangas City	PHO	FS	163
LIPA QUALITY CONTROL CENTER WATER LABORATORY	5/F Seňora Maria Bldg., P. Torres St. Cor. C.M. Recto Ave., Lipa City	Mr. Henry R. Young	FS	121
OPTIMAL LABORATORIES	2ND Floor T&E Bldg., Pres. Laurel Highway, Balintawak, Lipa City	Optimal Laboratories, Inc.	FS	144
F.A.S.T. LABORATORY (BATANGAS)	2nd Floor Malarayat Rural Bank Bldg., Maharlika Highway, Sto. Tomas, Batangas	FAST Cooperative	FS	173
METRO LIPA WATER DIST. LABORATORY	Metro Lipa Water Dist. Annex Bldg., Int. B. Morada Ave., Lipa City	Metro Lipa Water District	FS	202
CAVITE				
REGIONAL WATER LABORATORY	JM Loyola St., Carmona	Municipality of Carmona	FS	082

HB – hospital-based; FS – freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
DASMARIÑAS WATER DISTRICT LABORATORY	Camerino Ave., Dasmariñas	Dasmariñas Water District	FS	208
CAVITE PROVINCIAL WATER ANALYSIS LABORATORY	PHO, Gen. E. Aguinaldo Mem. Hospital, Luciano St., Trece Martires City	Cavite Provincial Government	HB	138
LAGUNA				
OSTREA MINERAL LABORATORIES, INC.	Brgy. Road, Bo. Mamplasan, Biñan Laguna	Dr. Antonio M. Ostrea	FS	117
AQUA LAB CENTER – CALAMBA	Doña Raymonda Bldg., J.P. Rizal Calamba City, Laguna	MHA Enterprises Corp.	FS	161
REGIONAL STANDARDS & TESTING WATER LABORATORY	Jamboree Rd., Timugan, Los Baños Laguna	DOST IV	FS	109
FIRST ANALYTICAL LABORATORY OF LAGUNA	3013 Fr. Masi St., Holiday Homes Phase 3, San Pedro, Laguna	Ms. Erlinda L. Pitoy	FS	150
LAGUNA PROVINCIAL HOSPITAL	J. de Leon St., Sta. Cruz, Laguna	Laguna Provincial Health Office	HB	100
COCA-COLA BEVERAGE GROUP CENTRAL LABORATORY	Coca-cola Bottlers Phils,, Inc., Sta. Rosa Plant I, Sta. Rosa	San Miguel Corporation	FS	203
MARINDUQUE				
DR. DAMIAN J. REYES MEM. HOSPITAL WATER ANALYSIS LABORATORY	MPH, Santol, Boac, Marinduque	Provincial Government of Marinduque	HB	054

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
OCCIDENTAL MINDORO				
OCCIDENTAL MINDORO HOSPITAL WATER LABORATORY	Mamburao, Occidental Mindoro	PHO	HB	048
PALAWAN				
ENVIRONMENTAL SANITATION AND PUBLIC	PHO, PEO Compound, Bancao-Bancao, Puerto Princesa City	PHO of Palawan	FS	204
QUEZON				
IPHO WATER LABORATORY	Quezon Memorial Hospital Compd., Lucena City	Provincial Government of Quezon	HB	089
RIZAL				
ANIMAL DISEASE DIAGNOSTIC LABORATORY	Patiis Road, Brgy. Malanday, San Mateo, Rizal	Rizal Poultry & Livestock Assn., Inc.	FS	183
RIZAL PROVINCIAL WATER ANALYSIS LABORATORY	Rizal Provincial Hospital, T. Claudio St., Morong, Rizal	Rizal Provincial Government	HB	133
ALBAY				
REGIONAL HEALTH LABORATORY NO. 5	Legaspi City	DOH-CHD Bicol	FS	003
CAMARINES SUR				
METROPOLITAN NAGA WATER DISTRICT LABORATORY	#40 J. Miranda Ave., Naga City	Metropolitan Naga Water District	FS	178

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
PROVINCIAL HEALTH OFFICE WATER ANALYSIS LABORATORY	Bula, Banasi	PHO	FS	076
REGION VI				
ILOILO				
WESTERN VISAYAS MEDICAL CENTER	Mandurriao, Iloilo City	Western Visayas Medical Center	HB	004
REGIONAL CALIBRATION AND TESTING CENTER	Magsaysay Village, La Paz, Iloilo City	DOST IV	FS	167
METRO ILOILO WATER DISTRICT	Bonifacio Drive, Iloilo City	Metro Iloilo Water Dist.	FS	096
REGION VII				
BOHOL				
BOHOL PROVINCIAL HEALTH OFFICE WATER LABORATORY	PHO, Dao District, Tagbilaran City	Provincial Government of Bohol	FS	041
CEBU				
CEBU CITY HEALTH DEPARTMENT WATER LABORATORY	Gen. Maxilom Ave. Ext., Cebu City	Cebu City Government	FS	049
UNIVERSITY OF SAN CARLOS WATER TESTING LABORATORY	Nasipit, Talamban, Cebu City	University of San Carlos	FS	170

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
DOST – 7 WATER ANALYSIS LABORATORY	Sudlon, Lahug, Cebu City	DOST 7	FS	175
AQUA LAB CENTER – MANDAUE	Unit 2-J Freestar Arcade, H. Cortes St. Subangdaku, Mandaue City	Mr. Iñigo Larrazabal	FS	179
AQUA LAB CENTER	Tabunok, Talisay, Cebu	Mr. Jaime Po	FS	174
TECHNOLAB LABORATORY SERVICES	Unit F, Mercedes Commercial Complex cor. Cabancalan, Talamban, Cebu City	Mr. Rod S. Bala	FS	186
BIWA WATER TESTING FACILITY	BIWA Office, Municipal Compd., Bantayan, Cebu	BIWA	FS	196
CHEMROCK LABORATORIES	Suba-Masulog, Lapu-Lapu City	Mactan's Rock Industries, Inc.	FS	201
OSTREA MINERAL LABORATORIES	M&n Bldg., 342 V. Albaño St., Bakilid, Mandaue City	Dr. Antonio M. Ostrea	FS	207
REGION VIII				
SOUTHERN LEYTE				
INTEGRATED PROVINCIAL HEALTH OFFICE	PHO, Maasin City	Provincial Government of Leyte	FS	212

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
REGION XI				
DAVAO DEL SUR				
DAVAO CITY WATER DISTRICT LABORATORY	Km. 5, J.P. Laurel Ave., Bajada, Davao City	Davao City Water District	FS	011
DAVAO DEL SUR PROVINCIAL HOSPITAL LABORATORY	Digos	Provincial Government of Davao del Sur	HB	028
DAVAO DEL NORTE				
DAVAO DEL NORTE PROVINCIAL HEALTH OFFICE WATER LABORATORY	Carmen, Davao del Norte	Provincial Government of Davao del Norte	FS	159
REGIONAL PUBLIC HEALTH LABORATORY DIRFO XI	Bajada, Davao City	DIRFO XI	FS	047
REGION XII				
COTABATO CITY				
COTABATO REGIONAL AND MEDICAL CENTER	Sinsuat Ave., Cotabato City	Cotabato Regional and Medical Center	HB	020
SOUTH COTABATO				
IPHO-SOUTH COTABATO PROVINCIAL HOSPITAL	Aguinaldo St., Koronadal City	Provincial Government of South Cotabato	HB	017

HB – hospital-based; FS - freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
GEN. SANTOS CITY				
GEN. SANTOS CITY WATER DISTRICT LABORATORY	E. Fernandez St., Lagao, Gen. Santos City	Gen. Santos City Water District	FS	200
NORTH COTABATO				
USM-BIODEPT. WATER LABORATORY	USM-Kabacan, Cotabato	USM	FS	195
CARAGA				
AGUSAN DEL SUR				
D.O. PLAZA MEMORIAL HOSPITAL	Patin-ay, Prosperidad, Agusan del Sur	D.O. Plaza Memorial Hospital	HB	191
NCR				
MANILA				
PUBLIC HEALTH LABORATORY	208 Quiricada St., Sta. Cruz, Manila	City of Manila	FS	065
EMILIO AGUINALDO COLLEGE MICROBIOLOGY LABORATORY	1113-1114 San Marcelino St., Paco, Manila	YLFI-Emilio Aguinaldo College	FS	156
QUEZON CITY				
A.T.T. AQUALAB CENTER, INC.	Unit #3, G/F King Center Bldg., #57 Sgt. E. Rivera St., Manresa, Quezon City	Ms. Hope Q. Lee	FS	169

HB – hospital-based; FS – freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
FIRST ANALYTICAL SERVICES & TECHNICAL COOP. LABORATORY	#65 20TH Ave., Cubao, Quezon City	FAST Cooperative	FS	091
PROGRESSIVE LABORATORIES	149 Dangay St., Proj. 7, Quezon City	Ms. Pinky Tobiano-Sinfuego	FS	135
PLATINUM LABORATORY, CO.	Suite 807, Union Square Condo, 15th Ave., Cubao, Quezon City	Juvy D. Deligero/ Majella R. Canzon	FS	073
ENVIRONMENTAL HEALTH LABORATORY SERVICE COOP	50 Holy Spirit Drive, Don Antonio Heights, Quezon City	Environmental Health Laboratory Services Coop.	FS	024
HOPE LOVE FAITH MEDICAL CLINIC AND LABORATORY	35-C Quezon Ave., cor. Cordillera St., Quezon City	Dr. Exaltacion Caringal	FS	172
NATIONAL REFERENCE LABORATORY EAST AVENUE MEDICAL CENTER	East Avenue, Diliman, Quezon City	DOH	HB	205
MAYNILAD WATER CENTRAL LABORATORY	La Mesa Treatment Plant I, La Mesa Dam Compound, Fairview, Quezon City	Maynilad Water Services, Inc.	FS	126
MICROBIOLOGY LABORATORY	SEC, Ateneo de Manila University, Katipunan Rd., Loyola Heights, Quezon City	Ateneo de Manila University	FS	146
AQUA LAB CENTER	Unit 10, #262 Del Monte Ave., cor. Mayon St., Maharlika, Quezon City	Ms. Lita L. Luciano	FS	162

HB – hospital-based; FS – freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
AERONICS, INC. ENVIRONMENTAL LABORATORY DIVISION	No. 19 Ashley St., North Fairview, Quezon City	Aeronics, Inc.	FS	184
MANILA WATER COMPANY LABORATORY SERVICES	MWSS Complex, Katipunan Rd., Balara, Diliman, Quezon City	Manila Water Company	FS	116
KIM BLAZE BIOCHEM LABORATORIES	148 N. Dominga St., Brgy. Kaunlaran, Quezon City	Mr. Marlon B. Mercado	FS	192
MAKATI CITY				
SGS PHILIPPINES, INC.	2/F Alegria Bldg., 2229 Chino Roces, Makati City	SGS Holding S A	FS	016
MAKATI HEALTH DEPARTMENT WATER LABORATORY	7th Floor, Makati City Hall Bldg., J.P. Rizal St., Makati City	City Government of Makati	FS	143
INTERTEK TESTING SERVICES PHILS., INC.	ITS Bldg., 2310 Pasong Tamo Ext., Makati City	Intertek Testing Services Phils., Inc.	FS	032
MAKATI MEDICAL CENTER	2 Amorsolo St., Makati City	Medical Doctors, Inc.	HB	090
MANDALUYONG CITY				
SENTRO TEX	208 Pilar St., Mandaluyong City	Mr. Richard A. Tee	FS	141
LABSERV, INC.	Suito 607 Jovan Condo., #600 Shaw Blvd. cor. Samat St., Mandaluyong City	Labserv, Inc.	FS	157

HB – hospital-based; FS – freestanding

NAME OF WATER TESTING LAB.	ADDRESS	OWNER	CLASS.	ACCR. NO.
MARIKINA CITY				
MARIKINA CLEAN FOODWATER LABORATORY	Public Market Bldg. Cor. Kap. Venciong & M. Cruz St., Sta. Elena, Marikina City	City Local Government	FS	145
ST. MARTIN PHARMACEUTICAL LABORATORY	55 Lakandula St., Parang, Marilina City	Mr. Jose Israel S. Bravo	FS	206
MUNTINLUPA CITY				
MICROBIOLOGY & INFECTIOUS DISEASE CENTER	2/F Gutierrez Apt., 233 National Rd., Bayanan, Muntinlupa City	Dr. Salvacion Gatchalian	FS	112
PASIG CITY				
LAGUNA LAKE DEVELOPMENT AUTHORITY LABORATORY	Rizal Provincial Capitol Compound, Pasig City	LLDA	FS	007
CHEMPRO ANALYTICAL SERVICES LABORATORIES, INC.	6th Floor, AF Bldg., 182 Shaw Blvd. Ext., Pasig City	Ms. Liwanag C. Cruz	FS	068
PASAY CITY				
SAN JUAN DE DIOS EDUCATIONAL FOUNDATION, INC.	2772 Roxas Blvd., Pasay City	San Juan de Dios Educational Foundation, Inc.	HB	155
LAS PIÑAS CITY				
MACH UNION, INC. WATER LAB	Unit 22, URCI Commercial Bldg., 21 C-5 Real St., Las Piñas City	Engr. Aladino M. Abulencia	FS	122

HB – hospital-based; FS - freestanding

5.2.8 List Of Laboratories Recognized By Bureau of Food and Drugs (BFAD) as per BC 06 s. 2005 amended by BC 09 s. 2006

NAME OF LABORATORY	ADDRESS/ CONTACT NO.	TYPE OF ANALYSIS
BIOTECH – Central Analytical Services Laboratories (CASL)	UPLB College Los Banos, Laguna Telefax: (049) 536-0587	**FOOD** o Proximate o Carbohydrates o Minerals o Water o Fats and Oils o Amino Acid o GC & HPLC Analyses
BIOTECH – Philippine National Collection of Microorganisms (PNCM)	UPLB College Los Banos, Laguna Tel.No. (049) 536-2884 Fax No.: (049) 536-2721	**MICROBIOLOGICAL** o Food o Water o wide range of analyses offered
First Analytical Services & Technical Cooperative (FAST)	62 20th Avenue Cubao, Quezon City Tel. No. (02)913-0241 Fax No. (02)913-8848	**FOOD** o Proximate o Fats and Oils o GC Analyses **MICROBIOLOGICAL** o Food o Water o wide range of analyses offered
Intertek Testing Services, Inc.	2nd Floor ITS Building 2310 Pasong Tamo Ext. Makati City Tel. No. (02)819-5841 to 48 Fax No. (02)817-2994	**FOOD** o Proximate o Iodine in Salt o Minerals o Food Additives (Nitrates/Nitrites, Benzoic/Sorbic Acid, Sulfates/Sulfites) o Fat/Water Soluble Vitamins (HPLC) o Heavy metals (AAS) **MICROBIOLOGICAL** o Food (except pathogenic) o Water

Lipa Quality Control Center	5th Floor, Sra Maria Bldg. P. Torres St. cor. CM Recto Avenue, Lipa City Tel. No. (043) 756-6220 to 22	**FOOD** o Proximate

NAME OF LABORATORY	ADDRESS/ CONTACT NO.	TYPE OF ANALYSIS
Philippine Institute of Pure and Applied Chemistry (PIPAC)	Ateneo de Manila University Campus Loyola Heights, QC Tel. No. (02)-4266072 Fax: (02)-4266073	**FOOD & PHARMACEUTICALS*** o Spectroscopy (IR, NMR, MS, AA, UV-Vis) o Chromatography (GC, HPLC, TLC, IC) o Acid-base/Redox Titrimetry o Kjeldahl N-analysis o Fluorometry o Electrochemical techniques o Gas Chromatography/Mass Spectrometry
Progressive Laboratories	149 Dangay Street Project 7, Quezon City Tel No. (02)371-3936; (02)411-2620; (02)411-2592 Fax No. (02)373-6444	**FOOD** o Proximate o Aflatoxin o Mineral Analysis (UV-Vis Spectrophotometry and AAS) **MICROBIOLOGICAL** o Total Plate Count o Yeast and Mold o E.coli/coliform o Rapid E. Coli/coliform o *Salmonella* o Sterility o Potability **PHARMACEUTICALS** (Vitamins and Antibiotics)
Sentro sa Pagsusuri, Pagsasanay at Pangasiwang Pang-Agham at Teknolohiya Corp (SENTROTEK)	208-B Pilar St. Mandaluyong City Tel. No. 721-6500 721-9699 718-3514 Fax No. (063) 721-0739	**FOOD** o Complete nutritional analysis and food labeling o Vitamins & Minerals o Fatty Acids o Heavy Metals & Residues Testing o Analysis of Drinking Water o Water Activity **MICROBIOLOGICAL** o Potability of Drinking Water **PHARMACEUTICALS**

		o Vitamins, Minerals & Antibiotics o Organic Volatile Impurities o Amino Acids o Identification Tests • Dissolution Testing/Profiles

NAME OF LABORATORY	ADDRESS/ CONTACT NO.	TYPE OF ANALYSIS
SGS Phils. Inc.	2nd Floor, Alegria Building 2229 Chino Roces Ave. Makati City Tel. No.(02)817-6231; (02)817-5656 Fax No.(02)818-2971; (02)815-0952	**FOOD** o Analysis of agri-food commodities, products and chemicals o Pesticide residues testing o Nutritional analysis and labelling **MICROBIOLOGICAL** o Bateriological analysis of food and other consumer products o Water and Waste Analysis **PHARMACEUTICALS** o Antibiotic formulations and residue testing

5.2.9 Government Counterpart Laboratories

NAME OF LABORATORY	ADDRESS/ CONTACT NO.	TYPE OF ANALYSIS
Food and Nutrition Research Institute	DOST Compound Gen. A. Santos Avenue Bicutan, Taguig Tel. No.(02)837-6149; (02) 837-8113 Fax. No. (02)837-3164	FOOD o Proximate o Water Activity o Vitamin A & Betacarotene (HPLC) o Iron, Calcium, Zinc, Sodium, Potassium (AAS) o Iodine in Salt (Titration) o Fatty Acids, Cholesterol (GC) MICROBIOLOGICAL o Food § Aerobic Plate Count § Total Coliform § Mold & Yeast § *Salmonella* § Staphylococcus aureus o Water § Heterotrophic Plate Count § Total Coliform Count § E. Coli count
Industrial Technology Development Institute (ITDI) – Standards & Testing Division Microbiology Laboratory	DOST Compound, Gen. Santos Ave. Bicutan, Taguig, MM Tel. No. (02)837-2071	MICROBIOLOGICAL o Food o Water * wide range of analyses offered

	ext. 2197 Fax No. (02)837-0032	(except sterility tests for pharmaceuticals)
Food Development Center (FDC)	FTI Complex Taguig, Metro Manila Tel.No: (02)838-4561; (02) 838-4715	FOOD MICROBIOLOGICAL

NAME OF LABORATORY	ADDRESS/ CONTACT NO.	TYPE OF ANALYSIS
Natural Science Research Institute (NSRI)	UP Campus, Diliman Quezon City Tel. No. (02)920-7730 (MRSL) (02)920-7731 (RASL)	FOOD MICROBIOLOGICAL
National Dairy Authority (NDA)	NDA Bldg., BAI Compound, Visayas Ave. 1100 Diliman Quezon City Tel. No. (02)926-0733 to 36 TeleFax. No. (02)926-8847	MICROBIOLOGICAL and FAT TESTING OF MILK PRODUCTS

5.2.10 Bureau of Fisheries and Aquatic Resources - Designated Laboratories

Region	Address	Tel. Number	Fax Number	Services offered by the laboratory
NCR	Fisheries Product Testing Laboratory Section 860 Quezon Ave., Q.C.	(02)372 -5050	(02)372- 5059	Microbiological Analysis, Freshness Test, Formalin, Heavy Metals
4 A	2nd Floor, ICC Bldg., NIA Complex Edsa Diliman, Q.C.	(02)527 -0718	(02)926- 8616 (02)925 -7235	Microbiological analysis, Fish Health
6	MH del Pilar St., Molo, Iloilo City	(033) 336-9878	(033) 336 -9432	Freshness test; Formalin; Red tide; Microbiological Analysis
7	Arellano Blvd., Cebu City	(032) 256-2775	(032) 256 -2776 (032) 256 -2773	Histamine; Microbiological Freshness test; Formalin, Cyanide; fish health, heavy metals (lead, Cadmium, Mercury), Red Tide
9	RT Lim Kawa-Kawa,	(062) 991-8192	(062) 993 -2046	Histamine, Cyanide, Fish Health, Freshness Test,

	Zamboanga City			Microbiological Analysis
11	Uyanguren St., Davao City	(082) 224-5085	(082) 225 -1727	Fish Health, Heavy metals (lead, mercury, cadmium) Histamine, Freshness test, Microbiological Analysis
12	General Santos City	(083)421-9367	(083)552 -9332 (083)552 -1328	Histamine, Freshness test, Microbiological analysis

5.2.11 Bureau of Animal Industry (BAI) Regional Laboratories - REGIONAL ANIMAL DISEASE DIAGNOSTIC LABORATORIES (RADDL)

Region	Barangay	Address	Office Tel. No.	Office Fax No.
I	Tebag	Tebag, Sta. Barbara, Pangasinan	(075) 523 – 3928	(075) 523 - 3928
II	San Gabriel	Nursery Comp. San Gabriel Tuguegarao, Cagayan	(078) 844 - 3101	(078) 846 – 4834
III	St. Niño	Capitol Compound, San Fernando, Pampanga	(045) 961 - 2934	(045) 961 - 2934
IV	Marauoy	Marauoy, Lipa City, Batangas	(043) 312 - 0411	
V	Cabangan	Cabangan, Camalig Albay	(052) 826 – 0147	(052) 826 – 0147
VI	Parola St.	Fort San Pedro, Iloilo City	(033) 336 - 9737	(033) 337 – 0939
VII	Guadalupe	M. Velez St., Cebu City	(032) 254 - 4005	(032) 254 – 4005
VIII	Diit	Brgy. Diit, Tacloban City	(053) 325 - 7805	(053) 325 – 7805
IX	Tumaga	RADDL, Tumaga, Zamboanga City	(062) 992 - 4165	(062) 992 – 4165
X	Brgy. 27	A. Luna St., Cagayan de Oro City	(088) 856 – 2753 to 55	(088) 856 – 2753
XI	San Gabriel	San Gabriel, Mintal, Davao City		
XII		Sinsuat Ave., Cotabato City	(064) 421 - 5402	(064) 421 – 3789
CARAGA	Taguibo	Capitol Site, Butuan City	(085) 342 - 0457	(085) 342 – 7445
CAR	Guisad	BDF Compound, Sto. Tomas Rd., Baguio City	(074) 445 - 4973	(074) 444 – 9872
ARMM	Simuay	Brgy. Simuay, Sultan Kudarat, Maguindanao	(064) 421 - 1234	(064) 421 – 1234
PAHC	Vasra	Visayas Avenue, Diliman Quezon	(02) 928 - 2177	(02) 920 – 0429

5.2.12 National Meat Inspection Service Central Office and Satellite Meat Laboratories

Region	Location	Contact No
I	Brgy Anonas, Urdaneta City, Pangasinan	(075)568-6233
II	Cagayan	(078)844-5343
III	Regional Government Center, Bo. Maimpis, San Fernando, Pampanga	(045)860-5073
IV-A	Brgy Maraouy, Lipa City, Batangas	(043)757-3181
VII	Department of Agriculture, M. Velez St, Cebu City	(032)254-4565
IX	Sevilla Apartment, FS Pajares San Jose District, Pagadian City	(062)214-4731
X	Zone II, Cugman SH Complex, Cagayan De Oro City	(088)273-3498
XI	Department of Agriculture, Father Selga St, Davao City 8000	(082)224-2737
NCR	3rd Flr., ATI Bldg, Elliptical Rd, Diliman, Quezon City	(02)927-4050/927-2658
Central Office	Visayas Ave, Diliman, Quezon City	(02) 924-3119

SECTION 6: APPENDIX

6.1 Acronyms

AO	Administrative order
APHA	American Public Health Association
AQL	Acceptable Quality Level of the DOH
ARSP	Antimicrobial Resistance Surveillance Program
ARSRL	Antimicrobial Resistance Surveillance Reference Laboratory
AST	Antimicrobial Susceptibility Test
AWWA	American Waterworks Association
BAI	Bureau of Animal Industry
BAM	Bacteriological Analytical Manual
BC	Bureau Circular
BFAD	Bureau of Food and Drugs
BFAR	Bureau of Fisheries and Aquatic Resources
BGLB	Brilliant Green Lactose Broth
BPI	Bureau of Plant Industry
CA	Competent Authority
CAC	Codex Alimentarius Commission
CESU	City Epidemiology Surveillance Unit
CCP	Critical Control Point
CFU	Colony Forming Units
cGMP	Current Good Manufacturing Practice
CHD	Center for Health Development
CHO	City Health Office
CO_2	Carbon Dioxide
CP	Control Point
CPR	Certificate of Product Registration (BFAD)
DA	Department of Agriculture
DILG	Dapartment of Interior and Local Gove rnment
DOH	Department of Health
EAMC	East Avenue Medical Center
EICT	Epidemic Investigation and Control Team

EMB	Eosin Methylene Blue
EMB	Environmental Management Bureau
EQAS	External Quality Assurance Scheme
ESR	Epidemiologic Surveillance and Respo nse
EU	European Union
FAO	Fisheries Administrative Order
FDRO	Food Drug Regulation Officer of BFAD
FETP	Field Epidemiology Training Program
FHSIS	Field Health Service Information System
FOO	Fisheries Office Order
FPTL	Fisheries Product Testing Labo ratory
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis Critical Control Point
HIS	Health Intelligence Service of the Depar tment of Health
HPC	Heterotrophic Plate Count
IHR	International Health Regulations
IMViC	IndoleMethyl Red-Voges Proskauer-Citrate Test
	Occupational Health, Toxicology and Micronutrient Assay
ISO	International Standards Organization
IVC	International Veterinary Certificate
LB	Lactose Broth
LCP	Lung Center of the Philippines
LESU	Local Epidemiology Surveillance Unit
LGU	Local Government Unit
LICD	Legal Information and Compliance Division,BFAD
LSD	Laboratory Services Division, BFAD
LTO	License to Operate
MFT	Membrane Filter Technique
MHO	Municipal Health Officer
MIEAID	Meat Import/Export Assistance Inspection Division
MMDWQMC	Metro Manila Drinking Water Quality Monitoring Committee
MPN	Most Probable Number
MR-VP	Methyl Red-Voges Proskauer
MTFT	Multiple Tube Fermentation Technique

MUG4	-methyl-umbelliferyl β-D-glucoronide
MWCI	Manila Water Company Incorporated
MWSI	Maynilad Water Services, Incorporated (Maynilad)
MWSS	Metropolitan Waterworks and Sewerage System
MWSS-RO	Metropolitan Waterworks and Sewerage System -Regulatory Office
NA	Nutrient Agar
NBI	National Bureau of Investigation
NEC	National Epidemiology Center
NCR	National Capital Region
NDA	National Dairy Authority
NKTI	National Kidney and Transplant Institute
NGO	Non Government Organization
NMIS	National Meat Inspection Services
NRL	National Reference Laboratory
NRL-EAMC	National Reference Laboratory-East Avenue Medical Center
NRLEOHTM	National Reference Laboratory for Environmental and Occupational Health, Toxicology and Micronutrient Assay
ONPG	o-Nitrophenyl-β-D-galactopyranoside
PDP	Poultry Dressing Plant
PESU	Provincial Epidemiology Surveillance Unit
PFDA	Philippine Fisheries Development Authority
PHC	Primary Health Care
PHO	Provincial Health Officer
PNSDW	Philippine National Standards for Drinking Water
POID	In-plant Operation Inspection Division
PSD	Product Services Division, BFAD
RDI	Regulation Division I, BFAD
RDII	Regulation Division II, BFAD
RESU	Regional Epidemiology Surveillance Unit
RHU	Rural Health Unit
RHO	Regional Health Office
RITM	Research Institute for Tropical Medicine
SACCL	STD-AIDS Central Cooperative Laboratory
SLH	San Lazaro Hospital

SOP	Standard Operating Procedure
SPC	Standard Plate Count
SSRS	Sanitation Standard Rating Sticker
SSOP	Sanitation Standard Operating Procedure
TNTC	Too Numerous To Count
TPC	Total Plate Count
VQMILC	Veterinary Quarantine and Meat Inspection Laboratory Certificate
WHA	World Health Assembly
WHO	World Health Organization
WNDR	Weekly Notifiable Decease Reports

6.2 Case Classifications and Case Definitions

Definition of terms in foodborne disease case classification:

Epidemiologically linked case: a case in which the patient has/had contact with one or more persons who have/had the disease, and the transmission agent by the usual modes of transmission is plausible. A case may be considered epidemiologically linked to a laboratory-confirmed case if at least one case in the chain of transmission is laboratory-confirmed.

Laboratory-confirmed case: a case that is confirmed by one or more of the laboratory methods listed in the case definition under "Laboratory criteria for diagnosis". Although other laboratory methods are used in clinical diagnosis, only those listed are accepted for laboratory confirmation for reporting purposes.

Meets the clinical case definition: meets precisely the case definition. Although in clinical practice the diagnosis may be made with the use of other criteria, for reporting purposes the stated criteria must be met.

Probable case: a case that is classified as probable for reporting purposes.

Supportive laboratory results: specified laboratory results consistent with the diagnosis but not meeting the criteria for laboratory confirmation.

Astrovirus (Viral)

Clinical Description: 12 – 48 hours incubation period. Diarrhea, vomiting, nausea, abdominal cramps, and low-grade fever.

Laboratory Criteria for diagnosis: Detection of viral RNA in at least two bulk stool or vomitus specimens by real-time or conventional RT-PCR or NoV with characteristic morphology by electron microscopy in at least two or more bulk stool or vomitus specimens or two or more stools positive by commercial EIA.

***Bacillus cereus* (Diarrheal toxin)**

Clinical Description: 6 – 24 hours incubation period. Diarrhea, abdominal cramps, and vomiting in some patients, fever uncommon.

Laboratory Criteria for diagnosis: Isolation from stool of two or more ill persons and not from stool of control patients or isolation of 10^5 organisms/g from epidemiologically implicated food, provided specimen is properly handled.

***Bacillus cereus* (Vomiting toxin)**

Clinical Description: 1 – 6 hours incubation period. Vomiting, some patients with diarrhea, fever uncommon

Laboratory Criteria for diagnosis: Isolation of organism from stool of two or more ill persons and not from stool of control patients or isolation 10^5 organisms/g from epidemiologically implicated food, provided specimen is properly handled.

Brucella

Clinical Description: Several days to several months usually >30 days incubation period. Weakness, fever, headache, sweats, chills, arthralgia, weight loss, and splenomegaly.

Laboratory Criteria for diagnosis: Two or more ill persons and isolation of organism in culture of blood or bone marrow; greater than fourfold increase in standard agglutination titer (SAT) over several weeks, or single SAT 1:160 in person who compatible clinical symptoms and history of exposure

Campylobacter jejuni/coli

Clinical Description: 2 – 10 days, usually 2- 5 days incubation period. Diarrhea (often bloody), abdominal pain, and fever.

Laboratory Criteria for diagnosis: Isolation of organism from clinical specimens from two or more ill persons or Isolation of organism from epidemiologically implicated food.

Cholera

Clinical description: An illness characterized by diarrhea and/or vomiting. Severity is variable.

Laboratory criteria for diagnosis: Isolation of toxigenic (cholera toxin-producing) *Vibrio cholerae* 01 from stool or vomitus, or

Significant rise in vibriocidal or antitoxic antibodies in acute- and early convalescent-phase sera, or

Significant fall in vibriocidal antibodies in early and late convalescent-phase sera among persons not recently vaccinated

Case classification

Confirmed: a clinically compatible illness that is laboratory confirmed

Confirmed case: a case that is classified as confirmed for reporting purposes.

Probable case: a case that is classified as probable for reporting purposes.

Laboratory-confirmed case: a case that is confirmed by one or more of the laboratory methods listed in the case definition under "Laboratory criteria for diagnosis". Although other laboratory methods are used in clinical diagnosis, only those listed are accepted for laboratory confirmation for reporting purposes.

Supportive laboratory results: specified laboratory results consistent with the diagnosis but not meeting the criteria for laboratory confirmation.

Epidemiologically linked case: a case in which the patient has/has had contact with one or

more persons who have/have had the disease, and the transmission agent by the usual modes of transmission is plausible. A case may be considered epidemiologically linked to a laboratory-confirmed case if at least one case in the chain of transmission is laboratory-confirmed.

Meets the clinical case definition: meets precisely the case definition. Although in clinical practice the diagnosis may be made with the use of other criteria, for reporting purposes the stated criteria must be met.

Clostridium botulinum

Clinical Description: 2 hours – 8 days; usually 12 – 48 hours incubation period. Illness of variable severity; common symptoms are diplopia, blurred vision and bulbar weakness; paralysis which is usually descending and bilateral, might progress rapidly.

Laboratory Criteria for diagnosis: Detection of botulinum toxin in serum, stool, gastric contents, implicated food or Isolation of organism from stool or intestines

Clostridium perfringens

Clinical Description: 6 –24 hours incubation period. Diarrhea and abdominal cramps; vomiting and fever uncommon.

Laboratory Criteria for diagnosis: Isolation of 10^5 organisms/gram from stool of two or more ill persons, provided specimen is properly handled or demonstration of enterotoxin in the stool of two or more ill persons or Isolation of 10^5 organism/gram from epidemiologically implicated food, provided specimen is properly handled.

Cryptosporidium spp. **(Parasitic)**

Clinical Description: 2 – 28 days: median: 7 days incubation period. Diarrhea, nausea, vomiting and fever.

Laboratory Criteria for diagnosis: Demonstration of oocysts in stool or in small-bowel biopsy of two or more ill persons

Cylospora cayetanensis **(Parasitic)**

Clinical Description: 1 – 14 days; median: 7 days incubation period. Diarrhea, nausea, anorexia, weight loss, cramps, gas, fatigue, and low grade fever; might be relapsing or protracted.

Laboratory Criteria for diagnosis: Demonstration of the parasite by microscopy or molecular methods in stool or intestinal aspirates or biopsy specimens from two or more ill persons or Demonstration of the parasite in epidemiologically implicated food.

***Escherichia coli* (Enterohemorrhagic E. coli 0157:H7 and others)**

Clinical Description: 1 – 10 days; usually 3 – 4 days incubation period. Diarrhea (often bloody), abdominal cramps (often severe), and little or no fever.

Laboratory Criteria for diagnosis: Isolation of *E. coli* 0157:H7 or other Shiga-like toxin-producing *E.coli* from clinical specimens from two or more ill persons or Isolation of *E. coli* 0157:H7 or other Shiga-like toxin-producing E. coli from epidemiologically implicated food.

***Escherichia coli* (Enterotoxigenic (ETEC)**

Clinical Description: 6 – 48 hours incubation period. Diarrhea, abdominal cramps, and nausea; vomiting and fever less common.

Laboratory Criteria for diagnosis: Isolation of organism of same serotype, demonstrated to produce heat – stable (ST) and/or heat – labile (LT) enterotoxin, from stool of two or more ill persons.

***Escherichia coli* (Enteropathogenic (EPEC)**

Clinical Description: variable incubation period. Diarrhea, fever, and abdominal cramps.

Laboratory Criteria for diagnosis: Isolation of organism of same enteropathogenic serotype from stool of two or more ill persons.

***Escherichia coli* (Enteroinvasive (EIEC)**

Clinical Description: variable incubation period. Diarrhea (might be bloody), fever, and abdominal cramps.

Laboratory Criteria for diagnosis: Isolation of same enteroinvasive serotype from stool of two or more ill persons.

***Giardia intestinalis* (Parasitic)**

Clinical Description: 3 – 25 days; median; 7 days incubation period. Diarrhea, gas cramps, nausea and fatigue.

Laboratory Criteria for diagnosis: Demonstration of the parasite in stool or small-bowel biopsy specimen of two or more ill persons.

Hepatitis A (Viral):

Clinical Description: 15 – 50 days; median: 28 days incubattion period. Jaundice, dark urine, fatigue, anorexia, and nausea.

Laboratory Criteria for diagnosis: Detection of immunoglobulin M antibody to hepatitis A virus (IgM anti-HAV) in serum from two or more ill persons who consumed epidemiologically implicated food.

***Listeria monocytogenes* (Diarrheal disease)**

Clinical Description: unknown incubation period. Diarrhea, abdominal cramps and fever.

Laboratory Criteria for diagnosis: Isolation of organism of same serotype from stool of two or more ill persons exposed to food that is epidemiologically implicated or from which organism of same serotype has been isolated.

***Listeria monocytogenes* (Invasive disease)**

Clinical Description: 2 – 6 weeks incubation period. Meningitis, neonatal sepsis and fever.

Laboratory Criteria for diagnosis: Isolation of organism from normally sterile site.

Norovirus (NoV)

Clinical Description: 12 – 48 hours (median: 33 hours) incubation period. Diarrhea, Vomiting, nausea, abdominal cramps and low-grade fever.

Laboratory Criteria for diagnosis: Detection of viral RNA in at least two bulk stool or vomitus specimens by real-time or conventional reverse transcriptase-polymerase chain reaction (RT-PCR) or Visualization of viruses (NoV) with characteristic morphology by electron microscopy in at least two or more bulk stool or vomitus specimens or two or more stools positive by commercial enzymes Immunoassay (EIA)

Salmonellosis

Clinical description: An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. Asymptomatic infections may occur, and the organism may cause extraintestinal infections.

Laboratory criteria for diagnosis: Isolation of *Salmonella* from a clinical specimen

Case classification

Probable: a clinically compatible illness that is epidemiologically linked to a confirmed case

Co*nfirmed:* a case that is laboratory confirmed

Note: Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases.

Shigella spp.

Clinical Description: 12 hours – 6 days, usually 2 – 4 days incubation period. Diarrhea (often bloody), often accompanied by fever and abdominal cramps.

Laboratory Criteria for diagnosis: Isolation of organism of same serotype from clinical specimen from two or more ill persons or isolation of organism from epidemiologically implicated food.

Staphylococcus aureus

Clinical Description: 30 minutes – 8 hours; usually 2 – 4 hours incubation period. Vomiting and diarrhea.

Laboratory Criteria for diagnosis: Isolation of organism of same phage type from stool or vomitus of two or more ill persons or detection of enterotoxin in epidemiologically implicated food or isolation of 10^5 organisms/gram from epidemiologically implicated food. Provided specimen is properly handled.

Streptococcus, group A

Clinical Description: 1 – 4 days incubation period. Fever, pharyngitis, scarlet fever and upper respiratory infection.

Laboratory Criteria for diagnosis: Isolation of organism of same M. or T. type from throats of two or more ill persons, or isolation of organism of same M. or T. type from epidemiologically implicated food.

Trichinella spp **(Parasitic)**

Clinical Description: 1 – 2 days for intestinal phase; 2 – 4 weeks for systematic phase incubation period. Fever, myalgia, periorbital edema, and high eosinophil count.

Laboratory Criteria for diagnosis: Two or more ill persons and positive serologic test or demonstration of larvae in muscle biopsy.

Typhoid Fever

Clinical description

An illness caused by *Salmonella* typhi that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough. Howeve r, many mild and atypical infections occur. Carriage of *S. typhi* may be prolonged.

Laboratory criteria for diagnosis: Isolation of S. typhi from blood, stool, or other clinical specimen

Case classification

Probable: a clinically compatible illness that is epidemiologically linked to a confirmed case in an outbreak

Note: Isolation of the organism is required for confirmation. Serologic evidence alone is not sufficient for diagnosis. Asymptomatic carriage should NOT be reported as typhoid fever.

***Vibrio cholerae* (01 or 0139)**

Clinical Description: 1 – 5 days incubation period. Watery diarrhea, often accompanied by vomiting.

Laboratory Criteria for diagnosis: Isolation of toxigenic organism from stool or vomitus of two or more ill persons or significant rise in vibriocidal, bacterial – agglutinating, or antitoxin antibodies in acute and early convalescent – phase sera among persons not recently vaccinated or isolation of toxigenic organism from epidemiologically implicated food.

***Vibrio cholerae* (non - 01 and non - 0139)**

Clinical Description: 1 – 5 days incubation period watery diarrhea

Laboratory Criteria for diagnosis: Isolation of organism of same serotype from stool of two or more ill persons.

Vibrio parahaemolyticus

Clinical Description: 4 – 30 hours incubation period, Diarrhea.

Laboratory Criteria for diagnosis: Isolation of Kanagawa – positive organism from stool of two or more ill persons or Isolation of 10^5 Kanagawa – positive organisms/gram from epidemiologically implicated food, provided specimen is properly handled

Yersinia enterocolitica

Clinical Description: 1 – 10 days; usually 4 – 6 days incubation period, diarrhea and abdominal pain (often severe)

Laboratory Criteria for diagnosis: Isolation of organism from clinical specimen from two or more ill, persons or isolation of pathogenic strain of organism from epidemiologically implicated food.

6.3 Definitions

Acceptable Quality Level (AQL) – also known as Assured Quality Level is the maximum percent nonconforming (or the maximum number of non-conformities per hundred units) that, for purposes of sampling inspection, can be considered satisfactory as a process average.

Acceptance number(s) – the maximum number(s) of defectives in an attribute sampling plan for which a lot will be accepted.

Active surveillance – surveillance wherein public health officers seek reports from participants in the surveillance system on a regular basis, rather than waiting for the reports.

Acute diarrhea/acute gastroenteritis - patient passing out looser than normal stools with or without vomiting for less than 2 weeks

Adulterated food – food that contains any poisonous or deleterious substances in a quantity which may render it injurious to health, or has been processed, prepared, packed or held under unsanitary conditions, where valuable nutrients have been in part or in whole omitted thereof.

Agent - A factor (microorganism, chemical substance, etc) whose presence or excessive presence is essential for the occurrence of disease.

Analytical epidemiology - The aspect of epidemiology concerned with the search for health-related causes and effects. It uses comparison groups, which provide baseline data to quantify the relationship between exposures and outcomes and to test hypotheses about causal relationships.

Appliance – includes the whole or part of any utensil, machinery, instrument, apparatus, or article used or intended for use in or for making, keeping/storing, preparing or supplying of any food.

Aseptic Sampling – sampling performed using sterile apparatus and methodologies to prevent microbiological contamination of the sample.

Attack rate - Proportion of people becoming ill after a specified exposure.

Bakery, bake house, cake kitchen or shop and similar establishments – any premises in which breads, pastries, cakes savories, or other bakers' small goods are baked or cooked for sale and any portion of such premises used for storage of yeast, flour or other ingredients, of used for the kneading or working with dough.

Batch – is a definite quantity of a commodity produced under the same conditions and processing date.

BFAD License to Operate – is a document issued by the BFAD for the purpose of an establishment to engage in the manufacture, selling and distribution (including importation and exportation) of mandated products

Broker – an individual or firm which acts as an intermediary or who arrange contracts between a buyer and seller, usually charging a commission or fee.

Carrier - A person or animal that harbors a specific infectious agent without showing signs of clinical illness and is capable of transmitting the agent to others.

Case: An occurrence of illness as defined by investigators.

Case definition: A set of diagnostic criteria that must be fulfilled to be regarded as a case of a particular disease. Case definitions can be based on clinical criteria, laboratory criteria or a combination of the two.

Case classification: Gradations in the likelihood of being a case (e.g. Possible/probable/confirmed). This is particularly useful where early reporting of cases is important and where there are difficulties in making definite diagnoses (e.g. specialized laboratory tests required).

Case-control study: Observational study in which subjects are enrolled based on the presence (cases) or absence (controls) of the disease of interest. Information is collected about earlier exposures and compared between cases and controls.

Case-fatality ratio: The proportion of all cases that die because of the disease. The cas e-fatality ratio will vary depending on the case definition used.

Caterer – any person, firm or corporation maintaining or operating a kitchen or any similar establishment for the preparation, purveying, cooking or processing of food or drink for sale or hired to serve to persons elsewhere.

Causative Agent – microorganism causing the disease.

cGMP (Current Good Manufacturing Practices) – is the system of quality assurance aimed at ensuring that products are consistently manufactured to a quality appropri ate for their intended use. It is thus concerned with both manufacturing and quality control processes and procedures.

Chilled fish – fresh fish that has been subjected to zero degree Celsius ($0\ ^{o}C$).

Chilled meat – refers to meat and meat products th at have been reduced in temp erature between 4°C and –1.5°C.

Code marks – markings which identify a lot or a distinct portion of lot

Cohort study- Observational study in which subjects are enrolled based on presence (exposed) or absence (unexposed) of risk factors. Subjects are followed over time for the development of a disease outcome of interest.

Coliform Organisms (Total Coliform) - Refers to any rod-shaped, non-spore-forming, Gram-negative bacteria capable of growth in the presence of bile salts, or other surface-active agents with similar growth inhibiting properties which are cytochrome-oxidase negative and able to ferment lactose at either 35 or 37^{o} C with the production of acid, gas, and aldehyde within 24-48 hrs.

Consumer food producing establi shment – owner of the facility or establishment responsible for the production of food from animal origin like farm animal production, processing plant for animal products, like egg, milk and animal feedstuff.

Common source outbreak - An outbreak that results from a group of persons being exposed to a common agent. If the group is exposed over a relatively brief period of time (i.e. all cases occur within one incubation period) the common source outbreak is further classified as a point source outbreak.

Consumer's risk – the risk a consumer takes that a lot will be accepted by a sampling plan even though the lot does not conform to requirements.

Container – any type of receptacle, package, wrapper, or confining band used in packing or marketing fish.

Contamination - the presence of infectious or non-infectious agent in an inanimate article or substance.

Contamination in food - Presence of a disease agent on/or in food or any object that may come into contact with food.

Contamination in water - A general term referring to the introduction of materials not normally found in water that make the water less desirable or unfit for its intended use.

Control - the comparison group of persons without the disease under investigation in a case-control study.

Control Point (CP) - Point, step or procedure that controls food safety hazards, including biological, physical, and chemical hazards; generally is a receiving or storage point.

Critical Control Point (CCP) - A point, step or procedure in the product-handling process where controls can be applied and a food safety hazard can be prevented, eliminated, or reduced to safe levels.

Cross contamination - The transfer of biological, physical or chemical hazards to food products by dirty sanitation rags, contact with other raw food products, previously cooked food, dirty contact surfaces or dirty food handler's hands.

Dairies – establishments for the production, sale or distribution of milk or milk products such as butter or cheese.

Decontaminate - is to remove contamination from somebody or something; to remove unwanted chemical, radioactive, or biological impurities or toxins from an object.

Demographic information - The "person" characteristics (age, sex, occupation, ethnicity, etc.) of descriptive epidemiology used to characterize the population at risk.

Descriptive epidemiology - The aspect of epidemiology concerned with organizing and summarizing health-related data according to time, place and person characteristics.

Diffuse outbreak – A disseminated point source outbreak that is not recognizable because There may not be an increase in the number of cases at the local level but is detectable when data are aggregated over a larger area. The use of advanced laboratory subtyping methods may greatly enhance detection.

Disinfect - rid something of germs: to clean something so as to destroy disease-carrying microorganisms and prevent infection.

Disinfection - Water treatment processes designed to destroy disease-causing micro-organisms. The efficacy of disinfection is often assessed by measuring the coliform group of indicator organism.

Dose response effect - With increasing magnitude of exposure to contaminated food source, the magnitude and/or frequency of the outcome also increases.

Drinking Water - water intended for direct human consumption or for use in food preparation.

Endemic - The constant presence of a disease within a given geographic area or population group.

Epidemic – The occurrence of cases of a disease (illness) above the expected or baseline level, usually over a given period of time, in a geographic area or facility, or in a specific population group.

Etiologic Agents – microorganism causing the infection

Exposure - Someone who has come in contact with an agent in a manner that may cause disease.

Facultative Anaerobic - Organisms that can use free-oxygen or can grow in the absence of atmospheric oxygen.

Facultative Bacteria - Bacteria that can adapt themselves to growth and metabolisms under aerobic and anaerobic conditions.

Fish – includes all fish and other aquatic species such as crustaceans (crabs, prawns, shrimps and lobsters), cephalopods (squid, cuttlefish and octopus) and mollusks (clams, mussels, scallops, oyster, snail and gastropods.

Fishery products – includes all seawater or freshwater animals and other products of aquatic living resources or parts thereof, e.g. seawater invertebrates, etc.

Food – Any substance, whether processed, semi processed or raw which is intended for human consumption and including beverages, chewing gum and any substance which has been used as an ingredient on the manufacture, preparation or treatment of "food" but excluding cosmetics, tobacco and substances only used as drugs.

Food Cart – a non-enclosed, movable food stand, with or without wheels, selling take-out foods and / or drinks such as bread, pastries, cakes, bottled or canned drinks or in mechanical dispensers, and usually located in the fast food areas of malls, atriums, shopping complex or multi-purpose establishments.

Food Establishment – an establishment where food or drinks are manufactured, processed, stored, sold or served, including those that are located in vessels.

Food Establishment Operator – any person who by ownership or contract agreement is responsible for the management of one or more food establishments.

Food Handler – any person who handles, stores, prepares, serves food, drinks or ice or who comes in contact with any eating or cooking utensils and food vending machines.

Foodborne disease - Any disease of an infectious or toxic nature caused by consumption of food.

Food or water-borne outbreak - an incident in which 2 or more persons experience a similar gastrointestinal illness after ingestion or consumption of a common food or water in the past 4 weeks.

Foodborne intoxication - Illness caused by ingestion of toxins produced in food by bacteria as a naturally occurring by-product of their metabolic processes.

Food hygiene - All conditions and measures necessary to ensure the safety and suitab ility of food at all stages in food growth, distribution and preparation.

Food safety - Assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.

Food Stall – a permanently constructed food booth with partition walls, dividers or equivalent, with food showcases and food displays, counters, with or without kitchen, selling cooked meals or snack foods and usually found in fastfood areas of multi-purpose establishments. They are sometimes ref erred to as self service restaurants.

Frozen fish – fish that has been subjected to a freezing process sufficient to reduce the temperature of the product to minus 18 degrees Celsius (-18^{o}C) in order to preserve its quality and to maintain it at this temperature.

Gram-Negative Bacteria - Bacteria that decolorize and accept the safranin stain which appears pink using the Gram-stain technique.

Grocery – where staple food articles commonly called "groceries" are handled and sold.

HACCP system - The Hazard Analysis and Critical Control Point (HACCP) system is a scientific and systematic way of enhancing food safety from primary production to final consumption through the identification, evaluation and control of hazards which are significant for food safe ty.

Hazard - A biological, chemical or physical agent in or property of food that may have an adverse health effect.

Health Certificate – a certification in writing, using the prescribed form, and issued by the municipal or city health officer to a person after passing the required physical and medical examinations and immunizations.

Health Officer – provincial, City or Municipal Health officer.

Histogram - A graphic representation of the frequency distribution of a continuous variable. Used in descriptive epidemiology to describe an outbreak over time.

Host - A person or animal that can be infected by an infectious agent under natural conditions (as opposed to experimental conditions).

Incidence - Number of new cases in a defined period of time in a specified population, divided by the population at risk (or person-time at risk).

Incineration – heating an organic substance until all organic matter is driven off and only ash remains .

Incubation period: The time interval between the initial contact with an infectious agent and the first appearance of symptoms associated with the infection.

Infection: Entry and development or multiplication of an infectious agent in the body of persons or animals.

Infectious disease - A clinically manifest disease resulting from an infection (see Infection).

Inspection level – determines the relationship between the lot or batch size and the inspection level to be used for any particular requirement will be as prescribed by the written procedure.

Laboratory confirmed *Salmonella* infection - patient who is culture-positive for *Salmonella* from any specimen type

Local Health Authority (LHA) – an official or employee responsible for the application of a prescribed health measure in a local political subdivision. For the provincial level, the local health authority is the Governor and the Mayor for a city or municipality as the case may be.

Lot – is a definite quantity of food items of a single type, grade class, size and composition which is processed in the same manner and bears the same label; a lot may consist of one or several batches or parts of a batch.

Lot size – the number of units of product in a lot.

Mean, arithmetic - Measure of central location called the average. Calculated by adding all the individual values in a group of measurements and dividing it by the number of values in the group.

Measure of association - A quantified relationship between exposure and outcome, including relative risk, risk difference and odds ratio.

Median - Measure of central location which divides a set of data into two equal parts.

Minimal Processing – includes all of the operations (washing, selecting, peeling, slicing, etc.) that must be carried out before blanching in a conventional processing line and that kee p the food as a living tissue.

Minimally Processed Foods – include meat and fresh products, with some added value to the product after undergoing processes such as chopping, husking, coring, low level irradiation, and individual packaging, compared with the conventional food preservation processes.

Minimally Processed Fruits and Vegetable – are products that contain living tissues or those that have slightly modified their freshness condition but keep their quality and character similar to those of fre sh products.

Minimally Processing Method – include those procedures that cause the least possible change in food quality (keeping their freshness appearance) but at the same time provide the food with enough useful life to transport from the production site to the consumer.

Misbranding – indicates all possible conditions of fraud, mislabeling, imitation or misrepresentation of food products.

Most Probable Number (MPN) - A statistical method of determining microbial populations. A multiple dilution tube technique is utilized with a standard medium and observations are made for specific individual tube effects. Resultant coding is translated by mathematical probability tables into population numbers.

Normal Inspection – is used when there is no evidence that the quality of the product being submitted is better or poorer than the specified quality level. It shall be carried out at the start of the inspection.

Notifiable disease - A disease that must be reported to the authorities by law or ministerial decree.

Odds ratio - (also known as cross product ratio). Measure of association which quantifies the relationship between an exposure and outcome from an analytical study (most often a case -control study).

On-line sampling – means a sampling undertaken within the accredited food processing plant other than cold storage

Organoleptic examination – visual examination of gross filth or detection of odors.

Outbreak - Synonymous with *Epidemic*.

Point source outbreak – A localized increase in the incidence of a disease linked to a family or community event.

Potable water - Water suitable (Both health and aesthetic considerations) for drinking and cooking purposes.

Pre-accreditation sampling – collection of samples prior to accreditation of food establishment to determine/verify the hygiene and sanitation status.

Pre-packaged product – any product packaged in a container in such a manner that is ordinarily sold to, or used or purchased by a consumer without being re -packaged.

Prevalence - The number or proportion of cases in a defined population.

Prevalence rate - The proportion of persons in a population who have a disease at a specified point in time or over a specified period of time.

Processed food – shall refer to food that has been subjected to some degree of processing, (e.g. milling, drying, concentrating, canning, etc.) which partially or completely changes the physicochemical and/or sensory characteristics of the raw material.

Producer's risk – the risk that a producer takes that a lot will be rejected by a sampling plan even though the lot conforms to requirements.

Propagated outbreak - An outbreak that does not have a common source but instead spreads from person to person.

Random sample – a sample that was chosen in such a way that every sample or unit in the lot had an equal chance of being selected.

Rate - Measure of disease frequency where the number of events is related to the population involved.

Raw Water - untreated, undisinfected surface or groundwater.

Raw milk - milk produced under hygienic and sanitary condition that has not been subjected to any processing intended to alter the quality and compositional characteristics of milk.

Readily Perishable Food – any food of such type or in such condition as may spoil and which consis t in whole or in part of meat, poultry, fish, shellfish, milk or milk products, eggs or other ingredients capable of supporting the progressive growth or micro-organisms which can cause food infection or food intoxication. This does not include products i n hermetically sealed containers processed by heat to prevent spoilage, and dehydrated, dried or powdered products as low in moisture content as to produce development of micro-organisms.

Reduced Inspection – uses the same quality level as for normal insp ection, but requires a smaller sample for inspection.

Regulatory Samples – samples collected by inspectors at the accredited food establishments and brought to food testing laboratory for analysis to determine the presence of disease and whether the level of drug residue, harmful substances, additives, contaminants, toxins and microbes conform to the standards and requirements of the Philippines.

Relative risk - Measure of association where the risk of an illness (attack rate) is compared between a group of exposed subjects and a group of unexposed subjects.

Representative sample – sample that reflects the properties of interest of the population from which it is taken.

Reservoir of infection - Ecological niche where a pathogen lives and multiplies and upon which it depends for its survival. Reservoirs include human reservoirs, animal reservoirs and environmental reservoirs.

Residual Chlorine - When a sufficient dosage of chlorine is applied to water, microorganisms of sanitary significance are destroyed and there is a reaction on all the oxidizable matter. After all these reactions have taken place at the end of a specified contact time, there remains a certain minute quantity of chlorine in the water. This is detected as residual chlorine. Its presen ce in water is usually an indication of sufficiency of treatment or chlorination, and is therefore an assurance of protection of the bacteriological quality.

Restaurant – coffee shops, canteens panciteria, bistro, carinderia, fast food, refreshment parlor s, cafeteria, snack bars, cocktail lounge, bars, disco, night club, food kitchens caterer's premises and all other eating or drinking establishments in which food or drink is prepared for sale elsewhere or as part of a service of a hospital, hotel, motel, boarding house, institution caring for people and other similar establishments.

Risk assessment - Scientific evaluation of known or potential adverse health effects resulting from human exposure to foodborne hazards. The risk assessment process involves f our steps: hazard identification, hazard characterization, exposure assessment and risk characterization.

Sample – is one or more sampling units selected or drawn at random without regard to their quality from the population or lot or batch

Samples – samples of food products brought by any consumer to food testing laboratory for laboratory analyses.

Sampling inspection – that type of inspection in which samples consisting of one unit or more units of food are selected at random from a lot and examined for one or more quality characteristics. Based upon this examination certain assumptions are made concerning the over -all compliance for the lot.

Sampling plan – a design that indicates the number of units to be collected from each lot and the criteria to be applied in accepting or rejecting the lot.

Sampling size (n) – the number of sample units comprising the total sample drawn from a lot or production.

Sample unit – a sample selected from the population (or collection of all items under consideration)

Sanitation Inspector – an officer employed by the national, provincial, city or municipal government, who enforces sanitary rules, laws and regulations and implements environmental sanitation activities.

Sanitary Engineer – a person duly registered with the Board of Examiners for Sanitary Engineers (RA 1364) and who heads the sanitation division or section or unit of the provincial / city / municipal health office or employed with the Department of Health or its regional field health units.

Sanitary Permit – the certification in writing of the city or municipal health officer or sanitary engineer that the establishment complies with the existing minimum sanitation requirements upon evaluation or inspection conducted in accordance with Presidential Decre es No. 552 and 856 and local ordinances.

Sanitize – an effective bactericidal treatment to render surfaces of utensils and equipment free of pathogenic microorganisms.

Sari-Sari Store – a convenience store where a variety of food and food materials and o ther household merchandise are sold in a small scale.

Secretary – the Secretary of Health

Sentinel surveillance – Surveillance conducted through monitoring key health events through sentinel sites, events, or providers.

Shellfish – all species of univalves or bivalves which are filter feeders such as lamellibranches mollusks and gastropods.

Shrimp or prawn – species of crustaceans with five pairs of walking legs and five pairs of abdominal swimming legs used for locomotion.

Single Sampling Plan – the number of sample items inspected shall be equal to the sample size given by the plan; the lot shall be considered *acceptable* if the number of nonconforming items found in the sample is equal to or less than the acceptance number; the lot shall be conside red not acceptable if the number of nonconforming items is equal to or greater than the rejection number

Single Service Articles – straws, cups, toothpick, chopsticks, containers, lids or closures, plates, knives, forks, spoons, stirrers, paddles, placema ts, napkins, doilies, wrapping and packaging materials and all other similar articles which are made wholly or in part from paper, paper board, molded pulp, foil, wood, synthetic, and other readily destructible materials which are intended to be discarded after use.

Source of infection - The person, animal, object or substance from which an infectious agent passes to a host. The source of infection may or may not be part of the reservoir of infection.

Sporadic case - a case that cannot be linked epidemiologically to other cases of the same illness.

Standard Methods - Methods of water analysis prescribed by a joint action of the American Public Health Association, American Water-works Association. Water Pollution Control Federation or US Environmental Protection Agency

Sterilization - is any process or procedure designed to entirely eliminate viable microorganisms from a material or medium. It can be accomplished by the use of heat, chemicals, radiation or filtration.

Surveillance - The systematic collection, analysis and interpretation of data essential to the planning, implementation and evaluation of public health practice, and the timely dissemination of this information for public health action.

Syndromic surveillance – Surveillance that captures a set of symptoms rather than a specific disease entity.

Thermotolerant (Fecal) Coliform - Subgroup of coliform bacteria that has a high positive correlation with fecal contamination associated with all warm-blooded animals. These organisms can ferment lactose at 44.5^{o}C and produce gas in a multiple tube procedure (EC Confirmation) or acidity with the Membrane Filter procedure (M-FC Medium)

Tightened Inspection – uses the same quality level as for normal inspection, but requires more stringent acceptance criteria.

Toxico-infection - Illness caused by ingestion of an infectious agent that produces a toxin in the body (as opposed to in the food).

Traceback - Food traceback is defined as tracing of the implicated food backwards through its distribution and production channels to its manufacturing plant.

Two-Class Sampling Plan – ideally suited for regulatory, port-of-entry and other consumer-oriented situations where little information is available concerning the microbiological history of the lot; t his plan is independent of lot size if the lot is large in comparison to sample size

Unannounced sampling – collection of samples on unannounced visit performed by inspectors to verify compliance with HACCP program by the processing establishment.

Unprocessed Food – shall refer to food that has not undergone any treatment resulting in substantial change in the original state but which may have been divided, boned, skinned, peeled, ground, cut, cleaned, trimmed, fresh, frozen or chilled.

Utensils And Equipment – any kitchenware, tableware, glassware, cutlery, containers, stoves, sinks, dishwashing machines, tables, meat blocks and other equipment used in the storage, preparation, distribution, or serving of food.

Vector - An animate intermediary in the indirect transmission of an agent that carries the agent from a reservoir to a susceptible host.

Vehicle - An inanimate intermediary (e.g. food) in the indirect transmission of an agent that carries the agent from a reservoir to a susceptible host.

Vermin – a group of insects or small animals such as flies, mosquitoes, cockroaches, lice, bedbugs, mice and rats which are vectors of diseases.

Waterborne Disease Outbreak: An incident in which two or more persons experience a similar illness after consumption or use of water intended for drinking, epidemiologic evidence implicates the water as a source of the illness.

Water Quality - those bacteriological, chemical, physical biological or radiological characteristics by which the acceptability of the water is evaluated. The term "quality" must be considered relative to the proposed use of water.

Water Supplier - An entity, government or private company responsible for source development, water abstraction, treatment and distribution of water.

Zoonosis: An infectious disease that is transmissible under natural conditions from animals to humans.

20-footer container van – container with a cubic capacity of 28 cu. m and equipped with a refrigerated machinery (dual voltage electrical power; 15ft-220/15ft-440 main power cable; 31-day chart recorder; fresh air exchange valve; automatic defrost timer; temperature digital display) and cooling capacities range from + 20 degree centigrade up to –20 degree centigrade.

40-footer container van - container with a cubic capacity of 56 cu. m and equipped with a refrigerated machinery (dual voltage electrical power; 15ft-220/15ft-440 main power cable; 31-day chart recorder; fresh air exchange valve; automatic defrost timer; temperature digital display) and cooling capaciti es range from + 20 degree centigrade up to –20 degree centigrade.

Annex 1A

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May 11, 2005

ADMINISTRATIVE ORDER
No. 2005-0012

SUBJECT: Guidelines for Foodborne Disease Surveillance of the Department of Health (DOH), Philippines with Salmonella as pilot pathogen

I. RATIONALE

Diarrheal diseases has been the number 1 cause of morbidity in the Philippines for many years to date with a morbidity rate of 913.6/100,000 (FHSIS 2002 data). Majority of cases are secondary to intake of contaminated food or water. Studies on the etiology of foodborne diseases worldwide show that 3 diseases – Norovirus infection, Campylobacteriosis, and Salmonellosis account for 70% of cases of known etiology transmitted by food (Present State of Foodborne Diseases in OECD countries, WHO, 2003). However, nontyphoidal Salmonella and the two other aforementioned etiologic agents may be an under-reported and often unrecognized cause of foodborne illness in the Philippines since hospitals within the Philippine Department of Health (DOH) currently conduct routine screening of stool for *Vibrio cholerae* and *Salmonella typhi* but do not routinely culture stool for other causes of gastroenteritis.

The Research Institute for Tropical Medicine (RITM), the coordinating center of the Philippine Antimicrobial Resistance Surveillance Program routinely screens for *Salmonella* from all specimens. In a review of ARSP data from 1988 to 2002, 18% of all stool isolates were salmonella, 15% non-typhoidal and 3% typhoidal Salmonella. In 2002, DOH and RITM, with assistance from United States Centers for Disease Control (CDC), conducted a pilot program to identify the most common bacterial etiologic agents of acute diarrhea among patients at the San Lazaro Hospital. In that study, 54% of patients with *Salmonella* isolated from their stool had non-typhoidal *Salmonella*, providing further evidence that nontyphoidal Salmonella may be more prevalent than *Salmonella typhi*.

Treatment of Salmonella is complicated by the emergence of strains that are resistant to multiple antimicrobials. In the Philippines, resistance of nontyphoidal Salmonella to ciprofloxacin, a fluoroquinolone had risen from <1% in 1994 to 7% in 2003, a matter of serious concern considering the very limited number of alternative antibiotics left for the clinician's use. On the other hand, although *S. typhi* had been generally sensitive to the first line drugs chloramphenicol, ampicillin and cotrimoxazole, there have been documented rare outbreaks of drug resistant typhoid fever as well, thus the need to sustain surveillance for this organism.

STATEMENT/DECLARATION OF POLICY

The epidemiology of typhoid fever is well known; however, the epidemiology of non-typhoidal Salmonella infection in the Philippines has yet to be described. Information such as

risk factors for acquiring nontyphoidal Salmonella infection and developing drug-resistant infection are wanting. Thus, the Department of Health is initiating a foodborne disease surveillance with Salmonella as a pilot pathogen by analyzing epidemiologic, clinical and laboratory data (including serotypes), data from which can be used to tract transmission of foodborne/waterborne infections from the suspected vehicle(s) to patients and to develop evidence-based risk assessment and risk management guidelines. This is in accordance with WHO Global Strategy for Food Safety which called on member states to utilize surveillance as the basis for formulation of national strategies to reduce food-related risks (WHO Global Strategy for Food Safety, 2002). **These guidelines are prescribed for reference and guidance of all reporting hospitals and other health facilities covered by the Salmonella surveillance.**

I. OBJECTIVES

A. General Objective:

To enhance/expand the existing surveillance on Salmonellosis utilizing existing personnel and infrastructure in the Philippines.

B. Specific Objectives:

Specific Objectives:

1. Determine the risk factors for the disease
2. Determine the food vehicles associated with *Salmonella* serotypes
3. Determine antimicrobial resistance patterns of *Salmonella*
4. Utilize the data to draw up recommendations for the control of foodborne diseases secondary to *Salmonella*
5. Determine how to integrate the data of NEC, ARSRL, ERL, BFAD and ARSP sentinel sites
6. Determine feasibility of including non-typhoidal *Salmonella* in the National Epidemic Sentinel Surveillance System (NESSS)

II. SCOPE AND COVERAGE

The Salmonella surveillance will be implemented in the following Antimicrobial Resistance Surveillance Program (ARSP) sentinel sites:

1. Corazon Locsin Montelibano Medical Center (Region 6)
2. Eastern Visayas Regional Medical Center (Region 8)
3. Vicente Sotto Memorial Medical Center (Region 7)
4. Davao Medical Center (Region 11)
5. Baguio General Hospital and Medical Center (CAR)
6. Cotabato Regional Hospital and Medical Center (Region 12)
7. Bicol Regional Training and Teaching Hospital (Region 5)
8. San Lazaro Hospital (NCR)
9. Rizal Medical Center (NCR)
10. Zamboanga Medical Center (Region 9)
11. Celestino Gallares Memorial Hospital (Region 7)

with their corresponding Regional Epidemiology Sentinel Units (RESU)/Local Epidemiology Sentinel Units (LESU), the RITM Antimicrobial Resistance Surveillance Reference Laboratory

(ARSRL), RITM Enteric Reference Laboratory (ERL), and the Bureau of Food and Drugs (BFAD).

III. DEFINITION OF TERMS\

1. Acute diarrhea/acute gastroenteritis – patient passing out loose stools/vomiting for less than 2 weeks
2. Laboratory confirmed Salmonella infection – patient who is culture-positive for Salmonella from any specimen type
3. Food or water-borne outbreak – an incident in which 2 or more persons experience a similar gastrointestinal illness after ingestion or consumption of a common food or water in the past 4 weeks.
4. Sporadic illness – all other cases acute diarrhea/acute gastroenteritis in which do not satisfy the definition of outbreak listed in item 3

IV. GUIDELINES AND PROCEDURES

A. Specimen collection, storage and transport of human specimens

1. All human specimens from suspected food or waterborne ***outbreaks*** will be sent to the RITM ERL for aerobic culture and sensitivity tests. Stool specimen should be placed on Cary Blair transport medium to be provided by the RITM Enteric Reference Laboratory, properly labeled with the information that includes patient's name, age, date of collection and address. All stool specimens should be stored in a stool specimen box with 4 ice packs to maintain a temperature of 4 ^{o}C until testing is performed. Requesting physician should fill up laboratory request form (APPENDIX 2).
2. For patients hospitalized at any ARSP sentinel site, a sufficient amount of bulk stool, approximately 5 ml blood, or other appropriate specimen will be obtained from cases of acute diarrhea/acute gastroenteritis or suspected cases of Salmonella infection during admission in the hospital, as deemed necessary by the attending physician. However, specimen collection should preferably be done on the day of presentation to the hospital or within 48 hours of hospital admission.
3. All specimens should be properly transported to the laboratory within 4 hours after collection.

B. Specimen collection, storage and transport from suspected food vehicles

1. All **processed food samples** suspected to be the vehicle of foodborne/waterborne illness will be sent to the BFAD for identification of possible bacterial agents of foodborne infection.
2. All **unprocessed food** suspected to be the vehicle of foodborne illness will be sent to the appropriate agency of the Department of Agriculture (DA) for culture and sensitivity tests. The following are the designated DA testing agencies for various types of unprocessed food and meat products:

    a. Bureau of Animal Industry- live food animals

b. National Meat Inspection Commission - slaughtered food animals(meat and meat products, local and imported)
c. Philippine Coconut Authority - coconut and coconut products
d. Bureau of Plant Industry- agriculture crops and by-products
e. Bureau of Agriculture and Fisheries Product Standards - agricultural fish products
f. National Dairy Authority - locally produced milk, small scale milk products
g. Bureau of Fisheries and Aquatic Resources (BFAR) – fresh chilled frozen fish and fishery products

A Memorandum of Understanding (MOU) will be drawn between the DOH and DA to facilitate coordination between the two agencies.

3. At least 200 g or ml of the suspected food/water vehicle should be aseptically collected and placed in a sterile container.
4. If the amount of the suspected food vehicle is big, representative samples should be collected.
5. Specimens should be transported to the BFAD/appropriate DA agency immediately at 4^{o}C in case of nonfrozen foods. In case of frozen foods, specimens should be transported in a box with dry ice.
6. Food/water sample should be labeled by stating the name of the sample, amount of sample, name of specimen collector, particulars of place where sampling was made, date and time of sampling. Nature and number of units with batch code or lot if suspected food is manufactured should be indicated.
7. All specimens should be properly transported to the laboratory within 4 hours after collection.

C. Surveillance Procedure for Sporadic Cases (hospitalized)

1. Patient suspected to have acute diarrhea/gastroenteritis/Salmonella infection is seen at the hospital outpatient department, emergency room or admitted.
2. Physician evaluating patient/admitting physician fills up the Foodborne Illness Complaint Worksheet and orders culture and susceptibility test of appropriate specimens.
3. Specimen collection is done by either the watcher or hospital staff.
4. Laboratory testing of human specimens for culture and sensitivity is done at the ARSP sentinel site laboratory
5. ARSP Lab informs RESU of cultures growing *Salmonella sp.* once detected.
6. RESU does the epidemiologic investigation, collects samples of suspected food/water vehicle for aerobic culture and sensitivity tests which they submit to BFAD or ARSP sentinel site laboratory or DA agency depending on the nature of the suspected food vehicle.
7. RESU does the traceback with BFAD if processed food; with DA if unprocessed food.
8. ARSRL coordinates with appropriate DA agency to obtain food isolate for confirmation
9. Sentinel site laboratories/BFAD/DA laboratory sends all Salmonella isolates (food/water/human) to ARSRL for confirmatory tests.
10. ARSRL does the confirmatory tests including Salmonella serotyping then forwards the result to NEC and the referring laboratory.

11. ARSRL encodes lab data while RESU encodes epidemiologic data using existing data management systems. RESU submits electronic copy of data to NEC. NEC shares its electronic files with ARSRL and vice versa.
12. ARSRL/NEC jointly generates biweekly summary of Salmonella isolates and provides copies to the DOH Executive Committee, DOH Food Safety Committee, and the DA

D. Surveillance Procedure for Outbreaks

1. R/LESU investigates outbreak, collects suspected food/water vehicle and human specimens and fills up Foodborne Illness Complaint Worksheet
2. LESU sends human specimens to RESU/RITM Enteric Reference Lab/ARSP Sentinel laboratory whichever is more readily accessible, processed food specimens to BFAD, and unprocessed food specimens to the appropriate DA agency. L/RESU coordinates with the appropriate DA agency in undertaking tracebacks of unprocessed food.
3. Follow procedure from Step 9 onwards enumerated above under Surveillance Procedure for Sporadic Cases. ARSRL provides copies of all confirmatory results to the referring laboratory of the DOH or DA.
4. Enteric Reference Lab forwards all test results to NEC as well as ARSRL for inclusion in the laboratory database
5. Enteric Reference Laboratory refers all onserotypable Salmonella isolates and those with unusual antimicrobial susceptibility patterns to the ARSRL for confirmatory tests.

The reporting system for the Salmonella Surveillance is attached as Appendix 3. Walk-in cases from BFAD will be excluded. Walk-in cases will be referred to the local government units or may be referred to the appropriate Rural Health Unit.

V. IMPLEMENTING GUIDELINES

A. Phases of Implementation

Implementation of the *Salmonella* Surveillance will be in 2 phases with the National Epidemiology Center (NEC) as lead agency starting July 1, 2005.

Phase 1 (pre-implementation phase) from July 1, 2005 to June 30, 2006 will consist of the following activities:

1. Organizational set-up and establishment of linkages
2. Preparatory activities such as development of the Manual of Procedures, laboratory and data management training, and training on epidemiology procedures to be utilized by the Department of Health and Agriculture reference laboratories and epidemiology surveillance units
3. Utilization of the Foodborne Illness Complaint Worksheet (Appendix 1) in the emergency room, outpatient department, and wards of all aforementioned ARSP sentinel sites for patients consulting for diarrhea and or vomiting
4. Traceback of suspected food/water vehicle, if any, by the NEC/RESU/LESU if such is **processed food** to be done in coordination with the Bureau of Food and Drugs (BFAD)

5. Confirmatory testing of all Salmonella isolates at ARSRL
6. Initial analysis of data

Phase 2 (implementation phase) commencing on July 1, 2006 onwards will consist of the following activities:

1. Implementation of an External Quality Assurance Program in all ARSP sentinel sites, BFAD, and DA laboratories by ARSRL
2. Monitoring visits of laboratories
3. Traceback of **all** suspected food/water vehicles, if any, by the NEC/RESU/LESU to be done in coordination with the Bureau of Food and Drug if such is **processed food** and in coordination with the Department of Agriculture reference laboratories if **unprocessed food**
4. encoding and analysis with bimonthly output of data by the NEC in coordination with the ARSRL with corresponding recommendations
5. advocacy activities for needed public health interventions, policy changes, revision of prevention and control measures

B. Roles and Responsibilities of Participating Agencies

1. National Epidemiology Center – serves as the lead agency in the surveillance

   a. NEC – Central Office
      1) Shall initiate the organizational set-up and establishment of linkages among offices/agencies involved in the surveillance
      2) Shall jointly draw up a Memorandum of Understanding (MOU) on the roles and responsibilities of each involved office/agency in the surveillance, if necessary
      3) Shall take the lead in putting together a Manual of Procedures for the surveillance
      4) Shall take the lead in developing a work and financial plan and/or proposal for funding for the surveillance
      5) Shall ensure that funds are provided to all offices/agencies involved in the surveillance for said purpose
      6) Investigates cases of laboratory confirmed Salmonella infection not covered by the RESUS and LESUS
      7) Shall undertake traceback of suspected food/water vehicle in cooperation with BFAD/DA agencies as necessary
      8) Encodes and collates epidemiologic data
      9) Generates bimonthly summary of data, its interpretation and corresponding recommendations in cooperation with the ARSRL on laboratory-confirmed Salmonella cases
      10) Provides assistance to RESUS and LESUS, if needed in the investigation of cases of foodborne/waterborne illness
      11) Disseminates urgent information/bulletins on occurrence of foodborne/waterborne infections to appropriate agencies of the DOH

   b. RESU
      1) Shall orient hospital staff of salmonella surveillance sentinel sites about the surveillance program

2) Investigates all cases with laboratory confirmed *Salmonella* infection identified from community outbreaks and from cases seen in the ARSP sentinel sites
3) Fills up laboratory request forms and submits appropriately labelled stool specimens from patients and samples of suspected food/water vehicles to the appropriate DOH or DA laboratory, respectively for culture and susceptibility tests
4) Inoculates stool specimens onto Cary Blair transport medium and ensures that these are transported at appropriate conditions to the RITM ERL/ARSP sentinel site laboratory
5) Transports all human and food/water specimens to the designated laboratory in the appropriate transport conditions
6) Shall undertake traceback of suspected food/water vehicle in cooperation with BFAD/DA agencies as necessary
7) Encodes and collates epidemiologic data
8) Submits reports of all investigations performed to NEC Central Office and other appropriate agencies/offices

c. LESU
1) Investigates all cases with laboratory confirmed *Salmonella* infection identified from community outbreaks
2) Enrols patients with laboratory confirmed *Salmonella* infection identified from community outbreaks
3) Fills up laboratory request forms and submit s appropriately labelled specimens from patients and samples of suspected food/water vehicles to the appropriate DOH or DA laboratory, respectively for culture and susceptibility tests
4) Transports all human and food/water specimens to the designated laboratory in the appropriate transport conditions
5) Shall undertake traceback of suspected food/water vehicle in cooperation with BFAD/DA agencies as necessary
6) Encodes and collages epidemiologic data
7) Submits reports of all investigations performed to NEC Central O ffice and other appropriate agencies

2. Antimicrobial Resistance Surveillance Reference Laboratory, RITM

a. Serves as the lead/reference laboratory of the surveillance
b. Shall take the lead in preparing the laboratory component of the Salmonella surveillance Manual of Procedures
c. Shall assist the NEC in preparing work and financial plan/proposal for funding of the Salmonella surveillance
d. Provides training programs on the relevant laboratory procedures of the surveillance in cooperation with the ERL and BFAD
e. Performs confirmatory tests of all referred Salmonella isolates
f. Coordinates with appropriate DA agency to obtain Salmonella isolates from food for confirmatory tests
g. Provides NEC results of confirmatory tests
h. Enters data into electronic files, generates a bim onthly summary of data, and provides copies of the data, its interpretation and recommendations to the

DOH Executive Committee, DOH Food Safety Committee, and DA in coordination with the NEC

3. Enteric Reference Laboratory, RITM

    a. Performs aerobic culture and sensitivity tests and serotyping of Salmonella isolates from human specimens from food/waterborne outbreaks submitted by NEC staff
    b. Provides Cary Blair transport medium to NEC staff
    c. Provides NEC results of aerobic culture, antimicrobial sensitivity tests and Salmonella serotyping as well as the ARSRL for inclusion in the laboratory database
    d. Refers all isolates of nonserotypable Salmonella and those with unusual antimicrobial susceptibility patterns to the ARSRL for confirmatory tests
    e. Cooperates with the ARSRL in its laboratory activities related to Salmonella surveillance

4. ARSP Sentinel Sites

    a. Clinical staff

        1) Administers Foodborne Illness Complaint Worksheet to cases of acute diarrhea/acute gastroenteritis/suspected cases of Salmonella consulting at the ER, OPD or admitted in the hospital
        2) Fills up laboratory request forms for stool aerobic culture and sensitivity test of enrolled patients within 48 hours from admission to the hospital

    b. Bacteriology staff

        1) Performs aerobic culture and sensitivity tests on human specimens from patients with acute diarrhea/acute gastroenteritis/suspected Salmonella infections and from community food/waterborne outbreaks submitted by NEC staff
        2) Refers all isolates of Salmonella to the ARSRL for confirmatory tests

5. Bureau of Food and Drugs

    a. Performs aerobic culture and sensitivity tests of suspected food vehicles from food/waterborne outbreaks submitted by NEC staff
    b. Provides the NEC/ARSRL with results of laboratory tests on suspected food/water vehicles
    c. Sends isolates of Salmonella to the ARSRL for confirmatory tests
    d. Shall participate in the preparation of the Manual of Procedures and work and financial plan or proposal for funding for the surveillance
    e. Cooperates with the ARSRL in implementing laboratory activities related to Salmonella surveillance

6. Food and Waterborne Disease Control Program

    a. Disseminates information obtained from the surveillance

b. Provides technical assistance on the prevention and control of food - and waterborne-diseases

7. Department of Agriculture Laboratories

a. Performs aerobic culture and sensitivity tests on suspected food vehicles from food/waterborne outbreaks submitted by NEC staff
b. Assists the NEC staff in investigating food/waterborne infections originating from unprocessed food
c. Provides the NEC/ARSRL with results of laboratory tests/reports on suspected food/water vehicles
d. Sends isolates of Salmonella to the ARSRL for confirmatory tests
e. Shall participate in the preparation of Manual of procedures and work and financial plan or proposal for funding of the surveillance

8. Steering Committee

A Steering committee will oversee the administration of the project whose functions will be the following:

a. Undertake monitoring and evaluation of the project
b. Develop work and financial plan
c. Recommend policy changes to the DOH Executive Committee

The Steering Committee will be composed of the following:

a. Chairperson – Undersecretary for Health Operations
b. Co-chair - Director, National Center for Disease Prevention and Control (NCDPC)
c. Members
   - Director, NEC
   - Head, NEC Surveillance Division
   - BFAD Deputy Director for Food
   - Program Manager, Food and Waterborne Diseases – DOH
   - Director, RITM
   - Head, ARSRL
   - Representative, RITM Enteric Reference Laboratory
   - Director, Bureau of Agriculture and Fisheries Product Standards (BAFPS)
   - Representative from World Health Organization (WHO)
   - Executive Assistant, Office of the Secretary

9. National Coordinating Committee

A National Coordinating Committee will serve as liaison between offices/agencies involved in the surveillance to ensure its smooth function and shall be composed of the following:

a. Chairperson - Head, NEC Surveillance Division
b. Members - Head, ARSRL
- Representative, BAFPS

10. Oversight Committee in ARSP Sentinel Sites

An oversight committee in each participating ARSP sentinel site shall be created to ensure compliance by physicians in filling up the Foodborne Illness Complaint Worksheet and shall be composed of the following:

a. Chairperson - Head, Chief of Clinics
b. Members - Head, Department of Pediatrics
Head, Department of Internal Medicine
Head, Records Department

It shall be the responsibility of every attending physician in all areas of the sentinel site to completely fill-up the Foodborne Illness Complaint Worksheet otherwise, sanctions shall be imposed by the Chief of Clinics on the erring physicians. Incompletely filled up forms shall not be accepted by the Records Department.

11. Office of the Secretary

The Office of the Secretary will be responsible for allotting funds to support the activities of the Salmonella Surveillance and shall be represented by the executive assistant to the Secretary of Health. **F**unding for the pre-implementation phase of the surveillance shall be derived from the Office of the Secretary's contingency funds. Once institutionalized, funds shall be provided to the involved agencies/offices to cover the costs of the surveillance.

VI. REPEALING CLAUSE

Administrative issuances and other related orders inconsistent with this Order are hereby repealed.

VII. EFFECTIVITY

This order shall take effect immediately.

MANUEL M. DAYRIT, MD, MSc
Secretary of Health

APPENDIX 1
Department of Health (DOH) Foodborne Illness Complaint Worksheet

Date of completion of worksheet: ____/____/_____ (mm/dd/yyyy)
Full name of person completing information: _____
Telephone _____ Organization _____

Patient Information

Name of hospital _____ Patient hospital number _____

Patient name _____ Telephone _____

Sex M __ F __ Occupation _____ Address _____

Date of admission ____/____/_____ (mm/dd/yyyy) Patient Outcome ___ Recovered ___ Died ___ Unknown

Date of Birth ____/____/_____ (mm/dd/yyyy) Date of onset ____/____/_____ (mm/dd/yyyy)

Symptoms: Fever __ Vomiting __ Diarrhea __ Bloody diarrhea __ Abdominal cramps __

Stool specimen submitted? Y __ N __ Date of specimen ____/____/_____ (mm/dd/yyyy)

Food History – Open Ended

Ask patient to tell all food and drink consumed in the 72 hours prior to onset of symptoms, or if organism identified, from the minimum to maximum incubation period. If this is part of an outbreak, focus on foods eaten in common.

Date	Time of day	Foods or dishes consumed	Eating establishment or grocery store – name and location

Food and Exposure History – Closed Ended

In the 72 hours before your illness began, did you do any of the following? [Y=Yes, N=No, U=Unknown]

Drink NAWASA/LOWA water	Y ( ) N ( ) U ( )	Drink boiled water	Y ( ) N ( ) U ( )
Drink bottled water	Y ( ) N ( ) U ( )	Drink deep well water	Y ( ) N ( ) U ( )
Drink rainwater	Y ( ) N ( ) U ( )	Drink unpasteurized milk	Y ( ) N ( ) U ( )
Wash your hands with soap	Y ( ) N ( ) U ( )	Eat pork	Y ( ) N ( ) U ( )
Eat beef	Y ( ) N ( ) U ( )	Eat chicken	Y ( ) N ( ) U ( )
Eat goat	Y ( ) N ( ) U ( )	Eat fish	Y ( ) N ( ) U ( )
Eat shellfish (oysters, clams, etc)	Y ( ) N ( ) U ( )	Eat eggs	Y ( ) N ( ) U ( )
Eat unpasteurized cheese	Y ( ) N ( ) U ( )	Eat home canned food	Y ( ) N ( ) U ( )
Eat spoiled or moldy food	Y ( ) N ( ) U ( )	Touch a cat	Y ( ) N ( ) U ( )
Touch a pig	Y ( ) N ( ) U ( )	Touch a goat	Y ( ) N ( ) U ( )
Touch a cow	Y ( ) N ( ) U ( )	Touch a chicken	Y ( ) N ( ) U ( )
Touch a reptile (lizard, turtle, etc)	Y ( ) N ( ) U ( )	Take antibiotics	Y ( ) N ( ) U ( )

Incubation periods of foodborne pathogens

Pathogen	Min	Max	Pathogen	Min	Max	Pathogen	Min	Max
B. cereus (short)	1 hr	6 hrs	E. coli O157:H7	3 days	8 days	Staph.aureus	30 min	8 hrs
B.cereus (long)	6 hrs	24 hrs	Hepatitis A	15 days	50 days	Shigella	12 hrs	96 hrs
Campylobacter	1 day	10 days	Salmonella (non typhi)	6 hrs	72 hrs	Vibrio cholerae	Few hrs	5 days
Cyclospora	1 day	14 days	Salmonella typhi	1 wk	3 wks	Viral GI	12 hrs	48 hrs
C.perfringens	6 hrs	24 hrs	Shellfish poisoning	Minutes	Few hrs	Yersinia	3 days	7 days

NOTE: If this case is outbreak-related, complete the BACK of this form

Outbreak-Related Questions

Is this patient part of an outbreak? Y ___ N ___

Name and address of a common location of exposure, eating establishment, etc, if any. _____
_____ ___

To which laboratory were specimens sent? _____

Please list all ill outbreak-related persons and notify Regional DOH, or Regional Epidemiology Surveillance Unit:

Name	Hospital number	Hosp. name	Birth-date	Sex	Telephone	Address	Onset date	Spe-cimen sent?	Ate the suspect food?	Relation to patient

---

Food Testing Questions

Is there a food exposure that is the suspected outbreak vehicle? Y ___ N ____

If yes, what is the product name (please be specific)? _____

Where was it consumed? _____

Is it available for testing? _____ [obtain the food, put in a sterile container, and send to the appropriate BFAD or Department of Agriculture laboratory]

What is the name of the brand of the food? _____

What is the UPC code number? _____

What is the lot number? _____

Manufacturer name and address _____

Department of Agriculture:

Bureau of Animal Industry	Live food animals
National Meat Inspection Commission	Slaughtered food animals, includes processed meats
Philippine Coconut Authority	Coconut and coconut products
Bureau of Plant Industry	Agriculture crops and by-products
Bureau of Agriculture and Fisheries Products Standards	Agricultural fish products
National Dairy Authority	Domestically produced milk
Bureau of Fisheries and Aquatic Resources	Fresh chilled frozen fish and fishery products

Bureau of Food and Drug — Processed foods

Appendix 2

(Hospital Address)

Microbiology/Parasitology Request Form

Name: _____ **Hosp. No.** |__|__|__|__|__|__|__|__|__|__|

Admission Date: |__|__|/|__|__|/|__|__|__|__| **(DD/MM/YY)** **Age:** |__|__| **Sex:** |__|__|
Ward/Bed: |__|__| **Specimen Date:** |__|__|/|__|__|/|__|__|__|__| **(DD/MM/YY)**

Specimen: _____

Diagnosis: 1. _____

2. _____

3. _____

Physician: _____

Laboratory Request:

Smear:

Gram Stain ☐ **Dark Field** ☐ **India Ink** ☐ **AFB Smear** ☐

Immunoflour ☐ **Wet Amount** ☐ **Others:** ☐ **(Pls. specify)**_____

Culture:

Aerobic ☐ **Anaerobic** ☐ **Fungal** ☐ **Virus** ☐ **AFB** ☐

Results: _____

_____

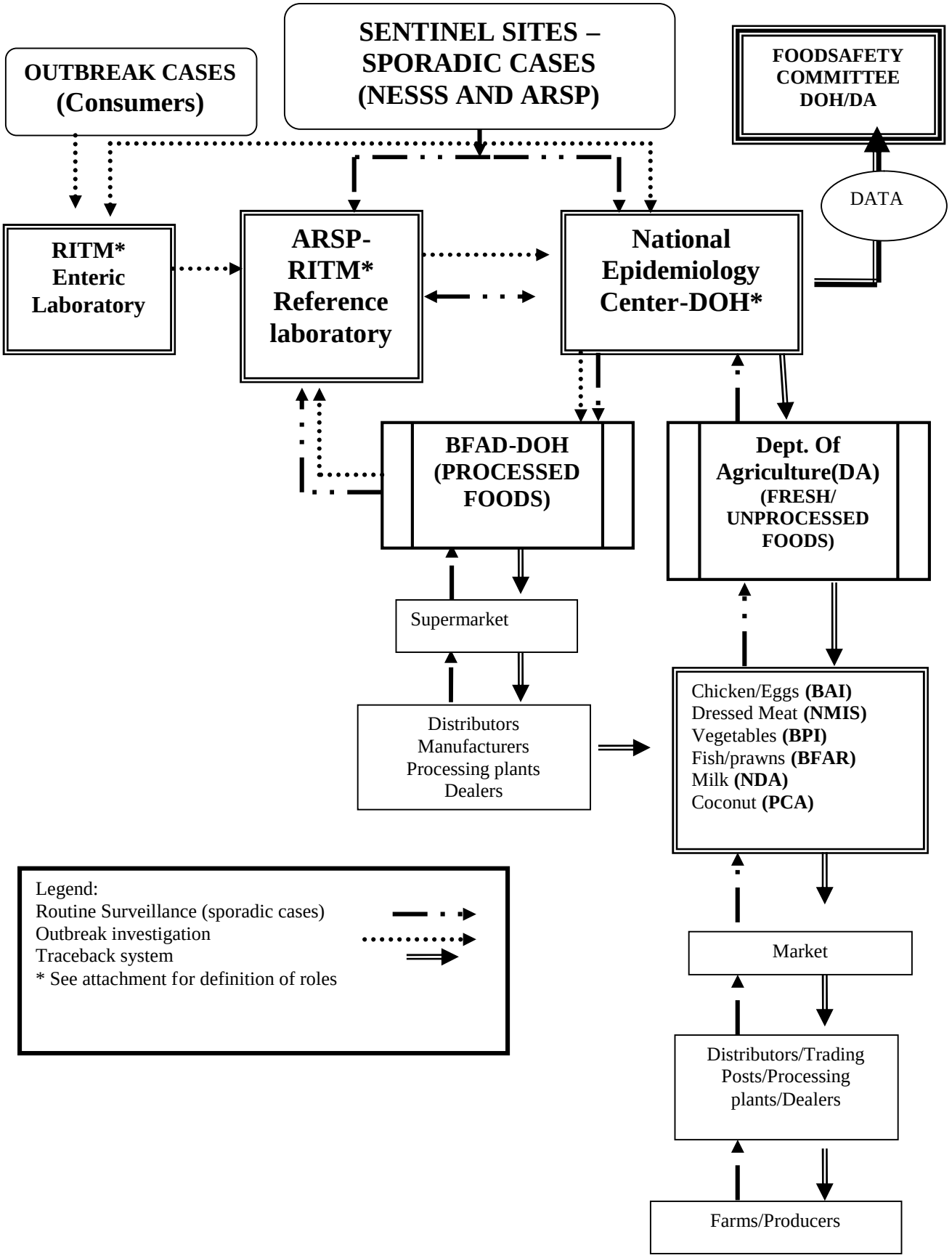
_____

Date Reported: |__|__|/|__|__|/|__|__|__|__| **(DD/MM/YY)**

Medical Technologist: _____ **Microbiologist:** _____

(Signature over Printed Name) **(Signature over Printed Name)**

APPENDIX 3. *Salmonella* Surveillance Reporting System



a. Chairperson - Head, NEC Surveillance Division
b. Members - Head, ARSRL
- Representative, BAFPS

10. Oversight Committee in ARSP Sentinel Sites

An oversight committee in each participating ARSP sentinel site shall be created to ensure compliance by physicians in filling up the Foodborne Illness Complaint Worksheet and shall be composed of the following:

a. Chairperson - Head, Chief of Clinics
b. Members - Head, Department of Pediatrics
Head, Department of Internal Medicine
Head, Records Department

It shall be the responsibility of every attending physician in all areas of the sentinel site to completely fill-up the Foodborne Illness Complaint Worksheet otherwise, sanctions shall be imposed by the Chief of Clinics on the erring physicians. Incompletely filled up forms shall not be accepted by the Records Department.

11. Office of the Secretary

The Office of the Secretary will be responsible for allotting funds to support the activities of the Salmonella Surveillance and shall be represented by the executive assistant to the Secretary of Health. Funding for the pre-implementation phase of the surveillance shall be derived from the Office of the Secretary's contingency funds. Once institutionalized, funds shall be provided to the involved agencies/offices to cover the costs of the surveillance.

VIII. REPEALING CLAUSE

Administrative issuances and other related orders inconsistent with this Order are hereby repealed.

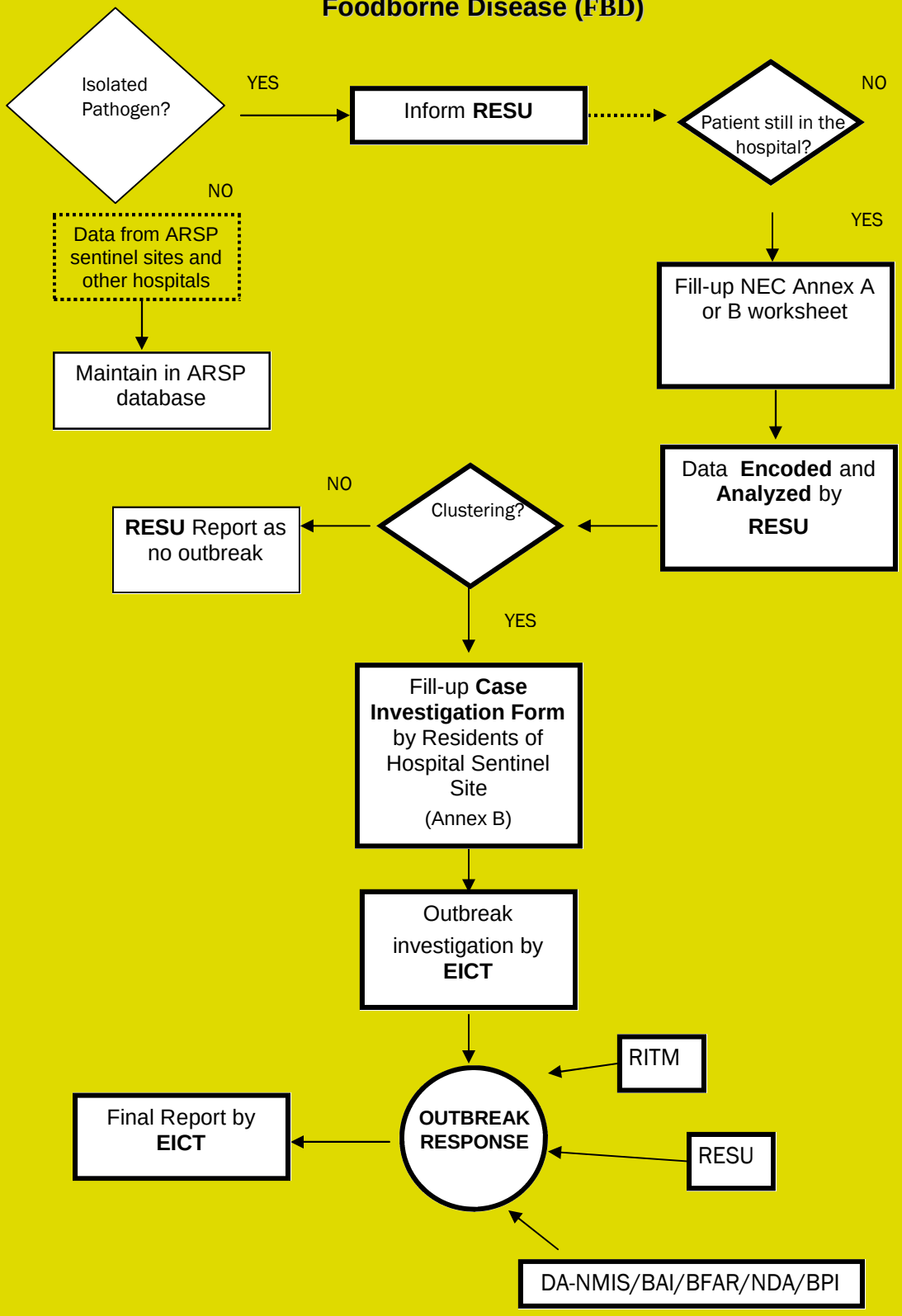
IX. EFFECTIVITY

This order shall take effect immediately.

MANUEL M. DAYRIT, MD, MSc
Secretary of Health

Annex 3.2A

Reporting Flow of Salmonella Surveillance and other Foodborne Disease (FBD)



Foodborne Disease

(Do not use this case investigation form to report cases of cholera, typhoid fever and PSP)

Name of DRU (Name of RHU/CHO//Hospital/Clinic/Laboratory/Port/Airport)**:** _____

Type of hosp/clinic: ☐ **Gov't.** ☐ **Private**

Patient no. _____ **Patient's full name:** _____

Age: _____ ☐ **year** ☐ **month** **Sex:** ☐ **M** ☐ **F** **Occupation:** _____

Complete address: _____

Patient admitted? ☐ **Yes** ☐ **No** **Date admitted/seen/consult:** ___/___/___ **Date onset of illness:** ___/___/___

Source of drinking water: ☐ **deep well** ☐ **piped water system** ☐ **open dug well** ☐ **spring** ☐ **surface water** ☐ **water vendor** ☐ **water refilling station**

Toilet facility: ☐ **pour flush** ☐ **pit latrine** ☐ **none**

Category: ☐ **infection** ☐ **poisoning**

Suspected food or drink: ☐ **Yes, specify:** _____ ☐ **No** ☐ **unknown**

Source of suspected food or drink:

☐ **home** ☐ **street food vendor** ☐ **food establishment** ☐ **grocery** ☐ **market** ☐ **convenient store**
☐ **neighbor/friend** ☐ **celebration, party, gathering, fiesta, other similar event**
☐ **bakery, bake house, cake shop, and similar establishments**
☐ **unknown** ☐ **other, specify:** _____

Stool culture: ☐ **positive (specify organism):** _____
☐ **negative** ☐ **indeterminate** ☐ **unknown** ☐ **not done**

Case classification:

☐ **suspected**
☐ **confirmed**

Outcome:
☐ **alive**
☐ **died**
Date died: ___/___/___
☐ **unknown**

Patient no. _____ **Patient's full name:** _____

Age: _____ ☐ **year** ☐ **month** **Sex:** ☐ **M** ☐ **F** **Occupation:** _____

Complete address: _____

Patient admitted? ☐ **Yes** ☐ **No** **Date admitted/seen/consult:** ___/___/___ **Date onset of illness:** ___/___/___

Source of drinking water: ☐ **deep well** ☐ **piped water system** ☐ **open dug well** ☐ **spring** ☐ **surface water** ☐ **water vendor** ☐ **water refilling station**

Toilet facility: ☐ **pour flush** ☐ **pit latrine** ☐ **none**

Category: ☐ **infection** ☐ **poisoning**

Suspected food or drink: ☐ **Yes, specify:** _____ ☐ **No** ☐ **unknown**

Source of suspected food or drink:

☐ **home** ☐ **street food vendor** ☐ **food establishment** ☐ **grocery** ☐ **market** ☐ **convenient store**
☐ **neighbor/friend** ☐ **celebration, party, gathering, fiesta, other similar event**
☐ **bakery, bake house, cake shop, and similar establishments**
☐ **unknown** ☐ **other, specify:** _____

Stool culture: ☐ **positive (specify organism):** _____
☐ **negative** ☐ **indeterminate** ☐ **unknown** ☐ **not done**

Case classification:

☐ **suspected**
☐ **confirmed**

Outcome:
☐ **alive**
☐ **died**
Date died: ___/___/___
☐ **unknown**

CASE DEFINITION

Laboratory criteria for confirmation: Isolation of pathogen.

Suspected:

A disease, usually either infectious or toxic in nature, caused by agents that enter the body through ingestion of food or drinking water.

Confirmed: A suspected case in whom laboratory investigation confirms the presence of one or more foodborne pathogens in a clinical specimen.

Includes: Food-borne bacterial, viral, parasitic infections (Salmonellosis, E. coli, viral GE, taeniasis, etc), poisoning due to chemical-contaminated foods or drinks, toxin-producing bacteria (Staphylococcus, Clostridium, Bacillus, etc), marine toxins (scombroid, ciguatera, etc), and other poisoning (tuba-tuba, etc).

***Excludes*:** Food-borne diseases specified in the list of notifiable diseases (e.g., Salmonella, typhoid and paratyphoid, cholera, paralytic shellfish poisoning).

(Please use the back page)

Patient no.__________ Patient's full name:______________________________

Age:________ ☐ year ☐ month Sex: ☐ M ☐ F Occupation:______________________________

Complete address:______________________________

Patient admitted? ☐ Yes ☐ No Date admitted/seen/consult:_____/_____/_____ Date onset of illness:_____/_____/_____

Source of drinking water: ☐ deep well ☐ piped water system ☐ open dug well ☐ spring ☐ surface water ☐ water vendor ☐ water refilling station

Toilet facility: ☐ pour flush ☐ pit latrine ☐ none

Category: ☐ infection ☐ poisoning

Suspected food or drink: ☐ Yes, specify:______________________________ ☐ No ☐ unknown

Source of suspected food or drink:

☐ home ☐ street food vendor ☐ food establishment ☐ grocery ☐ market ☐ convenient store
☐ neighbor/friend ☐ celebration, party, gathering, fiesta, other similar event
☐ bakery, bake house, cake shop, and similar establishments
☐ unknown ☐ other, specify:______________________________

Stool culture: ☐ positive (specify organism):______________________________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Case classification:
☐ suspected
☐ confirmed

Outcome:
☐ alive
☐ died
Date died:____/____/____
☐ unknown

Patient no.__________ Patient's full name:______________________________

Age:________ ☐ year ☐ month Sex: ☐ M ☐ F Occupation:______________________________

Complete address:______________________________

Patient admitted? ☐ Yes ☐ No Date admitted/seen/consult:_____/_____/_____ Date onset of illness:_____/_____/_____

Source of drinking water: ☐ deep well ☐ piped water system ☐ open dug well ☐ spring ☐ surface water ☐ water vendor ☐ water refilling station

Toilet facility: ☐ pour flush ☐ pit latrine ☐ none

Category: ☐ infection ☐ poisoning

Suspected food or drink: ☐ Yes, specify:______________________________ ☐ No ☐ unknown

Source of suspected food or drink:

☐ home ☐ street food vendor ☐ food establishment ☐ grocery ☐ market ☐ convenient store
☐ neighbor/friend ☐ celebration, party, gathering, fiesta, other similar event
☐ bakery, bake house, cake shop, and similar establishments
☐ unknown ☐ other, specify:______________________________

Stool culture: ☐ positive (specify organism):______________________________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Case classification:
☐ suspected
☐ confirmed

Outcome:
☐ alive
☐ died
Date died:____/____/____
☐ unknown

Patient no.__________ Patient's full name:______________________________

Age:________ ☐ year ☐ month Sex: ☐ M ☐ F Occupation:______________________________

Complete address:______________________________

Patient admitted? ☐ Yes ☐ No Date admitted/seen/consult:_____/_____/_____ Date onset of illness:_____/_____/_____

Source of drinking water: ☐ deep well ☐ piped water system ☐ open dug well ☐ spring ☐ surface water ☐ water vendor ☐ water refilling station

Toilet facility: ☐ pour flush ☐ pit latrine ☐ none

Category: ☐ infection ☐ poisoning

Suspected food or drink: ☐ Yes, specify:______________________________ ☐ No ☐ unknown

Source of suspected food or drink:

☐ home ☐ street food vendor ☐ food establishment ☐ grocery ☐ market ☐ convenient store
☐ neighbor/friend ☐ celebration, party, gathering, fiesta, other similar event
☐ bakery, bake house, cake shop, and similar establishments
☐ unknown ☐ other, specify:______________________________

Stool culture: ☐ positive (specify organism):______________________________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Case classification:
☐ suspected
☐ confirmed

Outcome:
☐ alive
☐ died
Date died:____/____/____
☐ unknown

Philippine Integrated Disease Surveillance and Response

Annex 3.2C

Typhoid Fever

(Case Investigation Form)

Name of DRU (Name of RHU/CHO//Hospital/Clinic/Laboratory/Port/Airport)**:** _____

Type of hosp/clinic: ☐ **Gov't.** ☐ **Private**

Patient no. _____ **Patient's full name:** _____

Age: _____ ☐ **year** ☐ **month** **Sex:** ☐ **M** ☐ **F** **Occupation:** _____

Complete address: _____

Patient admitted? ☐ **Yes** ☐ **No** **Date admitted/seen/consult:** ____/____/____ **Date onset of illness:** ____/____/____

Source of drinking water: ☐ **deep well** ☐ **piped water system** ☐ **open dug well** ☐ **spring** ☐ **surface water** ☐ **water vendor** ☐ **water refilling station**

Toilet facility: ☐ **pour flush** ☐ **pit latrine** ☐ **none**

Suspected food or drink: ☐ **Yes, specify:** _____ ☐ **No** ☐ **unknown**

Source of suspected food or drink:

☐ **home** ☐ **street food vendor** ☐ **food establishment** ☐ **grocery** ☐ **market** ☐ **convenient store**
☐ **neighbor/friend** ☐ **celebration, party, gathering, fiesta, other similar event**
☐ **bakery, bake house, cake shop, and similar establishments**
☐ **unknown** ☐ **other, specify:** _____

Blood culture: ☐ **positive for:** _____
☐ **negative** ☐ **indeterminate** ☐ **unknown** ☐ **not done**

Stool culture: ☐ **positive for:** _____
☐ **negative** ☐ **indeterminate** ☐ **unknown** ☐ **not done**

Case classification:
☐ **suspected**
☐ **probable**
☐ **confirmed**

Outcome:
☐ **alive**
☐ **died**
Date died: ____/____/____
☐ **unknown**

Patient no. _____ **Patient's full name:** _____

Age: _____ ☐ **year** ☐ **month** **Sex:** ☐ **M** ☐ **F** **Occupation:** _____

Complete address: _____

Patient admitted? ☐ **Yes** ☐ **No** **Date admitted/seen/consult:** ____/____/____ **Date onset of illness:** ____/____/____

Source of drinking water: ☐ **deep well** ☐ **piped water system** ☐ **open dug well** ☐ **spring** ☐ **surface water** ☐ **water vendor** ☐ **water refilling station**

Toilet facility: ☐ **pour flush** ☐ **pit latrine** ☐ **none**

Suspected food or drink: ☐ **Yes, specify:** _____ ☐ **No** ☐ **unknown**

Source of suspected food or drink:

☐ **home** ☐ **street food vendor** ☐ **food establishment** ☐ **grocery** ☐ **market** ☐ **convenient store**
☐ **neighbor/friend** ☐ **celebration, party, gathering, fiesta, other similar event**
☐ **bakery, bake house, cake shop, and similar establishments**
☐ **unknown** ☐ **other, specify:** _____

Blood culture: ☐ **positive for:** _____
☐ **negative** ☐ **indeterminate** ☐ **unknown** ☐ **not done**

Stool culture: ☐ **positive for:** _____
☐ **negative** ☐ **indeterminate** ☐ **unknown** ☐ **not done**

Case classification:
☐ **suspected**
☐ **probable**
☐ **confirmed**

Outcome:
☐ **alive**
☐ **died**
Date died: ____/____/____
☐ **unknown**

CASE DEFINITION

Laboratory criteria for diagnosis: Isolation of *S. typhi* from blood, stool, or other clinical specimen

Case Classification

***Suspected*:** A case with an illness characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and non-productive cough.

***Note**: However, many mild and atypical infections occur. Carriage of S. typhi may be prolonged.*

***Probable*:** A suspected case that is epidemiologically linked to a confirmed case in an outbreak.

***Confirmed*:** A suspected or probable case that is laboratory confirmed.

(Please use the back page)

Patient no.__________Patient's full name:__________

Age:________☐ year ☐ month Sex: ☐ M ☐ F Occupation:__________

Complete address:__________

Patient admitted? ☐ Yes ☐ No Date admitted/seen/consult:_____/_____/_____ Date onset of illness:_____/_____/_____

Source of drinking water: ☐ deep well ☐ piped water system ☐ open dug well ☐ spring ☐ surface water ☐ water vendor ☐ water refilling station

Toilet facility: ☐ pour flush ☐ pit latrine ☐ none

Suspected food or drink: ☐ Yes, specify:__________☐ No ☐ unknown

Source of suspected food or drink:

☐ home ☐ street food vendor ☐ food establishment ☐ grocery ☐ market ☐ convenient store
☐ neighbor/friend ☐ celebration, party, gathering, fiesta, other similar event
☐ bakery, bake house, cake shop, and similar establishments
☐ unknown ☐ other, specify:__________

Blood culture: ☐ positive for:__________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Stool culture: ☐ positive for:__________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Case classification:
☐ suspected
☐ probable
☐ confirmed

Outcome:
☐ alive
☐ died
Date died:____/____/____
☐ unknown

Patient no.__________Patient's full name:__________

Age:________☐ year ☐ month Sex: ☐ M ☐ F Occupation:__________

Complete address:__________

Patient admitted? ☐ Yes ☐ No Date admitted/seen/consult:_____/_____/_____ Date onset of illness:_____/_____/_____

Source of drinking water: ☐ deep well ☐ piped water system ☐ open dug well ☐ spring ☐ surface water ☐ water vendor ☐ water refilling station

Toilet facility: ☐ pour flush ☐ pit latrine ☐ none

Suspected food or drink: ☐ Yes, specify:__________☐ No ☐ unknown

Source of suspected food or drink:

☐ home ☐ street food vendor ☐ food establishment ☐ grocery ☐ market ☐ convenient store
☐ neighbor/friend ☐ celebration, party, gathering, fiesta, other similar event
☐ bakery, bake house, cake shop, and similar establishments
☐ unknown ☐ other, specify:__________

Blood culture: ☐ positive for:__________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Stool culture: ☐ positive for:__________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Case classification:
☐ suspected
☐ probable
☐ confirmed

Outcome:
☐ alive
☐ died
Date died:____/____/____
☐ unknown

Patient no.__________Patient's full name:__________

Age:________☐ year ☐ month Sex: ☐ M ☐ F Occupation:__________

Complete address:__________

Patient admitted? ☐ Yes ☐ No Date admitted/seen/consult:_____/_____/_____ Date onset of illness:_____/_____/_____

Source of drinking water: ☐ deep well ☐ piped water system ☐ open dug well ☐ spring ☐ surface water ☐ water vendor ☐ water refilling station

Toilet facility: ☐ pour flush ☐ pit latrine ☐ none

Suspected food or drink: ☐ Yes, specify:__________☐ No ☐ unknown

Source of suspected food or drink:

☐ home ☐ street food vendor ☐ food establishment ☐ grocery ☐ market ☐ convenient store
☐ neighbor/friend ☐ celebration, party, gathering, fiesta, other similar event
☐ bakery, bake house, cake shop, and similar establishments
☐ unknown ☐ other, specify:__________

Blood culture: ☐ positive for:__________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

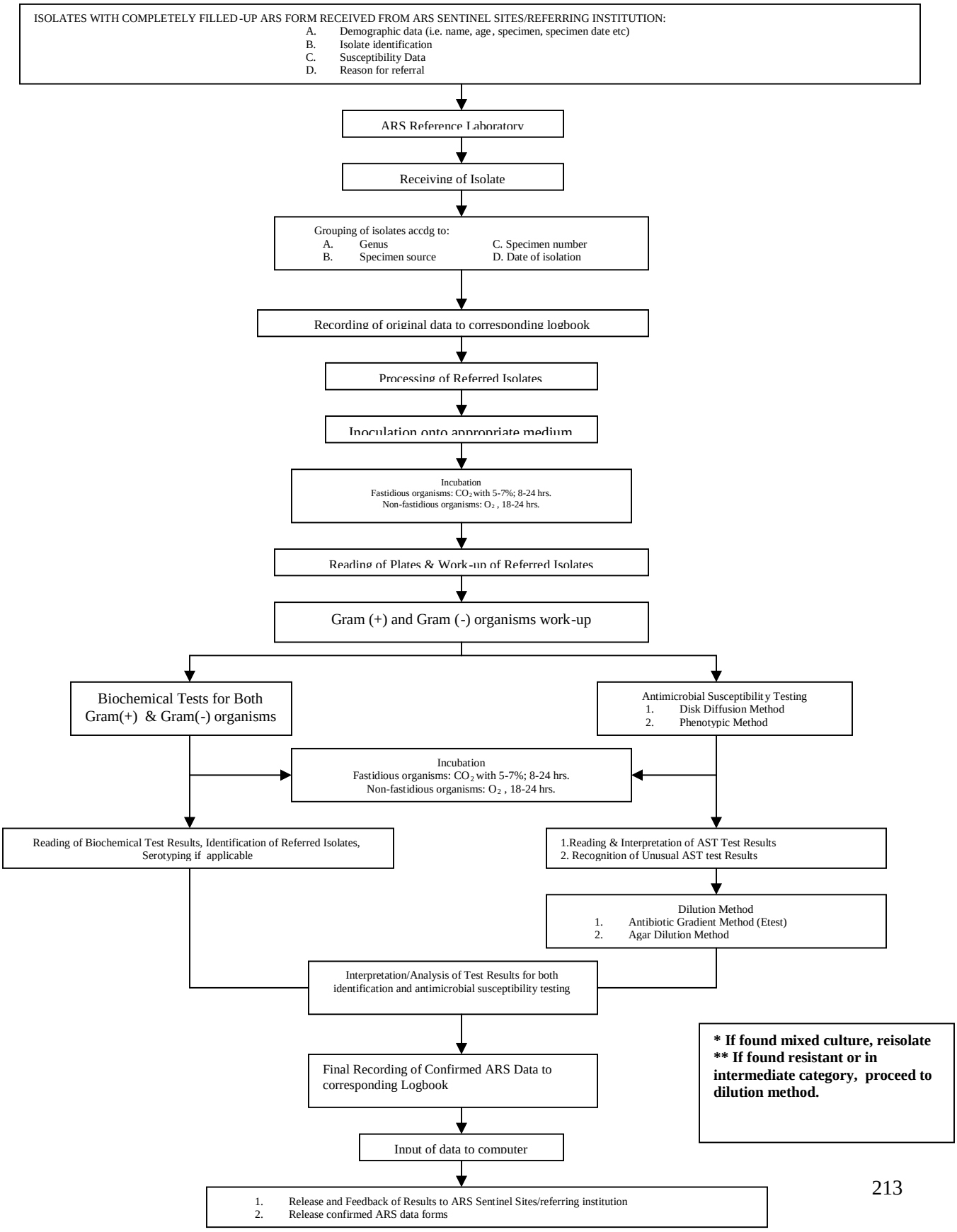
Stool culture: ☐ positive for:__________
☐ negative ☐ indeterminate ☐ unknown ☐ not done

Case classification:
☐ suspected
☐ probable
☐ confirmed

Outcome:
☐ alive
☐ died
Date died:____/____/____
☐ unknown

Annex **3.3.3A**

Referral flow of isolates to the Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL)



Annex 3.3.3B

Hospital Code: **ARSP RESULT FORM**

Name _____ _____

Pat No. |__|__|__|__|__|__|__|__|__|__|
Sex (F/M) |__| Ward |__|__|__|__|__|
Age |__|__| Service |__|__|__|
Organism |__|__|__| B-Lactamase (+/-) |__|

Specimen No. |__|__|__|__|__|
Specimen Date |__|__|/|__|__|/|__|__|__|__| (DD/MM/YYYY)
Specimen Code |__|__|
Date of Admission |__|__|/|__|__|/|__|__|__|__|

ZONE DIAMETERS

AMK|__|__|amikacin	**AUG**|__|__|amoxi/clav	**AMP**|__|__|ampicillin	**AMS**|__|__|ampi/sulbact
ATM|__|__|aztreonam	**AZI**|__|__|azithromycin	**CFC**|__|__|cefaclor	**MAN**|__|__|cefamandole
CFZ|__|__|cefazolin	**FEP**|__|__|cefepime	**FIX**|__|__|cefixime	**CFP**|__|__|cefoperazone
FTX|__|__|cefotaxime	**FOX**|__|__|cefoxitin	**CAZ**|__|__|ceftazidime	**CRO**|__|__|ceftriaxone
FRX|__|__|cefurox/sodium	**KEF**|__|__|cephalothin	**CHL**|__|__|**chloramphenicol**	**CIP**|__|__|ciprofloxacin
CLA|__|__|clarithromycin	**CLI**|__|__|clindamycin	**SXT**|__|__|co-trimoxazole	**ERY**|__|__|erythromycin
GEN|__|__|gentamicin10ug	**IMP**|__|__|imipenem	**KAN**|__|__|kanamycin	**LEV**|__|__|levofloxacin
NAL|__|__|nalidixic acid	**NET**|__|__|netilmicin	**FUR**|__|__|nitrofuratoin	**NOR**|__|__|norfloxacin
OFL|__|__|ofloxacin	**OXA**|__|__|oxacillin	**PEN**|__|__|penicillin G	**PIP**|__|__|piperacillin
RIF|__|__|rifampicin	**SPE**|__|__|spectinomycin	**STR**|__|__|**streptomycin10ug**	**TET**|__|__|tetracycline
TIC|__|__|ticarcillin	**TIM**|__|__|tic/clav	**TOB**|__|__|tobramycin	**VAN**|__|__|vancomycin
FRA|__|__|cefurox axetil	**MER**|__|__|meropenem	**PTA**|__|__|pip/tazo	**GEH**|__|__|genta 120
STH|__|__|strep 300ug			
Others___|__|__|_____	___|__|__|_____	___|__|__|_____	___|__|__|_____

MIC RESULTS: _____|_|_|_|_|_|_| _____|_|_|_|_|_|_| _____|_|_|_|_|_|_| _____|_|_|_|_|_|_|
_____|_|_|_|_|_|_| _____|_|_|_|_|_|_| _____|_|_|_|_|_|_| _____|_|_|_|_|_|_|
_____|_|_|_|_|_|_| _____|_|_|_|_|_|_| _____|_|_|_|_|_|_| _____|_|_|_|_|_|_|

Comment: _____

Annex 3.3.3C
GUIDELINES FOR SHIPMENT OF BACTERIAL ISOLATES

INTRODUCTION:

Submission of bacterial isolates that must be sent to distant/ reference laboratories for further testing and confirmation requires transportation by mail or through courier serv ices must follow the requirements of the Interstate shipment of Etiologic Agents code (Federal Regulations).

PREPARATION OF BACTERIAL ISOLATES

1. Revive the bacterial isolates onto desired culture media.
2. Incubate plates at 35°C – 37°C for 18-24 hours except for fastidious organisms which maybe incubated at enhance 5-10% CO_2 content.
3. Check the viability and purity of the culture.
4. Inoculate the isolates onto the tube with appropriate transport media used.

Organism	**Transport Medium**
Enterobacteriaceae	Nutrient agar butt/ slant
Enteric pathogens: *Salmonella / Shigella* *V. cholerae 01 / other Vibrios*	 Nutrient agar butt / slant Semi-solid nutrient agar with 1% NaCl
Staphylococcus spp.	Nutrient agar butt / slant
S. pneumoniae and other *Streptococcus spp*.	Sheep blood agar / Chocolate agar slant
H. influenzae	Chocolate agar slant
Neisseria gonorrhoeae	Chocolate agar slant overlaid with mineral oil

5. Incubate tubes to its required temperature.

PACKING OF BACTERIAL ISOLATES (DOUBLE PACK CONTAINER)

In most instances, microbiological specimens can be satisfactorily shipped through mail with special precautions against breakage and subsequent contamination of the mailing container.

A. Volume not exceeding 50 ml.

Material should be placed in a securel y closed, watertight container [primary container [test tube, vial, etc]] which shall be enclosed in a second, durable watertight container [secondary container]. Several primary containers may be enclosed in a single secondary container, if the total volu me of all the primary containers so enclosed does not exceed 50 ml. The space at the top, bottom, and sides between the primary and secondary

containers shall contain sufficient nonparticulate absorbent material [e.g. paper towel] to absorb the entire contents of the primary containers[s] in case of breakage or leakage. Each set of primary and secondary containers shall then be enclosed in an outer shipping container constructed of corrugated fiberboard, cardboard, wood, or other material of equivalent strength.

B. Volume greater than 50 ml.

Packaging of material in volumes of 50 ml or more shall comply with requirements specified in paragraph [a] of this section. In addition, a shock absorbent material, in volume at least equal to that of the absorbent material between the primary and secondary containers, shall be placed at the top, bottom, and sides between the secondary container and the outer shipping container. Single primary containers shall not contain more than 1,000 ml of material. However, two or more primary containers whose combined volumes do not exceed 1,000 ml may be placed in a single, secondary container. The maximum amount of etiologic agent which may be enclosed within a single outer shipping container shall not exceed 4,000 ml.

C. Labels

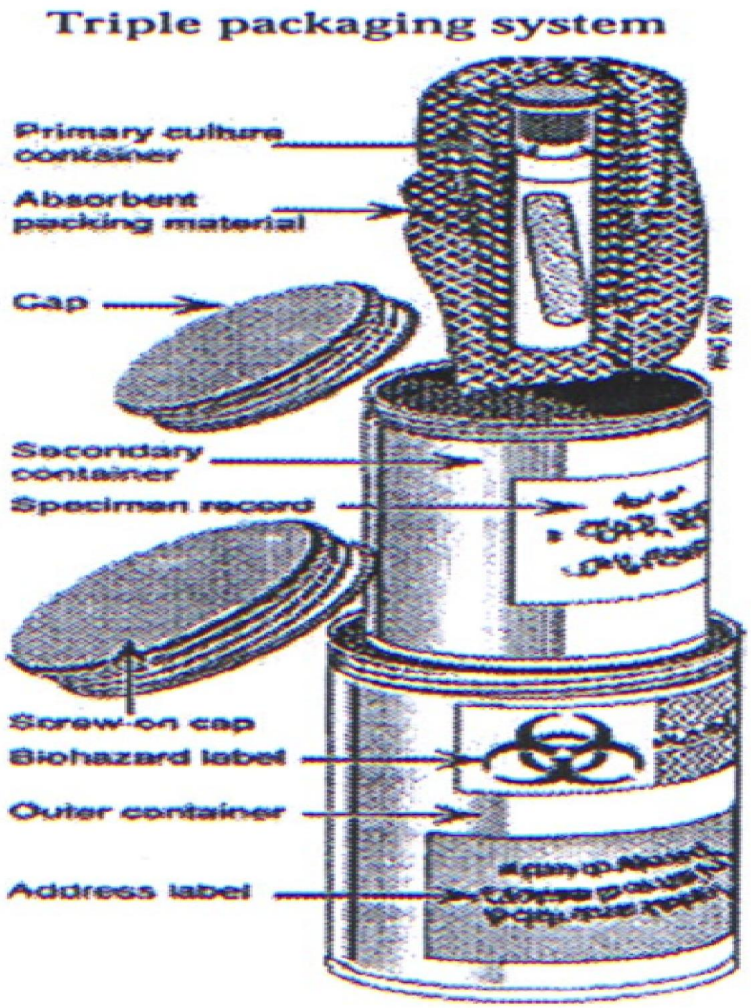
1. The outer shipping container of all materials containing etiologic agents transported must bear a label as illustrated and described below:

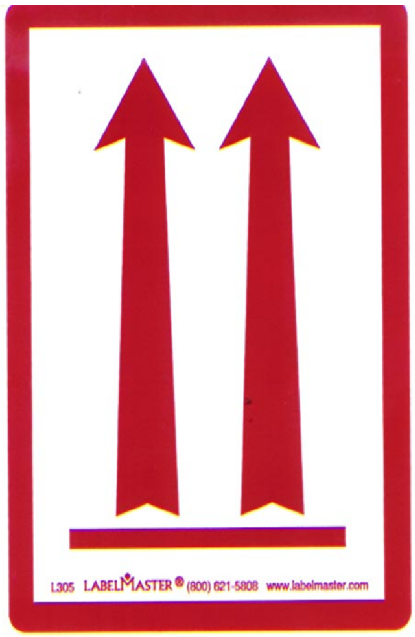
2. The label must be in the form of a square set at an angle of 45 ^{o} (diamond shaped) with each side having a length of at least 50 mm, the width of the line must be at least 2 mm, and the letters at least 6 mm high. If an airway bill is used, the "Nature and Quantity of Goods Box" must show the text "DIAGNOSTIC SPECIMENS", "CLINICAL SPECIMENS", or "BIOLOGICAL SUBSTANCE CATEGORY B" and "UN 3373".
3. Other labels to be placed outside the outer shipping container include the following:

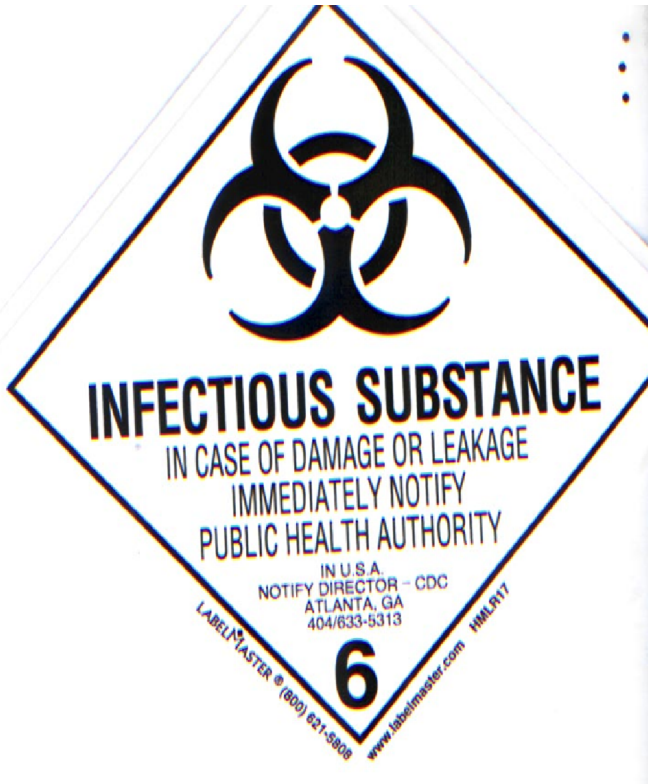
    - Name of Consignee (Label 1)
    - Name of Shipper (label 2)
    - Infectious Substance label
        - Infectious Substance Affecting Humans (Label 3)
        - "Up arrows" label (Label 4)

4. **Damaged packages**

The carrier shall promptly, upon discovery of evidence of leakage or any other damage to packages bearing Etiologic Agents/Biomedical Material label, isolate the package shall notify the Head, Antimicrobial Resistance Surveilance Program, Research Institute for Tropical Medicine, Filinvest Corporate City, Alabang, Muntinlupa, Metro Manila, by telephone (02) 809 -9763 . The carrier shall also notify the sender.




L305 LABELMASTER ® (800) 621-5808 www.labelmaster.com


INFECTIOUS SUBSTANCE
IN CASE OF DAMAGE OR LEAKAGE
IMMEDIATELY NOTIFY
PUBLIC HEALTH AUTHORITY
IN U.S.A.
NOTIFY DIRECTOR – CDC
ATLANTA, GA
404/633-5313
6
LABELMASTER ® (800) 621-5808
www.labelmaster.com
HMLR17

Annex 3.5.1.2A

Table 3A

Laboratory Diagnosis of Zoonotic Infections causing Food and Waterborne Disease

Disease	Causative Organism	Principal Animals Involved	Specimen to be Tested	Laboratory Criteria	Methods	Probable Means of Spread to Man	References
1. Salmonellosis	Salmonella spp.	Poultry, swine, cattle, dogs, cats, wild mammals, birds, reptiles,& amphibians	Animal feed and feed ingredients, environmental samples Feces/cloacal swab, organs/tissues from the edge of lesion and normal tissues	Isolation of Salmonella organism	1. Conventional culture method 2. Conventional biochemical screening and identification method 3. Biochemical screening and identification using Analytical Profile Index (API) 4. Serology	usually via ingestion of undercooked food contaminated with feces	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition 4. Bacteriological Analytical Manual Online Chapter 5 Salmonella
2. Brucellosis	Brucella abortus Brucella melitensis Brucella suis Brucella canis	Cattle, Goat, Sheep, Swine, Dogs, Cats, many animals	Whole fetus, any foetal lesions, cotyledons, uterine discharges, colostrum,and paired serum samples	Isolation of brucella organism	1. Conventional culture method 2. Rapid Agglutination test-(screening test 3. Elisa	direct contact with excretions or secretion including milk of infected animals	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition 4. Guidelines for Confirmation of Foodborne-Disease Outbreaks, CDC,
3. Campylobacteriosis	Campylobacter spp.	Many animals	Fecal/cloacal swab	Isolation of organism from clinical specimens	1. Conventional culture method 2.Conventional biochemical screening and identification method	Most species or subspecies appear to be reasonably host specific but cross infection is possible, usually via fecal contaminated of food	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition 4. Guidelines for Confirmation of Foodborne-Disease Outbreaks, CDC,

Disease	Causative Organism	Principal Animals Involved	Specimen to be Tested	Laboratory Criteria	Methods	Probable Means of Spread to Man	References
4. Anthrax	Bacillus anthracis	Warm blooded animals	Swabs of blood, other body fluids or swabs taken from incision oin tissues or organs	Isolation of organism from clinical specimens	1. Conventional culture method using bio-hazard cabinet	Human Infections usually through the skin; may be inhaled or ingested	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition
5. Vibriosis	Vibrio parahaemolyticus	Salt water fish, shellfish	Fecal/cloacal swab	Isolation of organism from clinical specimens	1. Conventional culture method 2.Conventional biochemical screening and identification method	Ingestion of undercooked contaminated food	1.Clinical Veterinary Microbiology 2.The Merk Veterinary Manual 8th edition 3. Guidelines for Confirmation of Foodborne-Disease Outbreaks, CDC,
6.Yersiniosis	Yersinia enterocolitica	Animals and birds	Faeces, food, milk and water	Isolation of organism from clinical specimens	1. Conventional culture method 2.Conventional biochemical screening and identification method	Ingestion of food or water or water that has been faecally contaminated	1.Clinical Veterinary Microbiology 2.The Merk Veterinary Manual 8th edition 3. Guidelines for Confirmation of Foodborne-Disease Outbreaks, CDC,
7. Sarcosporidiosis	Sarcocystis spp	Pig, cattle, sheep, duck				Ingestion of meat	1.Clinical Veterinary Microbiology 2.The Merk Veterinary Manual 8th edition
8. Beef tapeworm, Cysticercosis	Taenia saginata	Cattle, buffalo, giraffe				Ingestion of" measly" beef	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition

Disease	Causative Organism	Principal Animals Involved	Specimen to be Tested	Laboratory Criteria	Methods	Probable Means of Spread to Man	References
9. Pork tapeworm Cysticercosis	Taenia solium	Pig				Ingestion of "measly" pork, autoinfection	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition
10. Fish tapeworm	Diphyllobothrium spp.	Dogs, fish eating animals				Ingestion of raw or partially infected fish	
11. Trichiniosis	Trichinella spiralis	Pigs, bears, others carnivores rodents	Muscles from diaphragm pillars or tongue, masseter and abdominal muscles,	1. Direct demonstration of the parasites in tissue samples or digests 2. Indirect demonstration of the parasitesby the detection of specific antibodies	1. Trichinoscope method 2. Digestion method 3. Serological method	Ingestion of undercooked infected meat	1.OIE Manual of Diagnostic Tests and Vaccines for Terrestial Animals 5th edition,2004 2.Clinical Veterinary Microbiology 3.The Merk Veterinary Manual 8th edition 4. Guidelines for Confirmation of Foodborne-Disease Outbreaks, CDC,

Annex 3.5.2.2A

ISO 2859 (Military Standard 105E) standard sampling plan

Sampling Guide
(ISO 2859, S – 3)

Lot or batch size	Sample size	Acceptance	Quality Level
		(6.5)	
		Accept	Reject
2 to 8	2	0	1
9 to 15	2	0	1
16 to 25	3	0	1
26 to 50	3	0	1
51 to 90	5	0	1
91 to 150	5	0	1
151 to 280	8	1	2
281 to 500	8	1	2
501 to 1200	13	2	3
1201 to 3200	13	2	3
3201 to 10000	20	3	4
10001 to 35000	20	3	4
35001 to 150000	32	5	6
150001 to 500000	32	5	6
500001 and over	50	7	8

40 – Footer Container Van

A. container van which contains approximately **27,000 kg.** Of imported meat or meat products with **1,250 boxes** and weighing **25 – 27 kg.** Per box
B. container van which contains **26,000 kg.** Of imported meat or meat products with **1,200 boxes** and weighing **22 – 25 kg.** Per box
C. container van which contains **25,000 kg.** Of imported meat or meat products with **1,000 boxes** and weighing **20 – 22 kg.** Per box
D. container van which contains **24,000 kg.** Of imported meat or meat products with **800 boxes** and weighing **18 – 20 kg.** Per box

20 – Footer Container Van

A. container van which contains **17,000 kg.** Of imported meat or meat products with **800 boxes** and weighing **25 – 27 kg.** Per box
B. container van which contains **15,000 kg.** Of imported meat or meat products with **750 boxes** and weighing **22 – 25 kg.** Per box
C. container van which contains 14,000 kg. Of imported meat or meat products with **700 boxes** and weighing **20 – 22 kg.** Per box

Switching Rules

Normal Inspection - used when there is no evidence that the quality of the product being submitted is better or poorer than the specified quality level. Example, 13 boxes from a 40-footer container van containing 1,250 boxes.

Tightened Inspection - uses the same quality level as for normal inspection but requires more stringent acceptance criteria. Example, 13 boxes from a 40-footer container van containing 1,250 boxes. If 2 out of 5 or less consecutive container van has been non-acceptable, the next 5 consecutive arrivals from the same source will be subjected to tightened inspection.

Reduced Inspection - uses the same quality level as for normal inspection but requires smaller sample for inspection. Example, if the previous 10 consecutive containers during normal inspection have been found acceptable, reduced inspection is applied or 1 sample shall be collected from the next arrivals.

Normal to tighten

When normal inspection is being carried out, tightened inspection shall be put into operation when two out of five or less consecutive lots have been non-acceptable on original inspection (that is, ignoring resubmitted lots or batches for this procedure).

Tightened to normal

When tightened inspection is being carried out, normal inspection shall be reverted to when five consecutive lots have been considered acceptable on the original inspection.

Normal to Reduce

When normal inspection is being carried out, reduced inspection shall be put into operation provided that all of the following conditions are satisfied:

- The preceding 10 lots have been submitted for normal inspection and all have been accepted on original inspection; and
- The total number of nonconforming units (or nonconformities) in the samples from the preceding 10 lots or such other number as was used for condition (a) above is equal to or less than the applicable limit number. If a double or multiple sample is in use, all samples inspected should be included, not “first” samples only; and
- Production is at a steady rate; and
- Reduced inspection is considered desirable by the responsible authority.

Single Reduced

Sample Size Code	Sample Size	Acceptable Quality Level (at 6.5)	
		Accept	Reject
A	2	0	1
B	3		
C	5		
D	8	0	2
E	13	1	3
F	20	1	4
G	32	2	5
H	50	3	6

↓ Use first sampling below arrow. If sample size equals, or exceeds, lot or batch size, carry out 100% Inspection.

↑ Use first sampling plan above arrow.

Double Reduced

Sample Size Code	Sample	Sample Size	Acceptable Quality Level (at 6.5)	
			Accept	Reject
A				
B			↑	
C				
D	First	2	0	2
	Second	2	0	2
E	First	3	0	3
	Second	3	0	4
F	First	5	0	4
	Second	5	1	5
G	First	8	0	4
	Second	8	3	6
H	First	13	1	5
	Second	13	4	7

↑ Use first sampling plan above arrow.

Use corresponding single sampling plan (or alternatively use double sampling plan where available)

Reduced to Normal

When reduced inspection is being carried out, normal inspection shall be reverted to if any of the following occur on original inspection:

- A lot is not accepted; or
- A lot is considered acceptable under the procedures for reduced inspection; or
- Production becomes irregular or delayed; or
- Other conditions warrant the normal inspection shall be reverted to.

Discontinuation of Inspection

If cumulative number of lots not accepted in a sequence of consecutive lots on original tightened inspection reaches 5, the acceptance procedures shall be discontinued. Inspection shall not be resumed until the action has been taken by the supplier to improve the quality of the submitted product or service. (This could be a basis for banning/blacklisting FME.)

Double Normal

Sample Size Code	Sample	Sample size	Acceptable Quality Level (at 6.5)	
			Accept	Reject
A				
B	First	2	↑	
	Second	2		
C	First	3		
	Second	3	↓	
D	First	5	0	2
	Second	5	1	2
E	First	8	0	3
	Second	8	3	4
F	First	13	1	4
	Second	13	4	5
G	First	20	2	5
	Second	20	6	7
H	First	32	3	7
	Second	32	8	9

↓ Use first sampling plan below arrow. If sample size, or exceeds, lot or batch size, carry out 100% inspection.

↑ Use first sampling plan below arrow.
Use corresponding single sampling plan (or alternatively use double sampling plan where available)

Double Tightened

Sample Size Code	Sample	Sample Size	Acceptable Quality Level (at 6.5)	
			Accept	Reject
A			↓	
B	First	2		
	Second	2		
C	First	3		
	Second	3		
D	First	5		
	Second	5		
E	First	8	0	2
	Second	8	1	2
F	First	13	0	3
	Second	13	3	4
G	First	20	1	4
	Second	20	4	5
H	First	32	2	6
	Second	32	6	7

↓ Use first sampling plan below arrow, if sample size equals, or exceeds the lot or batch size, carry out 100% inspection

Use corresponding single sampling plan (or alternatively use double sampling plan below, where available)

Two-Class Plan

Two-class plan attributes are defined by the values ***n, c*** and ***m;*** where ***n*** is the sample size in terms of the number of items, ***c*** is the maximum number of nonconforming items permitted in the sample and ***m*** is a microbiological limit which separates the items into conforming and nonconforming. Any item that is contaminated at a concentration greater than ***m*** is not acceptable. Example, take ten (10) sample units (n) of the lot and test each of them; if two (2) or less show the presence of organism, accept the lot. If three (3) of more sample units show the presence of the organisms, reject the lot.

Annex 3.5.4.3A
MINIMUM MILK TESTING PER LEVEL*

TEST	CODE	Standard	Frequency	Farm*	MCC*	Plant* (Raw)	Pre-Distribution* (Processed)	TEST Equipment
Organoleptic / Sensory	**O/S**	a. Smell - pleasant b. Appearance - no visible dirt c. Taste – pleasant; good	Everyday Everyday Everyday					**Stainless Stirrer or Plunger**
Alcohol Precipitation Test	**APT**	No clot; Pinpoint clot; Negative (-) (*use of 72 % alcohol for cow's milk and 60% alcohol for carabao's milk)*	Everyday					**Alcohol Solution Test tube, Pipette**
Clot on Boiling	**COB**	No clot *(confirmatory for APT* (+) *milk only)*	Everyday					**Bunsen Burner or Alcohol Lamp**
California Mastitis Test	**CMT**	Negative *(no clot)*		Every milking	Every collection	Every collection/ delivery		**80:20 Distilled water: Joy antibac**
Titratable Acidity	**TA**	0.14-0.18% l.a. *(for both cow and carabao's milk)*	Everyday					**Eko/Lactoscan Milk Analyzer/Automatic burette**
Temperature	**T**	4-5 ˚ C	Everyday					**Lab Thermometer**
Hydrogen Ion Concentration	**pH**	6.6 - 6.7 plain 6.5-6.9 choco./ non acidic flavour 6.2-6.6 fruit flavour	Everyday					**pH Meter**

TEST	CODE	Standard	Frequency	Farm*	MCC*	Plant* (Raw)	Pre-Distribution* (Processed)	TEST Equipment
Methylene Blue Reduction Test	**MBRT**	Over 4.5 hrs. – good 2.5-4.5 hrs – average 30 min.-2.5 hrs. – poor < 30 min – very poor	Bulk milk *(daily)* Individual Farmer/Cluster *(1x / week)*					**Water Bath / Incubator**
Total Plate Count	**TPC**	Raw milk 0-300,000 cfu/mL *(bulk milk)* 0-150,000 cfu/mL *(individual farmer)* Pasteurized milk 0-30,000 cfu/mL Sterilized milk- commercially sterile	Monthly					**Autoclave Incubator**
Total Coliform Count	**C**	Pasteurized milk < 10 cfu/mL	Monthly					**Autoclave Incubator**
E. coli Count	**Ec**	Pasteurized milk 0 cfu/mL	Monthly					**Autoclave Incubator**
Butterfat Content	**FAT**	Not < 3.0% - *(cow's milk)* Not < 6.0% - *(carabao's milk)* *Flavoured milk - < 2%*	Daily *(bulk milk)* 2X a month *(individual farmer)*					**Eko/Lactoscan Milk Analyzer/Centrifuge**

TEST	CODE	Standard	Frequency	Farm*	MCC*	Plant* (Raw)	Pre-Distribution* (Processed)	TEST Equipment
Specific Gravity	**Sp. G**	Reading at Ambient Temp. Not < 1.025 *(cow's milk)* Not < 1.028 *(carabao's milk)*	Everyday		■	■		**Eko/Lactoscan Milk Analyzer/Quevenne Lactometer**
Antibiotic Residue Test	**ART**	Negative (-)	Weekly (bulk milk) Monthly (individual farmer)			■		**Incubator**
Somatic Cell Count	**SCC**	< 400,000 cells/ml	Weekly (bulk milk) Monthly (individual farmer)					**Microscope**
Brucella / Leptospira	**B/L**	Negative (-)	Once a year / mature animal					
Tuberculin Test	**Tb**	Negative (-)	Once a year/ animal					

■ – performed in indicated level

MILK QUALITY STANDARDS and SOPs for the MILK FEEDING PROGRAM (MFP)

1. The drink served shall be plain or chocolate milk or flavoured milk, either pasteurized or sterilized. The children and co-implementers may also serve other milk products subject to availability and acceptance.

2. The pasteurized plain or chocolate and other flavoured milk intended to be served for the MFP should pass initially once for PC standards and also pass for three consecutive times for Micro standards; result of which is valid for 6 months:

INDICATORS	FRESH, PASTEURIZED MILK		STERILIZED MILK PRODUCT
	PLAIN	CHOCOLATE-FLAVOURED / OTHER FLAVOURED MILK	
A. Physico-Chemical Test (PC)			
1. Butterfat (%)	min. 3.0	min. 2.0	min. 3.0
2. Milk Solids Not Fat (%)	min. 8.25	min. 9.25	Min. 8.25
3. Total Solids (%)	min. 11.25	min. 18	min. 18
4. Acidity (% lactic acid)	0.14 – 0.18	NA	NA
5. pH	6.6 – 6.7	6.5 - 6.9[a]	6.5 - 6.9

		6.2 - 6.6[b]	
B. Microbiological Test (Micro)			
1.Total Plate Count (cfu/ml)	max. 30,000	max. 30,000	NA
2. Total Coliform Count (cfu/ml)	max. 10	max.10	NA
3. *E. coli* Count (cfu/ml)	0	0	NA
4. Commercial Sterility Test	NA	NA	Commercially Sterile

[a] *Chocolate Milk and other non-acidic milk flavors (ube, pandan)*
[b] *Fruit Flavoured Milk (mango, strawberry, banana)*
NA – Not Applicable
cfu/ml – colony forming unit per milliliter

3. The MFP supplier must submit a certification that:

   - Raw milk used in the preparation of milk products is free from antibiotic residues and passed the Somatic Cell Count standard. This certificate is valid for 6 months.

INDICATORS	RAW MILK
Antibiotic Residue Test	Negative
Somatic Cell Count (cells/ml)	max. 400,000

   - Raw milk was obtained from Brucella and TB-free herd. This certificate is valid for a year.

   - Only certifications issued by the NDA Milk Laboratory shall be recognized.

4. The pasteurized milk supply for the MFP should ideally be kept and maintained at 4 -7˚C. The MFP coordinators in the area shall conduct a regular monthly spot-checking of milk temperature at the milk feeding delivery sites. Temperature lower than 4 C is acceptable, provided that the products are thawed prior to serving to the beneficiaries. Upon delivery, if the temperature of the pasteurized milk is found to be higher than the re quired temperature, the milk supplier shall be charged with a fine in the amount of P500.00. Moreover, the milk would be subjected to a random organoleptic test prior to serving to the beneficiaries.

5. All MFP suppliers are required to have a License to Ope rate (LTO) from BFAD effective 01 June 2007.

6. In the case of the processed long-life milk and based on pre-approved procedures, the product shall be cleared for commercial sterility by any BFAD accredited laboratory prior to release for milk feeding.

7. The type of milk products to be served for milk feeding shall consider the distance of the milk suppliers from the communities/schools beneficiary.

For the unannounced “free of charge” milk quality monitoring tests, the MFP coordinator in collaboration with the laboratory personnel shall collect samples once, in the entire duration of the program. In case of one failed result in any of the quality test indicators, the supplier shall pay for the entire test.

Annex 3.8A

International Health Regulations

The International Health Regulations (IHR) are legally binding regulations adopted by most countries to contain the threats from diseases that may rapidly spread from one country to another. Such diseases include emerging infections like SARS, or a new human influenza virus. The threats also come from other public health emergencies that may affect populations across borders, such as chemical spills, leaks and dumping or nuclear melt-downs.

The newest IHR (2005) are an update of the IHR (1969), which addressed only four diseases: cholera, plague, yellow fever and smallpox (which has since been eradicated). They were focused on the control at borders and relatively passive notification and control measures.

Their revision in 2005 has led to an unprecedented international public health agreement to contain health emergencies at the source, not only at national borders. The revision was adopted by the World Health Assembly in May 2005, and came into force on 15 June 2007. It includes all diseases and health events that may constitute a public health emergency of international concern.

Building on the unique experience of WHO in global disease surveillance, alert and response, the IHR (2005) provide the necessary legal framework. The framework defines the rights, obligations, and procedures in ensuring international health security without unnecessary interference in international traffic and trade.

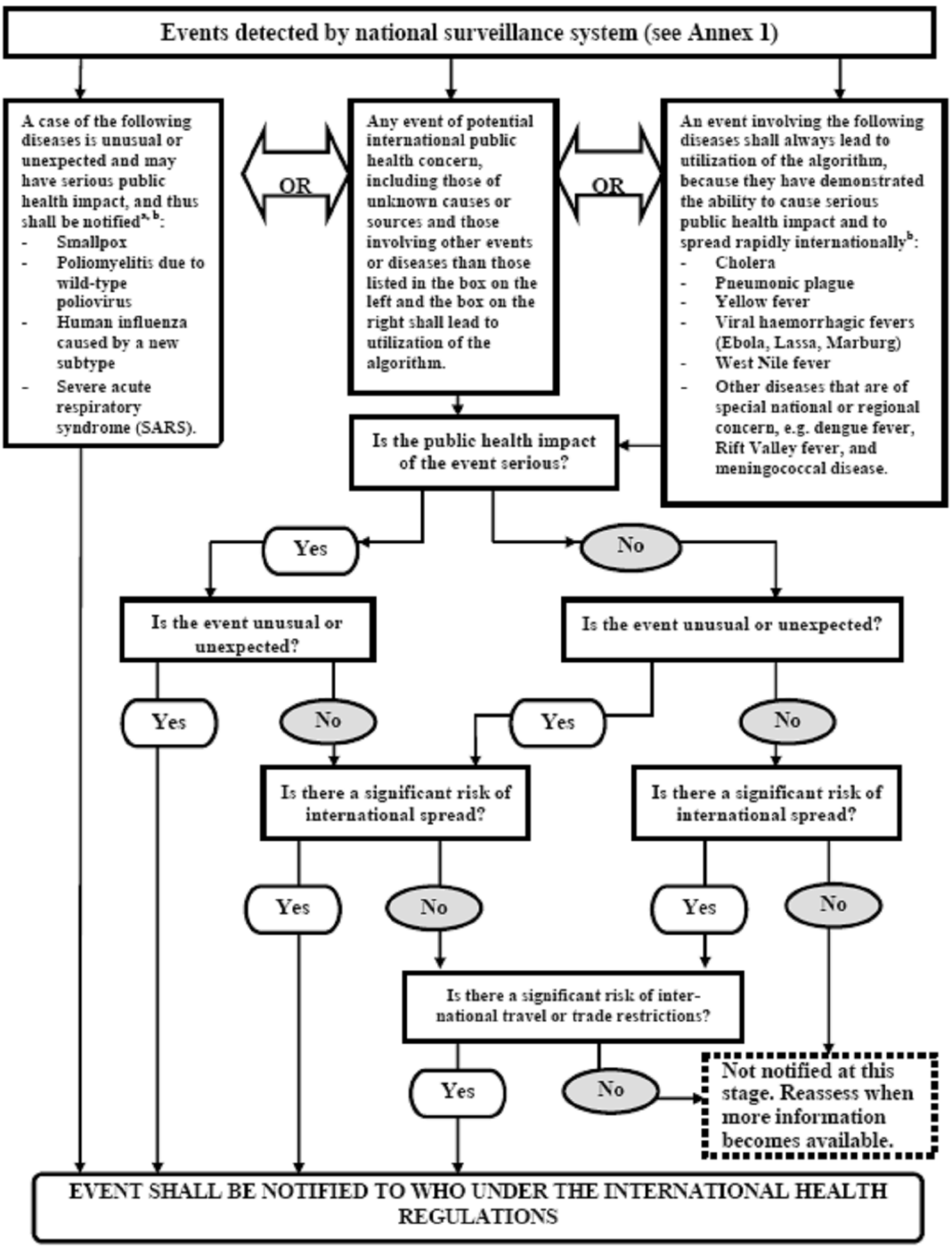
The revised Regulations also require all Member States to strengthen their existing capacity for disease surveillance and response. WHO is working closely with the Member States and partners to provide countries with technical guidance, particularly for the development of skilled human resources and quality infrastructure.

In May 2006, concerned about the public health risk from human cases of avian influenza, the World Health Assembly volunteered to implement in advance some provisions of the revised IHR to contain the pandemic influenza threats.

(Source: WHO)

ANNEX 2

DECISION INSTRUMENT FOR THE ASSESSMENT AND NOTIFICATION OF EVENTS THAT MAY CONSTITUTE A PUBLIC HEALTH EMERGENCY OF INTERNATIONAL CONCERN



[a] As per WHO case definitions.

[b] The disease list shall be used only for the purposes of these Regulations.

EXAMPLES FOR THE APPLICATION OF THE DECISION INSTRUMENT FOR THE ASSESSMENT AND NOTIFICATION OF EVENTS THAT MAY CONSTITUTE A PUBLIC HEALTH EMERGENCY OF INTERNATIONAL CONCERN

The examples appearing in this Annex are not binding and are for indicative guidance purposes to assist in the interpretation of the decision instrument criteria.

DOES THE EVENT MEET AT LEAST TWO OF THE FOLLOWING CRITERIA?

Is the public health impact of the event serious?

I. Is the public health impact of the event serious?

1. *Is the number of cases and/or number of deaths for this type of event large for the given place, time or population?*

2. *Has the event the potential to have a high public health impact?*

THE FOLLOWING ARE EXAMPLES OF CIRCUMSTANCES THAT CONTRIBUTE TO HIGH PUBLIC HEALTH IMPACT:

- ✓ Event caused by a pathogen with high potential to cause epidemic (infectiousness of the agent, high case fatality, multiple transmission routes or healthy carrier).
- ✓ Indication of treatment failure (new or emerging antibiotic resistance, vaccine failure, antidote resistance or failure).
- ✓ Event represents a significant public health risk even if no or very few human cases have yet been identified.
- ✓ Cases reported among health staff.
- ✓ The population at risk is especially vulnerable (refugees, low level of immunization, children, elderly, low immunity, undernourished, etc.).
- ✓ Concomitant factors that may hinder or delay the public health response (natural catastrophes, armed conflicts, unfavourable weather conditions, multiple foci in the State Party).
- ✓ Event in an area with high population density.
- ✓ Spread of toxic, infectious or otherwise hazardous materials that may be occurring naturally or otherwise that has contaminated or has the potential to contaminate a population and/or a large geographical area.

3. *Is external assistance needed to detect, investigate, respond and control the current event, or prevent new cases?*

THE FOLLOWING ARE EXAMPLES OF WHEN ASSISTANCE MAY BE REQUIRED:

- ✓ Inadequate human, financial, material or technical resources – in particular:
  - – Insufficient laboratory or epidemiological capacity to investigate the event (equipment, personnel, financial resources)
  - – Insufficient antidotes, drugs and/or vaccine and/or protective equipment, decontamination equipment, or supportive equipment to cover estimated needs
  - – Existing surveillance system is inadequate to detect new cases in a timely manner.

IS THE PUBLIC HEALTH IMPACT OF THE EVENT SERIOUS?

Answer "yes" if you have answered "yes" to questions 1, 2 or 3 above.

Is the event unusual or unexpected?	**II. Is the event unusual or unexpected?**
	4. *Is the event unusual?* THE FOLLOWING ARE EXAMPLES OF UNUSUAL EVENTS: ✓ The event is caused by an unknown agent or the source, vehicle, route of transmission is unusual or unknown. ✓ Evolution of cases more severe than expected (including morbidity or case-fatality) or with unusual symptoms. ✓ Occurrence of the event itself unusual for the area, season or population.
	5. *Is the event unexpected from a public health perspective?* THE FOLLOWING ARE EXAMPLES OF UNEXPECTED EVENTS: ✓ Event caused by a disease/agent that had already been eliminated or eradicated from the State Party or not previously reported.
	IS THE EVENT UNUSUAL OR UNEXPECTED? **Answer "yes" if you have answered "yes" to questions 4 or 5 above.**

Is there a significant risk of international spread?	**III. Is there a significant risk of international spread?**
	6. *Is there evidence of an epidemiological link to similar events in other States?*
	7. *Is there any factor that should alert us to the potential for cross border movement of the agent, vehicle or host?* THE FOLLOWING ARE EXAMPLES OF CIRCUMSTANCES THAT MAY PREDISPOSE TO INTERNATIONAL SPREAD: ✓ Where there is evidence of local spread, an index case (or other linked cases) with a history within the previous month of: – international travel (or time equivalent to the incubation period if the pathogen is known) – participation in an international gathering (pilgrimage, sports event, conference, etc.) – close contact with an international traveller or a highly mobile population. ✓ Event caused by an environmental contamination that has the potential to spread across international borders. ✓ Event in an area of intense international traffic with limited capacity for sanitary control or environmental detection or decontamination.
	IS THERE A SIGNIFICANT RISK OF INTERNATIONAL SPREAD? **Answer "yes" if you have answered "yes" to questions 6 or 7 above.**

Risk of international restrictions?	IV. Is there a significant risk of international travel or trade restrictions?
	8. *Have similar events in the past resulted in international restriction on trade and/or travel?*
	9. *Is the source suspected or known to be a food product, water or any other goods that might be contaminated that has been exported/imported to/from other States*?
	10. *Has the event occurred in association with an international gathering or in an area of intense international tourism?*
	11. *Has the event caused requests for more information by foreign officials or international media?*
	IS THERE A SIGNIFICANT RISK OF INTERNATIONAL TRADE OR TRAVEL RESTRICTIONS? **Answer "yes" if you have answered "yes" to questions 8, 9, 10 or 11 above.**

States Parties that answer "yes" to the question whether the event meets any two of the four criteria (I-IV) above, shall notify WHO under Article 6 of the International Health Regulations.

Annex 4.4.4A
Standard foodborne disease outbreak case questionnaire [1]

Interviewer name :_____ Date of interview: ____/____/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Introductory note

The content or format may require modification in accordance with the c ircumstances of a particular outbreak in your municipality, province or region. Some aspects of the questionnaire you may wish to customize include:

1. If you suspect a food item that does not appear in this questionnaire, add questions about this food.
2. If a pathogen has been identified, consider adding or altering clinical questions and specifying the incubation period accordingly.
3. Decide how to code onset times when respondents give nonspecific responses such as "morning" or "AM."

Part I. Demographics/Introduction:

Patient Name: _____ **B**irthdate: __/__/_____ Sex: _____
Surname First Name Middle Name [mm]/[dd]/[yy]

Address:_____
House No. Street Name Subdivision Barangay

_____
Town/City Province Zip

Home phone:_____ Mobile phone:_____
Parent's Name (if child)_____ O ccupation: _____
Work Phone: _____ Mobile Phone:_____
Address:_____
House No. Street Name Subdivision Barangay

_____
Town/City Province Zip

Hello. My name is _____and I am a representative from the _____ . I'm here because there have been several cases of _____ in our community and we are working to identify the source of infection, so we can prevent additional illness in the community. We understand that you are one of the persons/related to the person who had this illness. I would like to ask you some questions about the illness and foods that you or the patient ate before becoming ill, that will help us in this work. This will take about ____ minutes. Can we go ahead? Yes No
[Name of Government Institution]

(Magandang araw po. Ako po si _____ mula sa _____. Narito
[Sangay ng Pamahalaan]

po ako ngayon sapagkat may mga naiulat na kaso ng _____ sa ating lugar kung saan kinakailangang tukuyin ang pinagmulan ng impeksyon upang maiwasan ang pagkalat pa ng sakit na ito sa ating komunidad. Nabalitaan ko na isa kayo sa mga nagkasakit/ kakilla ng(mga) taong nagkasakit nito. Nais ko po sanang humingi ng inyong pahintulot na kayo po ay tanungin ko tungkol sa mga pagkaing kinain ninyo/ng pasyente bago po kayo/siya/sila nagkasakit. Ito po ay tatagal ng _____minuto. Maaari na po ba tayong magsimula? Oo Hindi)

If no/hindi: Is there a convenient time I can arrange for this interview? *(Maaari ko po ba kayong interbyuhin sa ibang oras o araw?)* Date: __/__/_____Time ___:___ am pm
[mm]/[dd]/[yy]

Interviewer name :_____ Date of i nterview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

If definite no, reason for refusal to be interviewed:
_____

Who was interviewed?

● Patient ● Other person
Name:_____
Rela tionship to patient:_____
Contact number/s:_____
Addre ss:_____
House No. Street Name Subdivision

_____
Barangay Town/City Province Zip

Part II. Clinical information

Which did the patient experience first: __ vomiting __ diarrhea

Date of onset of vomiting or diarrhea (whichever occurred first): ___/___/_____ [mm]/[dd]/[yy]
Onset time: *Circle closest hour. For on set times after midnight, double-check the onset day/date!*

1 am	7 am	1 pm	7 pm
2	8	2	8
3	9	3	9
4	10	4	10
5	11	5	11
6 am	12 noon	6 pm	12 midnight

	Yes No
Is the patient still experiencing vomiting or diarrhea?	
Date of last day of illness with vomiting or diarrhea: :	____ / ____ / ____
Time of last episode of vomit or diarrhea: ____:____ AM PM	

Read questions exactly as written below. Circle Y for "yes," N for "no" and DK for "don't know, can't remember, not sure" etc.

Did the patient have:

Nausea	Y	N	DK
Vomiting	Y	N	DK
Diarrhea	Y	N	DK
If yes:			
Maximum number of stools in a 24-hour period: _____			
Bloody diarrhea	Y	N	DK
Abdominal cramps	Y	N	DK
Fever	Y	N	DK
Chills	Y	N	DK

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Headache	Y	N	DK
Body aches	Y	N	DK
Fatigue	Y	N	DK
Constipation	Y	N	DK
Others, specify:	Y	N	DK

_____

Did the patient see a healthcare professional, such as a doctor or a nurse?
Y N When? ___/___/_____
[mm] /[dd] /[yy]

Was the patient hospitalized? Y N
Date of hospitalization: ___ /___ /___ to ___ /___ /___
Length of hospital stay:_____days_____hours
Name of Hospital _____
Hospital address: _____
House No. Street Name Subdivision Barangay

_____
Town/City Province Zip

Was a stool culture done? Y N DK

Date: ___ /___ /____ Results: _____

Did the patient take any medications for this illness? Y N DK
List of medications taken during illness

Generic Name	Brand Name	Generic Name	Brand Name
1.		6.	
2.		7.	
3.		8.	
4.		9.	
5.		10.	

Did anyone in the patient's household have a similar illness? If yes, who?

Name	Relationship to patient	Age	Sex
Surname, First Name, Middle Name			

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Does the patient know of anyone else with a diarrheal illne ss during the past week? Y N DK
If yes, please list names and contact numbers below:

Name	Age	Sex	Contact number/s
Surname, First Name, Middle Name			

Part III. General information

Did the patient attend a large gathering the week before his/her illness? (e.g., wedding reception, showers, church events, clubs, school events, athletic events, office parties or banquets, parties, festivals, fairs)
Y N

If yes, what events?
Event 1: _____ location: _____ When? ____ /____ /____
Event 2: _____ location:_____ When? ____ /____ /____
Event 3: _____ location:_____ When? ____ /____ /____
Event 4: _____ location:_____ When? ____ /____ /____

Is anyone else in the patient's neighborhood/school/office/busine ss/health club/church/ synagogue etc. with the same illness? Y N

If yes, please list below:

Name	Age	Sex	Contact No./s	Location
Surname, First Name, Middle Name				

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Did the patient travel anywhere during the seven days before his/her illness? Y N

Check all applicable modes of Transportation used to reach destination:
□ Airplane □ Ship/Inter-island vessel □ Land Vehicle

Airline_____ Outgoing Flight No._____ Name of Ship:_____
Date of Departure: : ___/___/_____ Date of arrival: : ___/___/_____ Destination:_____
Food (name dish) and drinks taken during flight, land trip or while aboard ship:

_____ _____
_____ _____
_____ _____
_____ _____

Check all applicable modes of Transportation used for the return trip:
□ Airplane □ Ship/Inter-island vessel □ Land Vehicle

Airline_____ Return Flight No._____ Name of Ship:_____ _____
Date of Departure: : ___/___/_____ Date of arrival: : ___/___/_____ Destination:_____
Food (name dish) and drinks taken during flight, land trip or while aboard ship:

_____ _____ _____
_____ _____
_____ _____
_____ _____ _____

Please list all places of accommodation as well as food and drinks taken during travel at destination/s.
Name of accommodation:_____
Address: _____ _____ _____
House No. Street Name Subdivision Barangay

_____ _____
Town/City Province Zip

Contact no./s_____ _____
Food and drinks taken:_____ _____
_____ _____
_____ _____

Name of accommodation:_____
Address: _____ _____
House No. Street Name Subdivision Barangay

_____
Town/City Province Zip

Contact no./s_____
Food and drinks taken:_____ _____ _____
_____ _____

Interviewer name :_____ Date of interview: ___/_ __/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Name of accommodation:_____

Address:_____ _____ _____
House No. Street Name Subdivision Barangay

_____
Town/City Province Zip

Contact no./s_____ _____

Food and drinks taken:_____ _____

_____ _____

_____ _____

Please list all other food establishments aside from accommodations where the patient ate (including take out) during travel, seven days before he/she became ill.

Name of Establishment	Location/Address	Date bought	Food eaten
		____/____/____	
		____/____/____	
		____/____/____	
		____/____/____	
		____/____/____	
		____/____/____	

Did the patient have any contact with children in a childcare setting, such as in a daycare center, orphanage, etc. during the seven days before illness? Y N

If yes, when: ____/____/____Name of facility: _____

Location_____ Phone:_____

Is the patient aware of any other illness in the childcare setting? Y N DK

What illnesses is the patient aware of? _____

_____

During the seven days before the patient's illness, did he/she have any pets at home, have contact with household pets elsewhere, or visit a household with pets? (including reptiles) Y N

If yes, what type of pets? _____ _____

If the patient own pets, what type of food are they given? □ Leftover food □ Pet food

Brand of pet food_____

Store and location where pet food is usually bought_____

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Did the patient live on a farm, visit a farm, or visit a petting zoo in the seven days before illness? Y N

If yes: What kind of animal(s) did the patient have contact with?

Name/Type of Animal	Date of Contact	Place of Contact	Name/Type of Animal	Date of Contact	Place of Contact
1.	/ /		5.	/ /	
2.	/ /		6.	/ /	
3.	/ /		7.	/ /	
4.	/ /		8.	/ /	

From what sources of water did the patient drink during the seven days before his/her illness?

Municipal tap water	Y	N	DK
Private well water	Y	N	DK
Public Well	Y	N	DK
Untreated surface water (river, pond, lake)	Y	N	DK
Bottled water	Y	N	DK
Other _____			

Did the patient drink any untreated/raw water during the seven days before his/her illness?

Y N

If yes, where?_____

Did the patient swim during the seven days before his/her illness? Y N

If yes, where?

Ocean/sea	Y	N	Location:_____
Pool	Y	N	Location:_____
Lake	Y	N	Location:_____
Pond	Y	N	Location:_____
River	Y	N	Location:_____
Floodwaters	Y	N	Location:_____
Others, specify:_____	Y	N	Location:_____

Where (e.g. wet market, grocery, sari-sari store, side walk vendor, ambulant vendor) did the patient shop for food items consumed the week before illness?

Type of Store	Name of Store (if applicable)	Location	Date of Purchase
			/ /
			/ /
			/ /
			/ /
			/ /
			/ /
			/ /

Interviewer name :_____ _____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Part IV. Restaurants Exposures:

In the seven days before the patient's illness, did he/she eat or take out food from any of the following types of commercial food establishment?

Restaurant	Y	N	DK
Fast-food establishment	Y	N	DK
Cafeteria	Y	N	DK
Coffee shops/Café	Y	N	DK
Read-to-eat food served in a Supermarket or department store?	Y	N	DK
Street-vended food/Carinderia	Y	N	DK
Concession stands at train stations or malls	Y	N	DK
Snack bar	Y	N	DK
Gas station	Y	N	DK

Please list all such food establishments where the patient ate during the seven days before he/she became ill.

Name: _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____
_____

Name: _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____
_____

Name: _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____
_____

Name: _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____
_____

Interviewer name :_____ _____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Name: _____ _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____
_____ _____

Name: _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____ _____
_____

Name: _____ date: ____ / ____ / ____
Address: _____ time: ___:___ AM PM
Foods eaten:
_____
_____

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Part V. Open-ended food history:

Please place a checkmark at the column corresponding to whether food was eaten at home or outside of home.

List the location of the meal and foods eaten within _____ days____hours before onset of symptoms. [Use the incubation period applicable to the agent/disease under investigation, e.g.,

Bacillus cereus: 1-24 hours
Campylobacter: 1-10 days
Cryptosporidium: 1-12 days
E. coli O157:H7: 2-7 days
Salmonella : 0-5 day s
Shigella 0-3 days
Staphylococcus: 30 min - 8 hrs
Vibrio parahemolyticus: 0-2 days
Viral agent: 0-3 days

If a specific agent is not suspected at the time of interview, ask about the day of illness and the four days before illness.

Day of illness onset: 0			**Date: __/__/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	__	__		
Lunch	__	__		
Dinner	__	__		
Other	__	__		

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name

[mm] /[dd] /[yy]

Day of illness onset: 1			**Date: ___/___/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	___	___		
Lunch	___	___		
Dinner	___	___		
Other	___	___		

Day of illness onset: 2			**Date: ___/___/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	___	___		
Lunch	___	___		
Dinner	___	___		
Other	___	___		

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

Day of illness onset: 3			**Date: ___/___/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	___	___		
Lunch	___	___		
Dinner	___	___		
Other	___	___		

Day of illness onset: 4			**Date: ___/___/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	___	___		
Lunch	___	___		
Dinner	___	___		
Other	___	___		

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name

[mm] /[dd] /[yy]

Day of illness onset: 5			**Date: __/__/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	__	__		
Lunch	__	__		
Dinner	__	__		
Other	__	__		

Day of illness onset: 6			**Date: __/__/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	__	__		
Lunch	__	__		
Dinner	__	__		
Other	__	__		

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Day of illness onset: 7			**Date: __/__/_____**	
Meal	**Ate at home**	**Ate outside of home**	**Food Establishment**	**Foods eaten**
Breakfast	__	__		
Lunch	__	__		
Dinner	__	__		
Other	__	__		

Interviewer name :_____ Date of interview: ___/___/_____
Surname First Name Middle Name [mm] /[dd] /[yy]

Appendix: Specific food consumption history:

Please check (√) the appropriate box indicating whether the patient **maybe ate (Not sure), did (Yes)** or **did not (No)** eat any of the food items listed below, during the seven (7) days before he/she became ill. For "Yes" and "Not sure" answers, fill out the remainder of columns.

Inclusive dates: ___/____/___ to ___/____/____

DAIRY

Food item	YES	NO	NOT SURE	PREPARATION (pasteurized, unpasteurized, processed, unprocessed, cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Butter							/ /	/ /	
Carabao's Milk							/ /	/ /	
Cow's milk							/ /	/ /	
Goat's milk							/ /	/ /	
Cheese							/ /	/ /	
Dressing/Cooking Cream							/ /	/ /	
Ice cream							/ /	/ /	
Margarine							/ /	/ /	
Yogurt							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

MEAT AND POULTRY

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Beef							/ /	/ /	
Chicken							/ /	/ /	
Duck							/ /	/ /	
Goat							/ /	/ /	
Pork							/ /	/ /	
Reptile, specify: Monitor lizard (*bayawak*)							/ /	/ /	
Python (*sawa*)							/ /	/ /	
Internal organs (beef), specify: Tripe (“goto”)							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Internal organs (chicken), specify: Gizzard (“*balunbalunan*”)							/ /	/ /	
Liver (“atay”)							/ /	/ /	
							/ /	/ /	
Internal organs (goat), specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Internal organs (pork), specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Others, specify: Blood							/ /	/ /	
							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name

[mm] /[dd] /[yy]

PROCESSED MEAT AND POULTRY PRODUCTS

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Bacon							/ /	/ /	
Beef Longganisa							/ /	/ /	
Beef Sausage							/ /	/ /	
Beef Tapa							/ /	/ /	
Cheesedog							/ /	/ /	
Chickenball							/ /	/ /	
Chicken Longganisa							/ /	/ /	
Chicken nuggets							/ /	/ /	
Chicken Sausage							/ /	/ /	
Chicken Tocino							/ /	/ /	
Ham							/ /	/ /	
Hotdog							/ /	/ /	
Kikiam							/ /	/ /	
Pork Longganisa							/ /	/ /	
Pork Siomai							/ /	/ /	
Pork Tocino							/ /	/ /	
Salami							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

CANNED FOOD

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Carne norte							/ /	/ /	
Corned beef							/ /	/ /	
Liver Spread							/ /	/ /	
Luncheon Meat							/ /	/ /	
Meat Loaf							/ /	/ /	
Pork and beans							/ /	/ /	
Sardines							/ /	/ /	
Tuna							/ /	/ /	
Vienna Sausage							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	

EGGS

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked, pasteurized)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Century egg							/ /	/ /	
Chicken egg							/ /	/ /	
Duck egg (*balut*)							/ /	/ /	
Duck egg (*penoy*)							/ /	/ /	
Duck egg (*itlog na maalat*)							/ /	/ /	
Quail egg							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

SEAFOOD AND SHELLFISH

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Clams						/ /	/ /	
Crabs						/ /	/ /	
Crablets (*talangka*)						/ /	/ /	
Eel						/ /	/ /	
Fish, specify:						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
Fishballs						/ /	/ /	
Lobster						/ /	/ /	
Mussels						/ /	/ /	
Octopus						/ /	/ /	
Oysters						/ /	/ /	
Sea urchin						/ /	/ /	
Shrimps/Prawns						/ /	/ /	
Snail (*kuhol, susô*)						/ /	/ /	
Squid						/ /	/ /	
Squidballs						/ /	/ /	
Others, specify:						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
						/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

FRUITS

Food item	YES	NO	NOT SURE	PREPARATION (fresh, processed, preserved, cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Apple							/ /	/ /	
Atis							/ /	/ /	
Avocado							/ /	/ /	
Banana							/ /	/ /	
Berries, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Citrus fruits, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Coconut							/ /	/ /	
Durian							/ /	/ /	
Grapes							/ /	/ /	
Guava							/ /	/ /	
Guyabano							/ /	/ /	
Jackfruit							/ /	/ /	
Kiwi							/ /	/ /	
Lanzones							/ /	/ /	
Lychee							/ /	/ /	
Mango							/ /	/ /	
Melon							/ /	/ /	
Passion fruit							/ /	/ /	
Papaya							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

Food item	YES	NO	NOT SURE	PREPARATION (fresh, processed, preserved, cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Peach							/ /	/ /	
Pear							/ /	/ /	
Pineapple							/ /	/ /	
Prunes							/ /	/ /	
Rambutan							/ /	/ /	
Santol							/ /	/ /	
Star apple							/ /	/ /	
Watermelon							/ /	/ /	
Other fruit, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	

FRESH VEGETABLE

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Alugbati							/ /	/ /	
Ampalaya							/ /	/ /	
Asparagus							/ /	/ /	
Baguio beans							/ /	/ /	
Bamboo shoots (*Labong*)							/ /	/ /	
Bell pepper							/ /	/ /	
Broccoli							/ /	/ /	
Cabbage							/ /	/ /	
Carrots							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Cauliflower							/ /	/ /	
Celery							/ /	/ /	
Cucumber							/ /	/ /	
Corn							/ /	/ /	
Eggplant							/ /	/ /	
Green Papaya							/ /	/ /	
Kamote tops (*talbos ng kamote*)							/ /	/ /	
Leeks							/ /	/ /	
Lettuce, Iceberg							/ /	/ /	
Lettuce, red leaf							/ /	/ /	
Lettuce, romaine							/ /	/ /	
Malunggay							/ /	/ /	
Mongo							/ /	/ /	
Mongo sprouts							/ /	/ /	
Mushrooms							/ /	/ /	
Mustasa							/ /	/ /	
Onion							/ /	/ /	
Patola							/ /	/ /	
Peanut							/ /	/ /	
Pechay Tagalog							/ /	/ /	
Pechay Baguio							/ /	/ /	
Radish (*Labanos*)							/ /	/ /	
Sayote							/ /	/ /	
Sitsaro							/ /	/ /	
Spinach							/ /	/ /	
Squash							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name

[mm] /[dd] /[yy]

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
String beans (*sitaw*)							/ /	/ /	
Sweet potato (*Kamote*)							/ /	/ /	
Taro (*Gabi*)							/ /	/ /	
Taro leaves (*dahon ng gabi*)							/ /	/ /	
Tomato							/ /	/ /	
Turnips(*Singkamas*)							/ /	/ /	
Upo							/ /	/ /	
Water cabbage (*Kangkong*)							/ /	/ /	
Water chestnut (*apulid*)							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

CONDIMENTS, SPREADS AND SAUCES

Food item	YES	NO	NOT SURE	PREPARATION (uncooked, cooked, preserved)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Catsup							/ /	/ /	
Cheese spread							/ /	/ /	
Coconut milk							/ /	/ /	
Fish paste (*bagoong isda*)							/ /	/ /	
Gravy							/ /	/ /	
Jams and jellies, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Lechon sauce							/ /	/ /	
Mayonnaise/Sandwich spread							/ /	/ /	
Peanut butter							/ /	/ /	
Salad dressing, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
Shrimp paste (*Bagoong alamang*)							/ /	/ /	
Tomato paste							/ /	/ /	
Tomato sauce							/ /	/ /	
Others, specify:							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

BREAD, BAKED PRODUCTS AND NATIVE PRODUCTS

Food item	YES	NO	NOT SURE	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Bibingka						/ /	/ /	
Biko						/ /	/ /	
Cake						/ /	/ /	
Doughnut						/ /	/ /	
Flavored bread (ube, mongo, raisin, coffee, chocolate, milk)						/ /	/ /	
Herbed bread (e.g. foccacia)						/ /	/ /	
Hopia						/ /	/ /	
Kutsinta						/ /	/ /	
Maja blanca						/ /	/ /	
Muffin						/ /	/ /	
Palitaw						/ /	/ /	
Pan americano						/ /	/ /	
Pan de sal						/ /	/ /	
Pastillas						/ /	/ /	
Pastry, specify:						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
						/ /	/ /	
Puto						/ /	/ /	
Sapin Sapin						/ /	/ /	
Suman						/ /	/ /	
Yema						/ /	/ /	
Others, specify:						/ /	/ /	
						/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

PASTA, NOODLES AND GRAINS

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Angel Hair							/ /	/ /	
Bihon							/ /	/ /	
Canton							/ /	/ /	
Cereal							/ /	/ /	
Fettuccini							/ /	/ /	
Lasagna							/ /	/ /	
Lomi							/ /	/ /	
Macaroni							/ /	/ /	
Malagkit							/ /	/ /	
Miki							/ /	/ /	
Oatmeal							/ /	/ /	
Penne							/ /	/ /	
Rice							/ /	/ /	
Sotanghon							/ /	/ /	
Spaghetti							/ /	/ /	
Vermicelli (*palabok, pancit Malabon*)							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	

BEVERAGES

Food item	YES	NO	NOT SURE	PREPARATION (unpasteurized, pasteurized,sterilized, distilled, purified, processed)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE TAKEN	STORAGE (refrigerated/ room temperature)
Water							/ /	/ /	
Carbonated drinks							/ /	/ /	
Chocolate drink							/ /	/ /	
Soy milk							/ /	/ /	

Interviewer name :_____ Date of interview: ___/___/_____

Surname First Name Middle Name [mm] /[dd] /[yy]

Food item	YES	NO	NOT SURE	PREPARATION (unpasteurized, pasteurized,sterilized, distilled, purified)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE TAKEN	STORAGE (refrigerated/ room temperature)
Fruit juice/shake, specify fruits:							/ /	/ /	
Hot tea							/ /	/ /	
Iced tea							/ /	/ /	
Milk tea							/ /	/ /	
Water							/ /	/ /	
Soy Milk							/ /	/ /	
Others, specify:							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	
							/ /	/ /	

OTHERS, PLEASE SPECIFY:

Food item	YES	NO	NOT SURE	PREPARATION (raw, cooked, half-cooked, pasteurized/sterilized, processed, preserved)	BRAND	WHERE ITEM WAS BOUGHT	DATE BOUGHT	DATE EATEN	STORAGE (refrigerated/ room temperature)
Tofu (*Taho*)									
Tofu (*Tokwa*)									

[1] Adapted from a standardized questionnaire developed by the Center for Disease Control for use as a template for investigating foodborne disease outbreaks and modified according to the common Filipino diet.

Annex 4.4.8

RESEARCH INSTITUTE FOR TROPICAL MEDICINE
Alabang Muntinlupa City

MICROBIOLOGY RESEARCH DEPARTMENT

_____
Family Name First Middle
Hospital No:_____Age:_____Sex:____
Address/Ward/Bed: _____
Requested By: _____
Date:_____ Time: _____

Diagnosis: _____
Specimen Source: _____

SMEAR:

Gram Stain ☐ Darkfield ☐ India Ink ☐

AFB Smear ☐ Immunoflour ☐ Wet Mount ☐

CULTURE:

Aerobic ☐ Anaerobic ☐ Fungus ☐ Virus ☐ AFB ☐

Results: _____

SENSITIVITY	R	I	S		R	I	S		R	I	S	
Penicillin				Chlorampenicol				Clindamycin				
Oxacillin				Tetracyline								
Cephalotin				Kanamycin								
Ampicillin				Gentamycin								
Piperacillin				Tobramycin								
Cefamandole				Amikacin								
Cefotaxime				Malidixie Acid								
				Nitro Ferentoin								

_____ _____ _____
Date Reported Technologist Microbiologist

Annex 4.4.8A

VIROLOGY LABORATORY REQUEST FORM

Laboratory Research Division
Research Institute for Tropical Medicine
Filinvest Corporate City Compound, Alabang, Muntinlupa City 1781
Tel. Nos.: (02) 807-2628 to 32 Loc. 605 , Direct Tel./Fax. No.: (02) 809-7120

Laboratory I.D.
(For RITM Use Only)

IMPORTANT: Kindly read the Guide to Specimen Collection, Handling and Transport at the back of this form. All specimens should be accompanied by a legibly and completely filled -out Request Form for processing and testing.

Patient's Name: (Family, Given, MI)	Sex:	Age (yrs./mos):	Hospital No.:	Patient Classification: ___ OPD ___ AS ___ IN
Address:	Requesting MD: Hospital: Address: Tel.:			Ward/Bed:
Clinical Impression:	Date of Onset (mm/dd/yy)		Suspected Viral Agent:	

Specimen	Date & Time Collected (mm/dd/yy)	Specimen	Date & Time Collected (mm/dd/yy)
Nasopharyngeal Aspirate (NPA)	_____	Urine	_____
Nasopharyngeal Swab (NPS)	_____	Stool	_____
Oropharyngeal/Throat Swab	_____	Blood (Acute)	_____
Vesicular Fluid/Swab	_____	Blood (Convalescent)	_____
Endocervical /Urethral Swab	_____	Blood (EDTA)	_____
Cerebrospinal Fluid (CSF)	_____	Others: _____	_____

Date/ Time Received: _____

Received By: _____

Condition/Remarks:

OR No.:

Test(s) Desired:

☐ Viral Culture ☐ Rapid Antigen Detection (IF) ☐ Viral Serology

☐ Molecular (Polymerase Chain Reaction) ☐ Chlamydia IF Detection

FOR RITM USE ONLY

Result/Interpretation:

Date Reported:

Lea Necitas G. Apostol, RMT	**Hazel O. Galang, RMT**	_____
Technologist	Virologist	Pathologist

Annex 4.4.8B

RESEARCH INSTITUTE FOR TROPICAL MEDICINE
Alabang Muntinlupa City

CLINICAL PATHOLOGICAL REQUEST

Hosp. Unit Number : _____
Name of Patient : _____
Age : _____Sex : _____ /__/ In /__/ Out
Address / Ward / Bed : _____
Classification : _____
Specimen : _____
Date & Time Collected : _____
Clinical Impression : _____
Specify Desired Examination : _____

_____, M.D.

Date Received : _____
Time Received : _____
Received By : _____

RESEARCH INSTITUTE FOR TROPICAL MEDICINE
Alabang Muntinlupa City

CLINICAL PATHOLOGICAL REQUEST

Hosp. Unit Number : _____
Name of Patient : _____
Age : _____Sex : _____ /__/ In /__/ Out
Address / Ward / Bed : _____
Classification : _____
Specimen : _____
Date & Time Collected : _____
Clinical Impression : _____
Specify Desired Examination : _____

_____, M.D.

Date Received : _____
Time Received : _____
Received By : _____

Annex 4.4.8C
Sanitary Inspection of food establishment

DEPARTMENT OF HEALTH

Office of the City/Municipal Health Officer

SANITARY INSPECTION OF FOOD ESTABLISHMENT

Establishment: _____ Category: _____
Owner/Manager: _____
Address: _____
No. of Personnel: _____ No. with Health Certificate _____ Sanitary Permit No. _____

SPECIAL FEATURES

ITEMS	DEMERIT (X)	RECOMMENDED CORRECTIVE MEASURES
1.		
2.		
3.		
4. CONSTRUCTION OF PREMISES		
5. MAINTENANCE OF PREMISES		
6. TOILET PROVISION		
7. HANDWASHING FACILITIES		
8. WATER SUPPLY		
9. LIQUID WASTE MANAGEMENT		
10. SOLID WASTE MANAGEMENT		
11. WHOLESOMENESS OF FOOD		
12. PROTECTION OF FOOD		
13. VERMIN CONTROL		
14. CLEANLINESS AND TIDINESS		
15. PERSONAL CLEANLINESS		
16. HOUSEKEEPING AND MANAGEMENT		
17. CONDITIONS OF APPLIANCES & UTENSILS		
18. SAN. CONDITIONS OF APPLIANCES & UTENSILS		
19. DISEASE CONTROL		
20. MISCELLANEOUS		

TOTAL DEMERITS ----------

NOTE: Non-complying item are indicated with an (x). Every such item is weighted a demerit of 5. The rating of the establishment is therefore 100 – (number of demand x 5). The result is expressed as a percentage (%) rating.

SANITATION STANDARD	PERCENTEGE RATING
EXCELLENT	90 – 100 %
VERY SATISFACTORY	70 – 89 %
SATISFACTORY	50 – 60%

Received by: Inspected By:

_____ _____
Owner/Operator/Manger Sanitary inspector

_____ _____
Date Date

SPECIAL FEATURES ITEMS 1 TO 3

a) EATING & DRINKING ESTABLISHMENTS
(including Hotels, Motels, Boarding Houses & the likes, Restaurants, Coffee Shops, Canteens Panciteria, Bistro, Carinderia, Fast foods, Refreshment Rooms/Parlors, Cafeteria/Snack Bars, Cocktail Lounge, Bars, Disco, Night Clubs & similar establishments)
1. Cleaning food utensils (prescribed method)
2. Food Protection (specific requirements)
3. Kitchen

b) BAKERY, BAKEHOUSE, BAKESHOP,

CAKE SHOP, CAKE KITCHEN
1. Storage/protection, ingredients
2. Storage/protection, flour
3. Condition of fixed appliances

c) DELICATESSENS
1. Separation, cooked/uncooked meats
2. Uncooked poultry, wrapped
3. Common cutting device

d) BUTCHER SHOPS, MEATSHOP, FISH SHOP
1. Storage/protection, meats
2. Food contact surfaces
3. Common cutting device

e) SALE OF ICE CREAM/FROZEN

CONFECTIONS
1. Storage of servers
2. Sterilizing server, etc.
3. Protection, cones wafers, frozen foods, etc.

f) ICE CREAM MANUFACTURER
1. Cleansing/Sterilizing plant/equipment
2. Storage/protection ingredients
3. Effectiveness of "no touch" techniques

g) MILK SHOPS
1. Milk temperature
2. Approved storage compartment
3. Sale, other products

h) MILK STORAGE/PENDING RETAIL SALE
1. Refrigerated storage
2. Self-closing doors
3. Exclusion of contaminating substances

i) STORAGE/BOTTLING RAW MILK
1. Cleansing/sterilizing bottle
2. Mechanical capping]
3. Storage/protection, bottle caps

j) RETAIL SALE OF LIQUOR
1. Glass-washing/storage
2. No smoking, etc.
3. Demijohn washing

k) WHOLE SALE OR LIQUOR & WINE SELLERS
1. Testing-room, sink, hot and cold water
2. Cleansing/storage, bottles/demijohn
3. Storage containers, corks, seals

l) BREWERIES

1. *Storage/protection, brewing ingredients*
2. Cleansing/storage, ottles/containers
3. Disposal of spent hops and yeast

m) WINE MAKERS
1. Cleansing/storage, bottles/containers
2. Disposal, mark, and wastes
3. Storage containers, corks, etc.

n) MANUFACTURER OF AERATED WATERS & BEVERAGES
1. Cleansing/storage, bottles
2. Contact surfaces
3. Syrup room

o) GROCER'S SHOPS

(including those not otherwise registered)
1. Protection, display food
2. Storage/Protection, perishable food
3. Bulk store and packaging

p) FRUIT & VEGETABLE SHOPS
(Including those not otherwise registered)
1. Food off ground
2. Storage/disposal, waste
3. Protection, special fruit

q) STORAGE, PACKING & PULPING OF EGGS
1. Cool, dump-proof storage for whole eggs
2. Candling equipment
3. Food contract surfaces

r) MARKETS
1. Separation of foods from other goods
2. Cleanliness of poultry cages and pens
3. Waste storage & disposal

s) ABATTOIRS
1. Approved plan
2. Slaughtering of animals
3.Container for refuse (specific requirements)

Annex 4.4.8D

FOOD EMPLOYEE REPORTING AGREEMENT

Preventing Transmission of Diseases through Food by Infected Food Employees with Emphasis on illness due to Salmonella typhi, Shigella spp., Escherichia coli 0157:H7, and Hepatitis A Virus.

The purpose of this agreement is to ensure that Food Employees notify the Person in Charge when they experience any of the conditions listed so that the Person in Charge can take appropriate steps to preclude the transmission of foodborne illness.

I AGREE TO REPORT TO THE PERSON IN CHARGE:

FUTURE SYMPTOMS and PUSTULAR LESIONS:

1. Abdominal Cramps
2. Diarrhea
3. Fever
4. Prolonged loss of appetite (more than 3 days)
5. Jaundice
6. Vomiting
7. Pustular lesions:
   -Pustular lesion on the hand, wrist, or an exposed body part (such as boils and infected wounds, however small)

FUTURE MEDICAL DIAGNOSIS:

Whenever diagnosed as being ill with typhoid fever (Salmonella typhi), shigellosis (Shigella ssp.), Escherichia coli 0157:H7 infection (E. coli 0157:H7), or hepatitis A (hepatitis A virus)

FUTURE HIGH-RISK CONDITIONS:

1. Exposure to or suspicion of causing any confirmed outbreak of typhoid fever, shigellosis, E. coli 0157:H7 infection, or hepatitis A.
2. A household member diagnosed with typhoid fever, shigellosis, illness due to E. coli 0157:H7, or hepatitis A.
3. A household member attending or working in a setting experiencing a confirmed outbreak of typhoid fever, shigellosis, E. coli 0157:H7 infection, or heaptitis A.
4. Travel outside the United States within the last 50 days.

I have read (or had explained to me) and understand the requirements concerning my responsibilities under the Food Code and this agreement to comply with:

1. Reporting requirements specified above involving symptoms, diagnoses, and high-risk conditions specified;
2. Work restrictions or exclusions that are imposed upon me; and
3. Good hygienic practices.

I understand that failure to comply with the terms of this agreement could lead to action by the food establishment or the food regulatory authority that may jeopardize my employment and may involve legal action against me.

Applicant or Food Employee Name (PLEASE PRINT)

Signature of Applicant or Food Employee **Date**

Signature of Permit Holder's Representative **Date**

Annex 4.4.8E

Categorization of Tests by Laboratory

Food Category	Laboratory
Unslaughtered livestock, , poultry, animal feeds and feed ingredients	Laboratory Services Division, Bureau of Animal Industry or regional laboratories
Fresh, chilled, frozen local and imported unprocessed meat and meat products	National Meat Inspection Service MIS central & satellites
Unprocessed Plants/Vegetables	Bureau of Plant Industry
Raw milk, unprocessed dairy products	National Dairy Authority
Water	National Reference Laboratory for Water-East Avenue Medical Center and accredited water testing laboratories
Processed Food	Bureau of Food and Drugs (BFAD)

Annex 4.4.8F

Foodborne Outbreak Kit Inventory					
Item	***Date:***	***Date:***	***Date:***	***Date:***	***Date:***
	Check & Initial	***Check & Initial***	***Check & Initial***	***Check & Initial***	***Check & Initial***
(1) Digital Camera					
(2) Foodborne Outbreak Investigation Checklist					
(2) Foodborne Illness Investigation report					
(3) Sample Collection Form					
(5) 10 oz. Sterile food sample container					
(4) 18 oz. Whirl-Pak bag					
(4) Zip Loc Bag 13 x 18 in. (4 ml thick)					
(3) Sterile Spoon (1 Tablespoon.)					
(1) Sterile Scoop 4 oz.					
(3) Sterile Spatula					
(1) 60 ml/2 oz. stainless steel sterile ladle					
(1) 250 ml/8 oz. stainless steel sterile ladle					
(5) Sterile cotton-tipped swabs					
(1) Sterile stainless steel tong					
Embargo Stickers					
Alcohol Preps					
Medium Vinyl Gloves					
Large Vinyl Gloves					

Annex 4.4.8G

Foodborne Outbreak Investigation Checklist

Food Inspector Checklist	*Task*	*Initials*
☐	1. Immediately embargo any suspect leftovers to prevent further illness.	
☐	2. Ensure that there is no bare hand contact with ready-to-eat foods.	
☐	3. Do not allow food to be served without checking and assuring safe temperatures.	
☐	4. Examine the walk-in refrigerator for food in large stockpots, in addition to whole roasts, or other foods more than four inches thick that were cooled. Take temperatures and determine when they were prepared and how they were cooled. Embargo if suspect.	
☐	5. Interview each food worker to determine if they are ill or have been ill within the last two weeks.	
☐	6. If the employee has been sick with a food-related illness within the last 3 days, exclude him or her from food preparation. (Notify Supervisor so that Disease Control can be contacted to obtain a stool culture.)	
☐	7. Obtain the complete menu served to ill group (including beverages, appetizers, dessert, etc.) and fax or call into office.	
☐	8. Obtain detailed food-handling procedures (including date, time & preparer) for each step in preparation of suspect food(s).	
☐	9. Identify ingredients, including weight/volume, and steps involved in the preparation of suspect food(s).	
☐	10. Collect samples for laboratory analysis as needed.	

Annex 4.4.8H

Sample Collection Form

Item: Brand name:
Collected at: Establishment License Number:
Address: City:
Manufacturer Name & Address:

Collected by:	Collection Date/Time:	Results to: FOO ☐ SHL ☐

Condition	Sealed	Product Code/Date of Manufacture	Manufactured on Premises	Sample Code	Establishment Temp. º F
Hot Cold Frozen Other	☐ Yes ☐ No		Yes ☐ No ☐		

Temp. Received º F	Exp. Date	From Lot of	Size	Date of Shipment

Consumer Complaint:	Complaint #:

Name & location of store where purchased:	Establishment License #	Original Container	Date Purchased
		☐ Yes ☐ No	

How stored	*Import Product*	*Date*	*Interviewed by*	*Time*	*Product used*	*Amount Remaining*
Frozen Ambient Cold	☐ Yes ☐ No				☐ Yes ☐ No	

Chain of Custody – Date, Time or Transaction of Complaint from Field to Lab, etc. (please sign then print your name)		***Date***	***Time***	***How stored***
1. From (sign):	**To (sign):**			
Print	Print			
2. From (sign):	**To (sign):**			
Print	Print			
3. From (sign):	**To (sign):**			
Print	Print			

Food Chemistry Tests* (please check)							**Food Micro Tests***	
☐FC01 Acetic Acid	☐FC08 Cereal Qual	☐FC16 Histamine	☐FC 24 Moisture	☐FC 33 Potassium	☐FC38 Sugars	☐FC69 Vitamin A	☐SM16 Bacillus cereus	☐SM0 8 Listeria
☐FC03 Added H_2O	☐FC10 Domoic Acid (ASP)	☐FC17 Lactic Acid	☐FC25 Mold/Yeast	☐FC34 Protein	☐FC39 Sulfite	☐FC70 Vitamin D	☐SM Campylobacter	☐SM32 Non-Coag Staph
☐FC04 Additives	☐FC11 Ethanol	☐FC19 Lactose/ Galactose	☐FC27 Non-Fat Dairy Milk	☐FC32 Phytoplankton	☐FC40 Thiobarbituric Acid	☐FC45 Water Activity	☐SM15 Coag. Staph	☐SM18 Salmonella
☐FC05 Allergens	☐FC12 Fat	☐FC20 L-Glutamic Acid	☐FC28 Nitrite	☐FC35 PSP	☐FC41 Titratable Acidity	☐FC46 Wt./Vol.	☐SM20 Clostridium Botulinum	☐SM24 Standard Plate Count
☐FC02 Aflatoxin	☐FC13 Free Fatty Acid	☐FC21 Magnesium	☐FC29 Organoleptic	☐FC36 Sodium	☐FC42 Trimethyl-amine		☐SM19 Clostridium perfringens	☐SM12 Total Coliform/MPN
☐FC06 Brix	☐FC14 Filth	☐FC22 Meat Species ID	☐FC30 pH	☐FC26 Sodium Chloride	☐FC43 Total Solids-RI		☐SM14 Fecal/MPN	☐SM Yersinia
☐FC07 Calcium	☐FC15 Heavy Metals	☐FC23 Mercury	☐FC31 Phosphorous	☐FC37 Soy Flour	☐FC44 Total Volatile Bases	**Other:**		

ESTABLISHMENT:_____

FOOD HANDLER INFORMATION FORM

NAME	PHONE (WORK) ( ) _____ -	PHONE (HOME) ( ) - _____

ADDRESS	CITY	STATE	*SEX:* Male Female

JOB TITLE:	WHAT DOES THE EMPLOYEE DO (DEFINE DUTIES)?

Clinical Information

Was the foodhandler sick during the past two weeks? ☐ Y ☐ N *(If no skip to WORK HISTORY)*

IF YES, WHAT WERE THE SYMPTOMS OF ILLNESS?

Diarrhea	Abdominal	Headache	Loss of Appetite
Vomiting	Cramps	Muscle Aches	Fatigue
Nausea	Fever	Chills	Dizziness
	Bloody Stool		Burning Sensation in Mouth

Other Symptoms	Symptom onset date	Duration of symptoms
_____	____/____/_____	_____days or _____hours

DID THE FOODHANDLER SEEK MEDICAL CARE? ☐ Y ☐ N (*If no skip to WORK HISTORY*)

PHYSICIANS NAME	PHONE NUMBER
_____	( ) _____- _____

ANY SPECIMENS OBTAINED? Y N	TYPE OF SPECIMEN: Stool Blood Other:_____
DATE OF SPECIMEN COLLECTION ____/____/____	LABORATORY _____

WAS THE CASE HOSPITALIZED? Y N	NAME OF HOSPITAL: _____	HOSPITAL CHART NO. _____

Work History

- Did the food handler prepare/serve/or handle foods, assist others in eating, or give oral medications? ☐ Y ☐ N
- What are the specific dates the food handler worked in the last two weeks?

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY

- In the past two weeks, did the foodhandler miss any work? ☐ Y ☐ N
  If yes, when:
  _____
- In the past two weeks, did the foodhandler work while experiencing loose stools? ☐ Y ☐ N
  If yes, when:
  _____
- In the past two weeks, were any household contacts ill? ☐ Y ☐ N
  If yes, when:
  _____
- In the past two weeks, did the foodhandler travel out of state/foreign? ☐ Y ☐ N
  If yes, where:
  _____

Duties And Responsibilities

- Did the foodhandler prepare/handle/serve, any foods that would not be cooked before being eaten?
  Y N
  If yes, please list all foods prepared/handled/served (e.g. salads, deserts, sandwiches, beverages, ice):

  _____ _____ _____ _____
  _____ _____ _____ _____
  _____ _____ _____ _____

- Does the foodhandler wash his/her hands every time after using the bathroom? Y N
- Does the foodhandler wash his/her hands throughout the day? Y N
- Are there times when the foodhandler has bare hand contact with ready-to-eat foods? Y N
  If yes, when:

  _____

- Are there times when the foodhandler does not wear protective gloves? Y N
  If yes, when:

  _____

- Are there times when the foodhandler does not use serving utensils? Y N
  If yes, when:

  _____

- Does the foodhandler work at any other establishment (daycare, food service or healthcare)? Y N
  If yes, please provide:
  Facility name: _____
  Phone: ( ) _____-_____

  Address: _____City: _____State: _____

  Person notified: _____Title: _____Date:_____/_____/____

  Specific Dates worked at other establishment in the last two weeks:

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY

Notes:

Will submit a stool specimen for surveillance purposes (not diagnostic) Y N

Person completing the form: _____Date/Time: _____

Annex 4.4.8J

TO BE FILLED UP BY MICROBIOLOGY LAB

MC-RCS No. _____
Date received _____
By_____

BFAD-LSD-FORM
MC-RCS

_____
Routine Slip No.

REQUEST FOR MICROBIOLOGICAL ANALYSIS
OF COLLECTED SAMPLES
(Please print legibly)

_____
Date

A. Product Identity and Description

1. Brand & Product Name _____
2. Manufacturer/Distributor Name & Address _____

_____

3. Package Type ☑

☐ Can/Retortable Pouch
☐ Bottle
☐ Tetra Pack
☐ Doy Pack
☐ Rigid Plastic Container
☐ Flexible Plastic Container/Bag
☐ Other, *please specify* _____

_____

4. Appropriate storage condition ☑

☐ ambient/room temperature ☐ requires refrigeration ☐ frozen

5. Lot Identification Code _____
6. Date Marking

Production Date _____

Expiry/Best Before/Consume Before Date _____
(underline type of date marked on label/container)

7. Container Condition
   ☐ Original Container Unopened without Seal
   ☐ Original Container Unopened with Seal Intact
   ☐ Original Container Opened/ Seal Broken or Tampered
   ☐ Not in Original Container, *please describe container* _____

_____

B. Amount of Samples Submitted (*number x vol/wt*) _____

C. Source of Sample (☑ Check appropriate source of sample)

☐ Purchased from _____
Name and Address of Retail Outlet

_____

Collected from:

☐ Manufacturer's Processing Plant: ☐ Production line ☐ Warehouse

☐ Manufacturer's Warehouse (not within premises of processing plant)

_____
(Warehouse name & address)

☐ Manufacturer's Authorized Distributor _____

_____
(Distributor name & address)

☐ Other Manufacturer's Processing Plant using the product _____

_____
(processing plant name & address)

☐ Other (*please specify*) _____

_____

D. Purpose of Collection: _____

_____

_____

E. Examination Desired: ☑

☐ Standard /Aerobic Plate Count (SPC / APC)
☐ Coliform Plate Count
☐ Molds & Yeasts Count
☐ E. coli
☐ Salmonella
☐ Staphylococcus aureus
☐ Listeria
☐ Commercial sterility

☐ Others, *please specify*

_____
_____
_____
_____
_____
_____

F. Specific Instructions: _____

_____

_____

_____

Submitted by: _____
Name

_____
Position/Designation

_____
Division/Field Office

NOTE: Use one request form per sample to be submitted for analysis.

Annex 4.4.8K

BFAD-LSD-FORM
MC-RCM

TO BE FILLED UP BY MICROBIOLOGY LAB

MC-RCM No. _____
Date received _____
By _____

_____
Routing Slip No.

REQUEST FOR MICROBIOLOGICAL ANALYSIS OF COMPLAINT SAMPLES
(Please print legibly)

_____
Date

A. Product Identity and Description

1. Brand & Product Name _____
2. Manufacturer/Distributor Name & Address _____

_____

3. Package Type ☑

☐ Can/Retortable Pouch
☐ Bottle
☐ Tetra Pack
☐ Doy Pack
☐ Rigid Plastic Container
☐ Flexible Plastic Container/Bag
☐ Other, *please specify* _____

_____

4. Appropriate storage condition ☑

☐ ambient/room temperature ☐ requires refrigeration ☐ frozen

5. Lot Identification Code _____
6. Date Marking
   Production Date _____
   Expiry/Best Before/Consume Before D ate _____
   (underline type of date marked on label/container)
7. Container Condition

☐ Original Container Unopened without Seal
☐ Original Container Unopened with Seal Intact
☐ Original Container Opened/ Seal Broken or Tampered
☐ Not in Original Container, *please describe container* _____

_____

B. Amount of Samples Submitted (*number x vol/wt*) _____

Is sample submitted part of consumed food suspected to have caused alleged illness/injury suffered by complaint(s)? ☑

☐ Yes
☐ No, but from same lot code
☐ No, purchased from same outlet/received from same person/entity
☐ Other, please specify _____

_____

_____

C. Source of Sample (☑ Check appropriate source of sample)

Annex 4.4.8K

☐ Purchased from _____
Name and Address of Retail Outlet

_____

Date of Purchase _____

☐ Received from _____
Name and Address of Person/Entity as Source of Complained Sample

D. Nature of Complaint

[Brief description of circumstances leading to complaint, including but not limited to those indicated below, is important to determine the appropriate laboratory examination.]

1) date of consumption of complained product _____
2) no. of days/hours between consumption and purchase/acquisition of complained product _____
3) no. of persons who consumed product _____
4) description of symptoms manifested (*vomiting, diarrhea, etc*.) _____

_____

_____

5) date/time of onset of symptoms _____
6) no. of persons affected with similar symptoms _____
7) age of person affected _____.

Additional Information: (Use separate sheet, if necessary)

_____

_____

_____

_____

<u>NOTE:</u> If person/s affected was/were examined by a physician, please attach medical report/certificate.

E. Requesting Party/Complainant

Postal Address:

_____ _____
Printed Name and Signature _____

_____ _____
Telephone / Fax No

_ _ _ _ _ _

TO BE FILLED BY THE LABORATORY SERVICES DIVISION

Product / Sample submitted to LSD:

Date & Time received: _____ by _____

If product requires refrigeration/frozen storage, describe condition upon receipt & how transported to BFAD.

_____

_____

Annex 4.4.8L

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF HEALTH
BUREAU OF FOOD AND DRUGS
Filinvest Corporate City
Alabang, Muntinlupa City

MALAYA AT MALUSOG NA PAMAYANAN

4 February 2004

BUREAU CIRCULAR
No. 014 s. 2004

TO: ALL CONCERNED

SUBJECT: **GUIDELINES FOR THE ASSESSMENT OF MICROBIOLOGICAL QUALITY OF PROCESSED FOODS**

In order to protect the public health, the BFAD is mandated to ensure food manufacturers comply with Good Manufacturing Practices (GMP). One of the food safety measures being implemented is the reduction of microbial contamination in processed foods through the application of Hazard Analysis Critical Control Point (HACCP).

This Bureau Circular is hereby issued to serve as guidelines for the assessment of microbiological quality of certain processed foods.

The reference criteria is prescribed in Tables 1-6. The Tables contain a description of the food to which a criterion applies, the required test(s) or the microorganism(s) of concern, the number of samples to be tested, the level of microorganisms considered to be acceptable, marginally acceptable or critical, and the number of samples which should conform to the limits.

The methods used for the enumeration or detection of specified microorganisms shall be those that have been internationally established. Such methods are obtained from the following recognized references:

1. FDA Bacteriological Analytical Manual published by the AOAC.
2. Compendium of Analytical Methods of the Canadian Health Protection Branch
3. Compendium of Methods for the Microbiological Examination of Foods compiled by the American Public Health Association (APHA)
4. Microorganisms in Foods by the International Commission on Microbiological Specifications for Foods (ICMSF)

This Bureau Circular shall take effect immediately and supersede other regulations or guidelines inconsistent herewith.

PROF. LETICIA-BARBARA B. GUTIERREZ, M.S.
Director IV

Annex 4.4.8M

TABLE 1. MILK AND DAIRY PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Milk Powders (whole, nonfat or filled milk, buttermilk, whey & whey protein concentrate)	Bacillus cereus, *cfu/g* *S. aureus* (coagulase +), cfu/g [1]Coliforms, cfu/g *Salmonella* / 25g normal routine for high risk population SPC/APC, cfu/g	5 5 5 5 15 5	1 2 1 0 0 2	10^2 10 10 0 0 5×10^4	10^3 10^2 10^2 2×10^5
Sweetened Condensed Milk	[1]Coliforms, cfu/g YMC, cfu/g SPC/APC, cfu/g	5 5 5	1 1 1	10 10 10^3	10^2 10^2 10^4
Liquid Milk (evaporated or ready to drink) and **Cream** Ultra Heat Treated / Sterilized	Commercial Sterility	6			
Pasteurized Milk	[1]Coliforms, cfu/ml *Salmonella* / 25 ml *Listeria monocytogenes* / 25 ml Psychrotrophic bacteria, cfu/ml SPC/APC, cfu/ml ➡ for flavored milk	5 5 5 5 5 5	1 0 0 1 1 2	10^2 0 0 10 5×10^4 5×10^4	10^3 10^2 10^5 10^6
Pasteurized Cream	[1]Coliforms, cfu/ml *Salmonella* / 25 ml *Listeria monocytogenes* / 25 ml SPC/APC, cfu/ml Psychrotrophic bacteria, cfu/ml	5 5 5 5 5	1 0 0 1 1	10^2 0 0 5×10^4 10	10^3 10^5 10^2
Yoghurt & other fermented Milk	*S. aureus* (coagulase +), cfu/g [1]Coliforms, cfu/g *Salmonella* / 25g	5 5 5	2 2 0	10 10 0	10^2 10^2
Butter & Whipped Butter	*Enterococci, cfu/g* YMC, cfu/g Proteolytic bacteria, cfu/g	5 5 5	1 1 1	10 20 10^2	10^2 10^2 10^3
Butter made from unpasteurized milk and/or milk products	*Coliforms, cfu/g* *E. coli,* MPN/g *S. aureus* (coagulase +), cfu/g *Salmonella* / 25g Listeria monocytogenes */ 25g* SPC/APC, cfu/g	5 5 5 5 5 5	1 1 1 0 0 0	10 <3 10 0 0 5×10^4	10^2 11 10^2 10^5

[1] Coliforms must be negative for *E. coli*

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 1. MILK AND DAIRY PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
All Cheese made from pasteurized milk	*S. aureus* (coagulase +), cfu/g *E. coli,* MPN/g	5 5	2 1	10^2 <11	10^3 <110
Cottage Cheese	Coliforms, MPN/g Psychrotrophic bacteria, cfu/g	5 5	1 2	<11 10^2	10^3 10^3
Soft & Semi-soft cheese (moisture ≥39%, pH > 5)	*Salmonella* / 25g Listeria monocytogenes */ 25g*	5 5	0 0	0 0	
All Raw Milk cheese	*Listeria monocytogenes* / 25g *Salmonella* / 25g	5 5	0 0	0 0	
Raw Milk Unripened Cheese with moisture >50%, pH >5.0	*Campylobacter* / 25g	5	0	0	
Processed Cheese Spread	[1]Coliforms, cfu/g *S. aureus* (coagulase +), cfu/g SPC/APC, cfu/g	5 5 5	1 1 2	10 10 10^4	10^2 10^2 $5x10^4$
Ice Cream & Sherbet plain & flavored	*[1]Coliforms, cfu/g* *S. aureus* (coagulase +), cfu/g Salmonella */ 25g* SPC/APC, cfu/g	5 5 5 5	1 1 0 2	10 10 0 10^4	10^3 10^2 $5x10^4$
Ice Cream with added ingredients **(nuts, fruits, cocoa, etc.)**	*[1]Coliforms, cfu/g* *S. aureus* (coagulase +), cfu/g Salmonella */ 25g* SPC/APC, cfu/g	5 5 5 5	2 1 0 2	10 10 0 $5x10^4$	10^3 10^2 2×10^5

[1] Coliforms must be negative for *E. coli*

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 2. FOOD FOR INFANTS AND YOUNG CHILDREN

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Powdered Infant Formula with or without added Lactic acid producing cultures	*Bacillus cereus* , cfu/g *S. aureus* (coaguilase +), cfu/g Coliforms, MPN/g E. coli*, MPN/g* Salmonella */ 25 g* SPC/APC, cfu/g (prior to addition of lactic acid producing cultures) For complaint investigation *Cl. perfringens,* cfu/g *Listeria monocytogenes* / 25g	5 5 5 10 10 5 5 5	2 1 2 1 0 2 1 0	10 0 <3 <1.8 0 10^3 <1 0	10^2 10 11 10 10^4 10
Infant formula (liquid) UHT/sterilized	Commercial Sterility	6			
Baby foods in hermetically sealed containers (thermally processed)	Commercial Sterility	6			
Dried & instant products requiring reconstitution	[1]*Coliforms, MPN/g* Salmonella /25g SPC/APC, cfu/g	5 60***** 5	1 0 2	<3 0 10^3	20 10^4
Instant Infant Cereal	Bacillus cereus, *cfu/g* Cl. perfringens, *cfu/g*	10 10	1 1	10^2 10^2	10^4 10^3
Dried products requiring reconstitution and boiling before consumption	*Coliforms,* cfu/g Salmonella */25g* SPC/APC, cfu/g	5 5 5	2 0 3	10 0 10^4	10^2 10^5
Infant Formula (liquid) UHT/sterilized	Commercial Sterility	6			
Coated or Filled, Dried Shelf-Stable Biscuits	[1]*Coliforms,* MPN/g Salmonella */ 25g*	5 10	2 0	<3 0	20

[1] Coliforms must be negative for *E. coli*

***** 25 g sample units may be composited to a quantity not to exceed 400 g
n = 60 ➡ 4 x 15 (25g) composite units

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 3. MEAT AND POULTRY PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Dried Animal Products (blood, plasma, gelatin)	*S. aureus* (coagulase +), cfu/g *Cl. perfringens,* cfu/g *Salmonella* / 25g	5 5 10	1 1 0	10^2 10^2 0	10^4 10^4
Meat Paste & Paté, heat treated	*Salmonella* / 25g *Clostridium perfringens*, cfu/g *S. aureus* (coagulase +), cfu/g [1]Coliforms, cfu/g SPC/APC, cfu/g	5 5 5 5 5	0 2 2 2 2	0 10^2 10^2 10 10^4	 10^3 10^3 10^2 10^5
Cold Cuts, Frozen & Chilled **Hot Dogs, Corned Beef, Luncheon Meat**	*E. coli*, MPN/g *Salmonella* / 25g *S. aureus* (coagulase +), cfu/g SPC/APC, cfu/g	5 10 5 5	0 0 2 2	<1.8 0 10^2 10^5	 10^3 10^6
Packaged cooked cured/salted meat (ham, bacon)	*S. aureus* (coagulase +), cfu/g *Salmonella* / 25g *Listeria monocytogenes* / 25g	5 5 5	2 0 0	10^2 0 0	10^3
Fermented, comminuted meat, not cooked (dry and semi-dry fermented sausages)	*S. aureus* (coagulase +), cfu/g *E. coli*, MPN/g *Salmonella* / 25g	5 5 5	1 0 0	10^3 <1.8 0	10^4
Cooked Poultry Meat, Frozen to be reheated before eating (e.g., prepared frozen meals)	*S. aureus* (coagulase +), cfu/g *Salmonella* / 25g	5 5	1 0	10^3 0	10^4
Cooked Poultry Meat, Frozen, Ready-to-Eat (e.g.,Turkey rolls)	*S. aureus* (coagulase +), cfu/g *Salmonella* / 25g	5 10	1 0	10^3 0	10^4
Cured / Smoked Poultry Meat	*S. aureus* (coagulase +), cfu/g Salmonella */ 25g*	10 10	1 0	10^3 0	10^4
Dehydrated Poultry Products	Salmonella */ 25g*	10	0	0	
Fresh/Frozen Raw Chicken during processing	SPC/APC, cfu/g (at 20°C)	5	3	$5x10^5$	10^7
Meat Products in hermetically Sealed containers (thermally processed)	Commercial Sterility	6			
Pasteurized Egg Products (liquid, frozen or dried)	Coliforms, cfu/g Salmonella */ 25g* YMC, cfu/g (for dried product) SPC/APC, cfu/g	5 10 5 5	2 0 0 0	10 0 10 $2.5x10^4$	10^3 10^5

[1] Coliforms must be negative for *E. coli*

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 4. FISH AND SHELLFISH PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Fresh Frozen Fish [a] and Cold-Smoked [b]	*E. coli,* MPN/g	5	3	11	<500
	Salmonella / 25g	5	0	0	
	V. parahaemolyticus, cfu/g	5	2	10^2	10^3
	S. aureus (coagulase +), cfu/g	5	2	10^3	10^4
	SPC/APC, cfu/g	5	3	$5x10^5$	10^7
Pre-Cooked Breaded Fish	*E. coli,* MPN/g	5	2	11	<500
	S. aureus (coagulase +), cfu/g	5	1	10^3	10^4
	SPC/APC, cfu/g	5	2	$5x10^5$	10^7
Frozen Raw Crustaceans [c]	*E. coli,* MPN/g	5	3	11	<500
	S. aureus (coagulase +), cfu/g	5	2	10^3	10^4
	Salmonella / 25g	5	0	0	
	V. parahaemolyticus, cfu/g	5	1	10^2	10^3
	SPC/APC, cfu/g	5	3	10^6	10^7
Frozen Cooked Crustaceans	E. coli, MPN/g	5	2	11	<500
	S. aureus (coagulase +), cfu/g	5	0	10^2	
	Salmonella / 25g	20	0	0	
	V. parahaemolyticus, cfu/g	10	1	10^2	10^3
	SPC/APC, cfu/g	5	2	$5x10^5$	$5x10^6$
Cooked, Chilled & Frozen Crabmeat [d]	E. coli, MPN/g	5	1	11	<500
	S. aureus (coagulase +), cfu/g	5	0	10^3	
	V. parahaemolyticus, cfu/g	10	1	10^2	10^3
	SPC/APC, cfu/g	5	2	10^5	10^6
Fresh & Frozen Bivalve Molluscs [e]	E. coli**,** MPN/g	5	0	16	
	Salmonella / 25g	20	0	0	
	V. parahaemolyticus, cfu/g	10	1	10^2	10^3
	SPC/APC, cfu/g	5	0	$5x10^5$	
Fish & Shellfish products in hermetically sealed containers (thermally processed)	Commercial Sterility	6			

[a] For fish derived from inshore/inland waters of doubtful bacteriological quality, particularly warm areas or harvested during summer. Tests for *Salmonella* and *V. parahaemolyticus* recommended if fish is to be eaten raw.

[b] Test for *S. aureus* recommended for smoked fish.

[c] Test for *S. aureus* recommended for breaded products. *Salmonella* and *V. paraheamolyticus* applied to products from warm waters or harvested during summer.

[d] SPC/APC for frozen products only

[e] Criteria to be used only for molluscs from approved harvesting areas where waters are free form enteric bacteria or virus contamination and no significant contamination by toxic metals or chemicals may be accumulated by animals.

Tests for *Salmonella* and *V. parahaemolyticus* recommended fro molluscs from endemic areas or harvested from warm waters or during summer.

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 5. FRUITS, VEGETABLES AND NUTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Frozen Vegetables & Fruits (pH > 4.5)	*E. coli,* MPN/g	5	2	<110	10^3
Fruit & Vegetable products in Hermetically sealed containers (thermally processed)	Commercial Sterility	6			
Dried Vegetables	*E. coli* **,** MPN/g	5	2	<110	10^3
Coconut (desiccated)	*Salmonella* / 25g	10	0	0	
Yeast	Salmonella / 25g	20	0	0	
Peanut Butter & other Nut Butters ➡consumed without heating or other treatment to destroy microbes	*Salmonella* / 25g	10	0	0	
➡ used as ingredient in high **moisture food**	*Salmonella* / 25g	20	0	0	
Sun Dried Fruits	Molds, cfu/g Osmophilic Yeasts, cfu/g E. coli, *MPN/g*	5 5 5	2 2 2	10^2 10 <3	10^4 10^3 11
Spices	Molds, cfu/g SPC/APC, cfu/g	5 5	2 2	10^2 10^4	10^4 10^6
Spices (ready to eat)	[1]*Coliforms, cfu/g* *S. aureus* (coagulase +), cfu/g Salmonella */ 25g* *Molds*, *cfu/g* SPC/APC, cfu/g	5 5 5 5	2 2 0 2	10^2 10^2 0 10^2	10^3 10^4 10^4
Cocoa Powder	*Molds*, *cfu/g* *Salmonella* / 25g Coliforms, MPN/g SPC/APC, cfu/g	5 5 5 5	2 0 2 2	10^2 0 <1.8 10^4	10^4 10 10^6
Chocolate Products	*Molds*, *cfu/g* *Salmonella* / 25g Coliforms, MPN/g SPC/APC, cfu/g	5 10 5 5	2 0 2 2	10^2 0 <1.8 10^4	10^4 10^2 10^6

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 6. CEREAL AND CEREAL/LEGUME -BASED PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Cereals/Cereal Grains	Molds, cfu/g	5	2	10^3	10^5
Cultured seeds and grains (bean sprouts, alfalfa, etc.)	E. coli, cfu/g Coliforms, cfu/g	5 5	2 2	10 10^2	10^2 10^4
Breakfast Cereals and Snack Foods	*Molds,* cfu/g Yeasts & Yeastlike Fungi, cfu/g Coliform, cfu/g SPC/APC, cfu/g	5 5 5 5	2 2 2 2	10 10 10 10	10^3 10^2 10^2 10^2
Soya Flours, Concentrates and Isolates	Molds, cfu/g Salmonella, / 25g	5 5	2 0	10^3 0	10^5
Flour, Corn meal, Corn grits, Semolina	Molds, cfu/g Yeasts & Yeastlike Fungi, cfu/g Coliform, cfu/g *Bacillus subtilis,* cfu/g "rope spores"	5 5 5 5	2 2 2 2	10^2 10 10 10	10^4 10^2 10^2 10^2
Frozen Bakery products (ready-to-eat) with low-acid or high a_w fillings or toppings	*S. aureus* (coagulase +), cfu/g Salmonella */ 25g*	5 5	1 0	10^2	10^4
Frozen Bakery Products (to be cooked) with low-acid or high aw fillings or toppings (e.g. meat pies, pizzas)	*S. aureus* (coagulase +), cfu/g *Salmonella* / 25g	5 5	1 0	10^2 0	10^4
Frozen Entrees containing Rice or Corn Flour as main ingredient	B. cereus, cfu/g	5	1	10^2	10^4
Frozen & Refrigerated Doughs	Molds, cfu/g Yeasts & Yeastlike Fungi, cfu/g Coliform, cfu/g Psychrotrophic bacteria, cfu/g SPC/APC, cfu/g	5 5 5 5 5	2 2 2 2 2	10^2 10^5 10 10 10^3	10^4 10^6 10^2 10^3 10^6

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8M

TABLE 6. CEREAL AND CEREAL/LEGUME -BASED PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM **Reference Criteria**	**n**	**c**	**m**	**M**
Soy Protein	Coliforms, cfu/g	5	2	10^2	10^3
	E. coli, *cfu/g*	5	1	10	10^2
	Psychrotrophic bacteria, cfu/g	5	2	10^2	10^4
	Cl. perfringens, *cfu/g*	5	2	<10	10^2
	Molds, cfu/g	5	2	10	10^2
	Salmonella / 25g	5	0	0	
	SPC/APC, cfu/g	5	2	10^2	10^5
Tofu	*B. cereus*, cfu/g	5	2	10^2	10^3
	S. aureus (coagulase +), cfu/g	5	2	10^2	10^3
	E. coli, MPN/g	5	0	<1.8	
Pasta Products	Coliforms, cfu/g	5	2	10	10^3
	YMC	5	1	10	10^5
	Salmonella	5	0	0	
	S. aureus (coagulase +), cfu/g	5	1	10^2	10^4
	SPC/APC	5	2	10^3	10^5
Dry Mixes for Soups and Sauces	*Cl. perfringens,* cfu/g	5	2	10^2	10^3
	YMC, cfu/g	5	3	10^2	10^4
	Coliforms, cfu/g	5	3	10	10^3
	SPC/APC	5	2	10^4	10^6
Starch	Coliforms, cfu/g	5	2	10	10^2
	YMC, cfu/g	5	2	10^2	10^3
	Salmonella	5	0	0	
	SPC/APC, cfu/g	5	2	10^3	5×10^4

Legend:

n - the number of sample units selected from a lot of food to be examined

m - the acceptable level of microorganism determined by a specified method; th e values are generally based on levels that are achievable under GMP

M - the level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

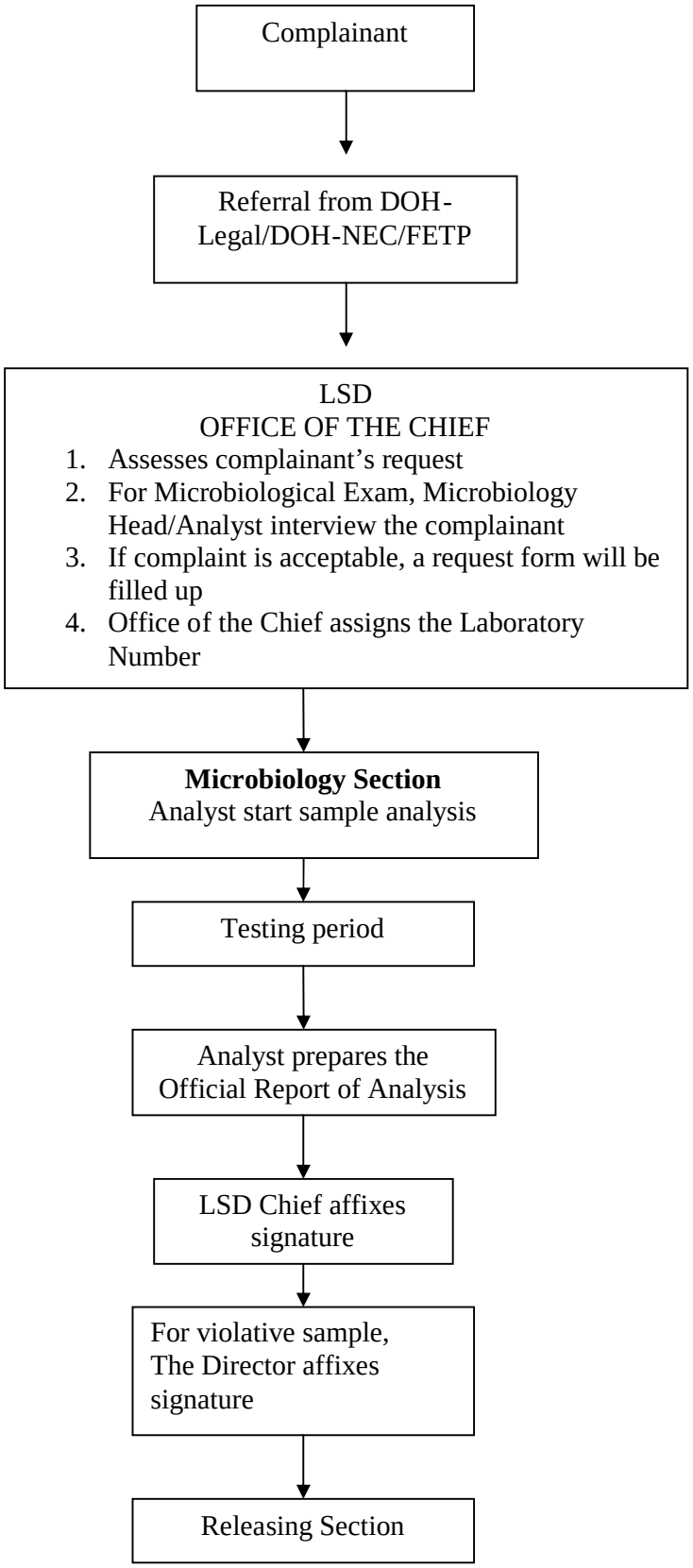
c - the maximum allowable number of defective or marginally acceptable units

Annex 4.4.8N

Laboratory Services Division

MICROBIOLOGY SECTION

PROCEDURE FOR FILING A REQUEST FOR LABORATORY ANALYSIS OF COMPLAINT SAMPLE



Annex 4.4.8O

Republic of the Philippines

NATIONAL DAIRY AUTHORITY

BAI Compound, Visayas Avenue, Diliman, Quezon City

REQUEST FOR LABORATORY SERVICE (RLS) FORM

Client: _____ Date: _____

Address: _____ RLS No. _____

Tel. No.: _____

Fax No.: _____

1. LABORATORY ANALYSIS

Sample	Description, Package and Code	Type of Analysis	Unit Cost	Total Cost

2. Other Services

_____

_____

Description of Service: (use of extra page if needed)

3. Client's Instruction/s

_____

_____

4. Remarks

_____

_____

Approved by: Information Checked and Verified by: Conforme:Client/Authorized Representative

Printed Name:

Signature Signature: Signature

This form will serve as basis for the issuance of NDA Report/s to client.

_____

Annex 4.4.8P

LSD Form No. 1A (ARBITRARY)
LSD Control No. _____

_____
Date

LABORATORY REQUEST FORM
(*for local and walk-in clients)*

Requested by:

Owner: _____
Representative: _____
Establishments: _____
Address: _____
Tel. No.: _____

Sample submitted: _____

Type of sample: ( ) Fresh ( ) Frozen ( ) Canned ( ) Others _____

Sampling date: _____
Date of slaughter: _____
Time of slaughter: _____
Date Processed: _____
Sampler Name: _____
Source: _____

No. of samples: _____ Weight (approximate) per sample: _____

Examination Desired:

( ) Organolepic Test
( ) Bacteriological Test
( ) Pathological Test
( ) Molecular-Based Test

- ○ Salmonella
- ○ Yersinia
- ○ Listeria Monocytogenes
- ○ Campylobacter
- ○ E. coli (0157:H7)
- ○ Meat species identification

( ) Veterinary Drug Residue Test

- ○ Elisa Test
  - ○ Chloramphenicol
  - ○ Nitrofuran
  - ○ Beta Agonist
  - ○ Hormones
  - ○ Corticosteroids

○ Microbial Inhibition Test

○ Penicillin ○ Sulfa drugs ○ Tetracycline

○ Streptomycin ○ Erythromycin ○ Quinolone

( ) Others, please specify: _____

Remarks: _____ _____

_____

Received by: _____

Date Received: _____ **Approved by:**

OR No. _____

DR. MARVIN B. VICENTE
Head, DA-NMIS LSD

Annex 4.4.8Q

LCD Form No. 1B
LSD Control No. _____

_____
Date

LABORATORY REQUEST FORM
(for Examination of Imported Meat and Meat Products)

Name of Storage: _____

Consignee: _____

Sampling date: _____

A. Packaging:

Place of Origin: _____
Establishment No.: _____
Vet. Control No.: _____
Container No.: _____
Net. Weight: _____
External Packaging Appearance: *(Please check whichever is applicable)*

( ) Carton with/without polyfoil ( ) Polysack w/ or w/out polyfoil
( ) Stockinet w/ or w/out polyfoil ( ) Styropor receptacle
( ) Jute sack w/ or w/out polyfoil ( ) Others _____

Date of Packaging: _____
Expiration Date: _____

B. Examination of the Samples:

No. of samples in carton: _____
Block product? ( ) Yes ( ) No
Inside Packaging: *(Please check whichever is applicable)*

( ) Polyfoil bag
( ) Polythylene bag
( ) Alu, Poly, Tray Packing
( ) Polyfoil w/ Multivac/Cyrovac
( ) Others _____

Condition: ( ) Chilled ( ) Frozen Internal Temperature of Meat: _____°C

C. Meat Identification: _____

	Normal	**Abnormal**	**Remarks *(please specify)***
Color	○	○	_____
Odor	○	○	_____
Texture	○	○	_____

Total Weight *(approximate)* of samples submitted: _____

D. Examination Desired: _____
_____

_____
Signature over printed name of Plant Officer/Veterinarian

Received by: _____
Date Received: _____

APPROVED BY: _____
Date: _____

Annex 4.4.8S

LSD Form No. 1C
LSD Control No. _____

LABORATORY REQUEST FORM

(for Examination of Canned Meat Products)

_____
Date

CLIENT : _____

ADDRESS : _____

TEL/FAX : _____

Description of Samples:

( ) Export ( ) Import ( ) Local ( ) Others _____

Please accomplish the following information per product to be examined.

Product Name	Brand/Manufacturer	Weight	Product Code	Mfg. Date	Expiry Date	# of samples

TOTAL # of CANS: _____

REMARKS *(Please accomplish /product if appropriate)*

_____

_____

Examination Desired:

( ) Organoleptic Test
( ) Chemical Test
( ) Parasitological Test
( ) Bacteriological Test
( ) Pathological Test
( ) Others, please specify: _____

Requested by:

Name: _____
(Signature over printed name)
Address: _____
Tel No. _____

Approved by: _____
LSD Head

Date: _____

Annex 4.4.8R

LSD Form No. 1D
Control No. _____

_____
Date

TO:
CLIENT: _____
ADDRESS: _____ _____
TEL/FAX: _____

FROM: _____

Please be informed that the Meat Samples you submitted to the NMIS Cetral/Satellite Meat Laboratory for the laboratory examination were rejected due to the following reasons:

a) Without label

b) Contaminated

c) Wrong Sample

d) Underweight

e) Advance stage of spoilage
e.g. extreme foul odor

f) Others: _____ _____

For your information.

ANNEX 4.4.8V

RECORDING OF TEST RESULTS (LOGBOOK)

Date	Laboratory Accession#	Requesting Party	Residual Chlorine	Time Collected	Time Received	Source	Sampling Point	Address (Source)	LB 24hr	LB 48hr	EC 24hr	EC 48hr	EC 24hr	BGLB 48hr

Annex 4.4.8W

Republic of the Philippines
Department of Health
East Avenue Medical Center
NATIONAL REFERENCE LABORATORY
East Avenue, Diliman, Quezon City
Tel. No./Fax No.: 435-71-36; Website: www.doh.gov.ph/nrl

Accession No. :
Laboratory No. :
Submitted by :

Date and Time of
Collection :
Receipt :
Examination :

Sample Source :
Location :

Physical Characteristics:

BACTERIOLOGICAL EXAMINATION OF WATER

Result of Analysis		Remark(s)
Total Coliforms	**Fecal Coliforms**	

Philippine National Standards for Drinking Water (PNSDW)

	Refilling Station/Water Treatment Works	*Public Water Supplies*
MPN/100ml. Total Coliform	*Less than 1.1 or 0*	
MPN/100ml. Total Coliform	*Less than 1.1 or 0*	*Less than 1.1 or 0*

Analyst:

MARITESS D. GO
Med. Tech. II

Cerified Correct

NENITA G. MARAYAG
Chemist IV

NOTED:

SOCORRO C. YAÑEZ, M.D., FPSP
Head, National Reference Laboratory
East Avenue Medical Center

Date Released

NRL-WBRSFRM1- A

Annex 4.4.8X

Republic of the Philippines
Department of Health
East Avenue Medical Center
NATIONAL REFERENCE LABORATORY
East Avenue, Diliman, Quezon City
Tel. No./Fax No.: 435-71-36; Email: ; Website: www.doh.gov.ph/nrl

Submitted by:

Accession No.:
Physical Characteristics:

BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES

Lab No.	Sample Source and Addresses	Date and Time of:			Results of Analysis		Remark(s)
		Collection	Receipt	Exam'n.	Total Coliforms	Fecal Coliforms	

Philippine National Standards for Drinking Water (PNSDW)

	Refilling Station/Water Treatment Works	*Public Water Supplies*
MPN/100ml. Total Coliform =	*Less than 1.1 or 0*	
MPN/100ml. Total Coliform =	*Less than 1.1 or 0*	*Less than 1.1 or 0*

Analyst:

MARITESS D. GO
Med. Tech. II

Certified Correct

NENITA G. MARAYAG
Chemist IV

NOTED:

SOCORRO C. YAÑEZ, M.D., FPSP
Head, National Reference Laboratory
East Avenue Medical Center

Date Released

NRL-WBRSFRM1-B

Annex 4.4.8Y

BUREAU OF ANIMAL INDUSTRY CONSUMER HELP DESK
Department of Agriculture - Bureau of Animal Industry
Visayas Avenue, Diliman, Quezon City
Tel. Nos. (02)926-6866/ 9203906

COMPLAINT SHEET

Date Filed_____

Name/ Name of Respondent/s:_____

_____

Name of Complainant:_____

Address/ Tel. No. of Complainant:_____

Nature of Complaint:_____

_____

Evidence Presented:_____

_____

Demands/ Request:_____

_____

Details of Complaint:_____

_____

Findings/ Suggestion/ Action Taken:_____

_____

_____

_____
Name and Signature of Interviewer

Annex 4.4.8Z

Republic of the Philippines
Department of Agriculture
Bureau of Fisheries and Aquatic Resources
860 Arcadia Building, Quezon Ave., Quezon City 3008
Tel. Nos. 632- 372-50-57 * 373-74-52
Fax Nos. 632 - 372-50-48

SAMPLE COLLECTION FORM

Date Collected : _____
Date Received : _____
Job Order No. (Lab internal use) _____

Purpose of Sampling : ☐ monitoring / verification ☐ certification

Reference Code : (PLANT LOCATION / COMPANY NAME / PRODUCTION DATE - _____
(for BFAR use only) Year/Month/Date) _____

Official Code : Inspection Unit-Region-year-unique sample code) Ex. IU3-06-0020 _____

Name of Establishment : _____

Address : _____
_____

Approval Number : _____

Name of Product : _____

Origin of raw material : _____

Source of raw material : ☐ Wild-caught ☐ Aquacultured

State/Condition of Sample Received:

☐ Fresh ☐ Chilled ☐ Frozen ☐ Dried ☐ Canned ☐ Others: _____

Product Temperature : _____

Storage Container (upon submission to the laboratory) : _____
Sampling Point :

☐ Production Line ☐ Post Production ☐ Post Incubation Period ☐ Van Loading ☐ Others

English & Scientific Name of Raw Material _____
Batch Number : _____
Production Code : _____
Production Date : _____
"Best Before" Date : _____
Country of Destination : _____
Type of Analysis Requested _____:

_____
Net Weight of Sample : _____

Collected by (BFAR Inspector/Analyst or Company Representative):

BFAR: _____ Exporter: _____
(Name and Signature) (Name and Signature)

Received from (BFAR Inspector Analyst or Company Representative):

BFAR: _____ Date Received: _____
(Name and Signature)

Analysis Conducted by (BFAR or 3rd Party Lab):

BFAR: _____ 3rd Party Lab: _____
(Lab Analyst)) (Lab Analyst)

_____
(Laboratory Name)

Annex 4.4.8Z1

Republic of the Philippines
Department of Agriculture
Bureau of Fisheries and Aquatic Resources
860 Arcadia Building, Quezon Ave., Quezon City 3008
Tel. Nos. 632- 372-50-57 * 373-74-52
Fax Nos. 632 - 372-50-48

Reference Code :
Approval No. :

Job Order No. :
Date Received :
Date Analyzed :
Date Reported :

Name of Company :
Plant Address :
Name of Product :
Product Description :
Scientific Name :
Product Temperature :
Weight of the Product :
Production Date :
Production Code :

RESULTS OF ANALYSIS

Examination : Microbiological Method – Bacteriological Analytical Manual, 1998, 8th edition.

APC cfu/g	Staphylococcus cfu/g	E. coli MPN/g	Salmonella	Shigella

Remarks :

_____ Analyst

_____ Analyst

NOTED BY:

BELINDA S. RAYMUNDO
Chief, Fisheries Product Testing Laboratory Section

GININTUANG MASAGANANG ANI
Go Modern Agriculture

Annex 4.4.8AA

BUREAU OF PLANT INDUSTRY
LABORATORY SERVICES DIVISION

REQUEST ORDER FORM

Date _____

Name: _____
Address: _____

Items/ Materials	Types of Analysis	Cost
_____	_____	P _____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Total P _____

REMARKS: _____
_____

O.R. No. _____
Date: _____
Received by: _____

Requested by:

_____

Approved:

_____

Annex 4.4.8BB

ANALYSIS REQUESTED :

KIND OF MATERIALS :

SUBMITTED BY :

DATE SUBMITTED :

DATE REPORTED :

CERTIFICATE OF ANALYSIS

Acc. No. Sample

REMARKS: As per sample received.

Recommending Approval:

Chief, Microbiology Section

Approved:

Chief, Laboratory Services Division

OR No. :
Date:

Annex 4.4.8CC

Food Agencies and their Jurisdiction Over Commercial Food Products

Category	Laboratory
Unslaughtered livestock, , poultry, animal feeds and feed ingredients	Laboratory Services Division, Bureau of Animal Industry or regional laboratories
Fresh, chilled, frozen local and imported unprocessed meat and meat products	National Meat Inspection Service MIS central & satellites
Unprocessed Plants/Vegetables	Bureau of Plant Industry
Unprocessed fish and other fish products	Bureau of Fish and Aquatic Resources
Raw milk, unprocessed dairy products	National Dairy Authority
Water	National Reference Laboratory for Water-East Avenue Medical Center and accredited water testing laboratories
Processed Food Bottled Water	Bureau of Food and Drugs

Annex 4.4.8DD

Foodborne/Waterborne Outbreak Early Alert Fax/Email Template

To: _____ Fax:_____
From:_____ Phone: _____ ___
CC: _____ Date : _____

This is an early alert/heads up on an investigation we are conducting. The information contained in this fax should be considered preliminary and confidential. This information should not be shared or distributed without permission from the sender. If you have similar cases, please notify the appropriate agency or agencies in your jurisdiction.

The Department of Health is currently investigating an outbreak th at is suspected to be

foodborne _____
waterborne_____
of unknown source/vehicle _____

Number of cases _____ Number of clusters_____

Earliest onset date_____ Latest onset date_____

Pathogen/Agent _____ ____ (suspected/confirmed)

Food/Water Product _____ (suspected/implicated/lab confirmed)
Place(s) of Exposure _____

Details:

Our agency's lead contact is:

Name:
Phone Number:
Fax Number:

Confidential

Annex 4.4.9A

Procedures of Disinfection

Step 1. Preparation for disinfection

1. Prepare schedule for disinfection
2. Inform the person or agencies concerned about the schedule and request them to prepare the necessary tools and equipment
3. Inform the consumers to store sufficient drinking water prior to disinfection
4. Prepare 50-100 ppm disinfecting solution using any of the two reference tables below.

DISINFECTION OF WELL AND WATER CONTAINER

The following tables give the amount of Calcium Hypochlorite (70%) available chlorine required to provide a dosage 50 ppm to 100 ppm of available chlorine.

Diameter of Casing	Capacity in gallons per foot of depth	Amount of Calcium Hypochlorite in ounces/grams per foot of depth	
		50 ppm	100 ppm
Column 1	Column 2	Column 3	Column 4
2 inches	0.16	0.001152/0.0432	0.00305/0.0866
4 inches	0.66	0.00628/0.1783	0.01256/0.3587
6 inches	1.47	0.01397/0.3967	0.02799/0.7949
8 inches	2.61	0.02484/0.7054	0.04969/1.4112
10 inches	4.08	0.03884/1.10305	0.07768/2.2061
12 inches	5.88	0.0557/1.5895	0.11196/3.7096

HOW TO USE THE TABLE

1. To find the volume of water in the well:
   Multiply the number of gallons specified in the table (Col. 2. opposite the given diameter) by the depth of the water in foot.

   Example:
   Given : Diameter of casing = 6 inches (Col. 1)
   Depth of Water = 100 feet
   Therefore, Volume of Water = 1.47 (Col. 2) x 100 = 147 Gals.

2. To find the amount of calcium Hypochlorite (70%) available chlorine to disinfect a well:

   Example: a) Diameter of Well = 6 inches
   Depth of Water = 100 feet
   Therefore, amount of Hypochlorite = 0.02799 (Col. 4) x 100
   = 2.9 inches of 5 ounces/79 grams

   b) Same as well as a)
   Dosage = 50 ppm (Col. 3)

   Therefore, amount of Calcium Hypochlorite = 0.01389 (Col. 3) x 100
   = 1,389 ounces or 3.5 ounces/42.6 grams

NOTE: If a weighing scale is not available, the chemical may be measured with spoon.

1 ounce weighs approximately 3 level tablespoons
1 ounce weighs approximately 2 moderately heaping tablespoons

one (1) pound = 16 ounces
(1) ounce = 28.4 grams

Chlorine (grams) = $\frac{\text{Vol. of } H_2O \text{ in gallons x 8.34 x dosage required in ppm x 454}}{1{,}000{,}000 \text{ x \% of available } C1_2}$

CHLORINE (60% - 70% CALCIUM HYPOCHLORITE)
REQUIREMENTS FOR WELL DISINFECTION, DOSAGE – 100 PPM

Depth of Water Column	50 mm	75 mm	100 mm	150 mm	200 mm	250 mm	300 mm
1	-	1/4 t	1/4 t	1/2 t	3/4 t	1 1/2 t	2 t
2	¼ t	1/4 t	½ t	1 t	1 3/4 t	2 3/4 t	4 t
3	¼ t	1/2 t	½ t	1 1/2 t	2 1/2 t	4 1/4 t	6 t
4	¼ t	1/2 t	¾ t	2 t	3 1/2 t	2 1/2 t	8 T
5	¼ t	1/2 t	1 ¼ t	2 1/2 t	4 1/2 t	7 t	5 T
6	½ t	3/4 t	1 ½ t	3 t	5 1/2 t	8 1/2 t	6 T
7	½ t	3/4 t	1 ½ t	3 1/2 t	6 1/4 t	9 3/4 t	7 T
8	½ t	1 t	1 ¾ t	4 t	7 1/4 t	5 1/2 t	8 T
9	½ t	1 1/4 t	2 t	4 1/2 t	8 t	6 1/4 T	9 T
10	½ t	1 1/4 t	2 ¼ t	5 t	9 t	7 T	10 T
20	1 1/4 t	2 1/2 t	4 ½ t	5 T	9 T	14 T	20 1/4 T
30	1 1/2 t	3 3/4 t	6 ¾ t	7 1/2 T	13 1/2 T	21 T	30 1/4 T
40	2 1/4 t	5 t	9 t	10 T	18 T	28 T	40 1/2 T
50	2 3/4 t	6 1/2 t	5 ½ t	12 1/2 T	22 1/2 T	35 T	50 1/2 T
60	3 1/2	7 1/2	6 ¾ t	15 T	27 T	42 T	60 1/2

	t	t					T
70	4 t	8 3/4 t	8 t	17 3/4 T	31 1/2 T	49 1/2 T	70 3/4 T
80	4 1/2 t	5 t	9 t	20 1/4 T	36 T	68 T	80 3/4 T
90	5 t	5 3/4 t	10 t	22 3/4 T	40 1/2 T	63 1/2 T	91 T
100	5 1/2 t	6 1/4 t	11 ¼ t	25 1/4 T	45 T	70 T	101 T

LEGEND:
1 t – LEVELED TEASPOON = 5 GRAMS
2 T – LEVELED TABLESPOON = 10 GRAMS

Step 2. Actual Disinfection

Wells

1. Disengage pump connection and remove drop pipes, fittings and valves in the well to allow free contact between water in the well and disinfecting solution
2. Determine the amount of chlorine needed.
3. Dissolve the chlorine in small amount of water and stir to hasten disinfectant to dissolve completely
4. Pour the solution into the well
5. Allow at least 12-24 hours contact between water in the well and the disinfectant
6. After 12-24 hours of contact, assemble the pump of the well and allow the water to waste
7. After 15-20 minutes of pumping the well, check the chlorine odor by smelling. If the odor is still strong continue pumping until the strong chloride odor disappears. At this time, the procedure is already completed.
8. After at least 12 hours from time of disinfection and using the well, collect and submit samples to the laboratory for bacteriological examination.

Storage Tanks/ Water Cisterns

1. Scrub the tank, thoroughly clean and drain it to remove any sediment, if needed.
2. Start filling the tank with water. When 1/2 full of water, pour chlorine solution in computed amount using 50 to 100 ppm and continue filling the tank with water until full.
3. Let the water with chlorine solution stay for 12-24 hours before draining to waste.
4. Drain the water through the piping system to disinfect the pipes.

Household Container Disinfection

1. Prepare stock solution of 60-75 % available chlorine by dissolving thoroughly one level teaspoon of chlorine granules (calcium hypochlorite) to approximately 1 liter of water in a dark colored bottle. Keep the bottle out of direct sunlight. The solution is good only for 7 days
2. From the stock solution get two (2) teaspoons and mix with 20 liters (approximately 5 gallons) of water. Let the disinfected water stand for at least 30 minutes before using or drinking it.

To compute for the amount of chlorine needed in disinfecting tanks, the formula being used is:

$$\text{Chlorine in mg} = \frac{\text{Volume in liters of water X dosage required}}{\text{\% of available chlorine}}$$

Level II/Level III Water Systems

All Level II/Level III water systems regardless of source must be disinfected and maintain a residual chlorine of 0.2 – 0.5 mg/l at the farthest point of the pipe distribution system.

Generally, the newly constructed or repaired Level II/Level III water systems are subject to disinfection prior to their use.

In case any water sample from the system indicates contamination during its operation, disinfect the system after correcting or removing the sources of contamination.

If the contamination comes from the storage tank follow the procedure for disinfection of storage tanks or water cisterns.

Recommendations

1. A Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) should be entered into by concerned national agencies regarding surveillance and outbreak investigation of food and waterborne diseases
2. Once finalized, administrative order (AO)/directives need to be issued by concerned agencies concerning the use of the manual of procedures
3. Accreditation requirements for food establishments at the level of local government units need to be strictly implemented.
4. In view of their role as team leaders of the Epidemic Investigation and Control Team (EICT) during outbreaks, qualification standards of Municipal/City/Provincial Health Officers should include a minimum of 6 months training under the Field Epidemiology Training Program (FETP) or other equivalent training program.
5. Provisions for personnel, and other logistics should be provided in support of food and waterborne disease surveillance.
6. All government laboratories designated to test for microbial agents of food and waterborne diseases should follow internationally accepted standards for testing. Laboratories which have not yet established such standards in their laboratory should work towards the establishment of the standards.
7. The coordination mechanism between National Epidemiology Center (NEC) and other agencies during traceback activities must be strengthened.
8. All microorganisms which are major causes of food and waterborne diseases should be monitored in the laboratory-based surveillance.
9. Once completed, the Manual should be made available on line for easier access.
10. A National Food Safety Committee should be created with representatives from concerned national agencies/departments and other stakeholders on food and water safety.
11. To ensure the safety of drinking water in areas outside of Metro Manila and other cities, there should be regular water sampling by the sanitary inspectors where specimens are sent to laboratories accredited by BHFS-DOH at a frequency recommended in 2007 PNDSW.
12. Each municipality/province should have approved water sources at different levels (e.g. 1,2,3 level etc) requiring registration for water potability.