

PETRONAS TECHNICAL STANDARDS

HEALTH, SAFETY AND ENVIRONMENT

FOOD SAFETY GUIDELINE

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This new PTS **60.1501.08 - Food Safety Guideline (October 2011, Revision 0)** has been developed to address PETRONAS requirements on Food Safety.
This PTS also includes PETRONAS Lessons Learnt and PETRONAS Best Practice for Food Safety.

Document Approval

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PREFACE

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They are based on the experience acquired during the involvement with the design, construction, operation and maintenance of processing units and facilities. Where appropriate they are based on, or reference is made to, national and international standards and codes of practice.

The objective is to set the recommended standard for good technical practice to be applied by PETRONAS' OPU's in oil and gas production facilities, refineries, gas processing plants, chemical plants, marketing facilities or any other such facility, and thereby to achieve maximum technical and economic benefit from standardisation.

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1. INTRODUCTION TO THE GUIDELINE

1.1. OBJECTIVE

This Guideline outlines PETRONAS requirements on Food Safety. It shall serve as guidance to line managers, HSE practitioners and catering service providers.

1.2. SCOPE

The Guideline explains the different food-borne illnesses and the factors that influence/cause them. The various mitigation measures to prevent food-borne diseases and Food Safety Standards are outlined. The guideline also illustrates the training and education and the health requirements of Food Handlers and the investigation and control of food related/incidences/outbreaks.

This Guideline is to be read in conjunction with PTS 60.1506 Guideline on Drinking Water. PTS 60.1506 addresses issues on Water Safety. Water is essential for food preparation

1.3. APPLICABILITY

All requirements established in this Guideline shall be applicable to all PETRONAS facilities and premises where food is provided for consumption by the employees, directly by the Company or through any catering service¹ providers contracted by the Company.

In facilities and locations where applicable statutory requirements are available, the more stringent requirements shall take precedence.

1.4. RESPONSIBILITY

Custodian, Occupational Health/Discipline Head, Group HSE Division shall be the custodian of this Guideline. He shall be responsible for periodically reviewing and revising/updating its contents and distributing the revised/updated documents to relevant end users.

Operating Unit (OPU) HSE Managers/HSE Focal points shall be responsible for communicating the requirements set forth in this Guideline and its revisions to the relevant personnel in their respective Operating Units.

They shall also be responsible, where applicable, for modifying the requirements of this Guideline in consultation with Custodian Occupational Health/Discipline Head, Group HSE Division, PETRONAS to suit local statutory requirements and Operating Unit needs. All employees including contractors and catering service providers working in the company's facilities shall adhere to the requirements of this Guideline.

1.5. REVIEW OF DOCUMENT

This Guideline shall be reviewed every 5 years or as and when deemed necessary. All queries, interpretations, clarifications and proposed amendments shall be addressed in the first instance to the custodian of this Guideline.

1.6. LANGUAGE

In this Guideline, the acronym PETRONAS and the term Company are used interchangeably and refer to PETRONAS Group of Companies. Additionally, the use of the following terms shall carry the following meaning:

SHALL - Mandatory action required. Deviation requires PETRONAS Management's

approval

SHOULD - Preferred action. Deviation requires Operating Unit Management's approval

MAY - Recommended action

1.7. DEFINITIONS AND ABBREVIATIONS

Catering service¹: provision of supply, storage, handling, preparation and disposal of food.

1.8. REFERENCES

1. World Health Organisation Media Centre Fact Sheet No: 237
2. A Guide to Food and Water Safety for the oil and gas industry – OGP Report Number 397
3. Food borne Disease Outbreak – Guidelines for Investigation and Control (WHO) – 2008
4. Standard Operating Procedure for the Investigation of Food Poisoning Outbreaks – Department of Health, Western Australia
5. Hazard Analysis Critical Control Point (WHO, 1996)

2. FOOD SAFETY AND FOOD BORNE ILLNESS

2.1. INTRODUCTION

Food safety is an increasingly important public health issue, as there is an increasing number of food safety problems and rising consumer concerns.

Food borne illnesses are defined as diseases, usually either infectious or toxic in nature, caused by agents that enter the body through the ingestion of food. Every person is at risk of food borne illness.

Food borne diseases are a widespread and growing public health problem, both in developed and developing countries.

- The global incidence of food borne disease is difficult to estimate, but the World Health Organisation (WHO) has reported that in 2005 alone 1.8 million people died from diarrhoeal diseases. A great proportion of these cases can be attributed to contamination of food and drinking water.
- In industrialized countries, the percentage of the population suffering from food borne diseases each year has been reported to be up to 30%. In the United States of America (USA), for example, around 76 million cases of food borne diseases, resulting in 325,000 hospitalizations and 5,000 deaths, are estimated to occur each year.
- Developing countries bear the brunt of the problem due to the presence of a wide range of food borne diseases, including those caused by parasites. The high prevalence of diarrhoeal diseases in many developing countries suggests major underlying food safety problems.
- Most food borne diseases are sporadic, and an outbreak may take on massive proportions. For example, in 1988, an outbreak of Hepatitis A, resulting from the consumption of contaminated clams, affected some 300,000 individuals in China. In 1994, an outbreak of salmonellosis due to contaminated ice cream occurred in the USA, affecting an estimated 224,000 persons. More recently, in May 2011, countries in the WHO European region have reported significant numbers of infections from verocytotoxin producing *Escherichia Coli*, resulting in a large number of cases of bloody diarrhea and haemolytic uraemic syndrome in Germany and a cluster of cases in the Bordeaux region of France. Evidence indicates that the outbreak took 50 lives in Germany.

Food safety is of paramount importance to the effective functioning of the Oil and Gas Industry. All sectors of the industry, from frontier exploration and production locations to retail operations are potentially at risk. Diseases related to food are major contributors to project morbidity, and can have significant and adverse impacts on workforce productivity, particularly during large-scale construction phases of a project

2.2. SOME OF THE MAJOR CATEGORIES OF FOOD HAZARDS

Food can be adversely affected either separately or in combination with water since water is essential for food preparation. Food can be impacted by a variety of hazards that can make people sick either immediately or in a slower and more chronic fashion. Some of the major categories of food hazards include:

2.2.1. Microorganisms

- **Salmonellosis** is a major problem in most countries. Salmonellosis is caused by the *Salmonella* bacteria and symptoms are fever, headache, nausea, vomiting, abdominal pain and diarrhea. Examples of foods involved in outbreaks of salmonellosis are eggs, poultry and other meats, raw milk and chocolate.

- **Campylobacteriosis** is a widespread infection. It is caused by certain species of Campylobacter bacteria and in some countries; the reported number of cases surpasses the incidence of salmonellosis. Foodborne cases are mainly caused by foods such as raw milk, raw or undercooked poultry and drinking water. Acute health effects of campylobacteriosis include severe abdominal pain, fever, nausea and diarrhea. In 2 to 10% of cases the infection may lead to chronic health problems, including reactive arthritis and neurological disorders.
- Infections due to **enterohaemorrhagic** (causing intestinal bleeding) **E. coli**, e.g. E.coli O157, and **listeriosis** are important foodborne diseases which have emerged over the last decades. Although their incidence is relatively low, their severe and sometimes fatal health consequences, particularly among infants, children and the elderly, make them among the most serious foodborne infections.
- **Cholera** is a major public health problem in developing countries, also causing enormous economic losses. The disease is caused by the bacterium Vibrio cholerae. In addition to water, contaminated food can be the vehicle of infection. Different food, including rice, vegetables, millet gruel and various types of seafood have been implicated in outbreaks of cholera. Symptoms, including abdominal pain, vomiting and profuse watery diarrhea, may lead to severe dehydration and possibly death, unless fluid and salt are replaced.

2.2.2. Adulterants

Physical contaminants in food can pose an ingestion hazard, e.g. glass metal, plastic, hair etc. Chemical adulterants such as melamine can be inappropriately added in order to artificially boost the nitrogen content of the food and make the overall protein content appear higher.

2.2.3. Mycotoxins

Naturally occurring substances that are present on plants or in animal products. Mycotoxins, such as aflatoxins and ochratoxin A, are found at measurable levels in many staple foods.

2.2.4. Antibiotic Drug Residues

Residues can occur in animal products. Some residues may potentially contribute to growing resistance of microorganisms to antibiotics. Examples are antibiotics used to treat infected dairy cows which are later found in their milk.

2.2.5. Chemicals

Industrial and environmental contaminants including those produced during processing. Persistent Organic Pollutants (POPs) are compounds that accumulate in the environment and the human body. Known examples are Dioxins and PCBs (polychlorinated biphenyls). Dioxins are unwanted byproducts of some industrial processes and waste incineration. Exposure to POPs may result in a wide variety of adverse effects in humans.

2.2.6. Additives

Direct and indirect substances added during food processing; in many developing countries non-approved dyes/colourants are utilized to improve food aesthetics, colour and shelf-life. Use of inappropriate types and concentration of additives can have significant adverse health effects.

2.2.7. Partical Residues

Contaminants which may impact both surface and groundwater sources. High levels of pesticide residues may also enter into the local food chain, particularly in a developing country setting. Examples of pesticides are chlorinated, organophosphate and carbamates. Other residues that may affect are fumigants, fungicides, herbicides, rodenticides, fertilizers, plant growth regulators, molluscicides, nematocides etc.

2.2.8. Heavy Metals

Heavy metals such as lead and mercury cause neurological damage in infants and children. Exposure to cadmium can also cause kidney damage, usually seen in the elderly. These metals may contaminate food through pollution of air, water and soil.

2.3. FACTORS AFFECTING FOOD SAFETY

Some factors may be introduced into the food chain from a variety of sources and at different stages by different agents and the environment:

- Food handlers
- Vectors
- Water supply
- Equipment

While most microorganisms do not cause disease, dangerous microorganisms are widely found in soil, water, animals and people. These microorganisms are carried on hands, wiping cloths and utensils, especially cutting boards, and the slightest contact can transfer them to food and cause foodborne diseases. Raw material including water and ice may be contaminated with dangerous organisms and chemicals.

Hygienic food handling is critical at various stages in the food chain to prevent contamination of food:

- Source
- Delivery
- Storage
- Preparation and cooking
- Serving
- Food waste disposal
- Food handlers

Toxic chemicals may be formed in damaged mouldy food. Care in selection of raw materials and simple measures such as washing and peeling may reduce the risk. Raw food, especially meat, poultry and seafood, and their juices, can contain dangerous microorganisms which may be transferred onto the food during food preparation and storage.

Proper cooking kills almost all dangerous microorganisms. Cooking food to a temperature of 70°C can help ensure it is safe for consumption. Food that require special attention include mincemeat, rolled roasts, large joints of meat and whole poultry

Microorganisms can multiply very quickly if food is stored at room temperature. By holding at temperatures below 5°C or above 60°C, the growth of the microorganism is slowed down or stopped. Some dangerous microorganisms still grow below 5°C

Some foods are categorised under high risk food i.e. those that fall under favourable conditions that promote the growth of food poisoning organisms. They include but are not limited to:

- All cooked meat and poultry including gravy and stock
- Milk, cream, coconut milk, artificial cream, custard and dairy products
- Egg based products e.g. mayonnaise
- Shellfish and other seafood
- Perishable food e.g. vegetables and fruits