BUSAN METROPOLITAN CITY
INSTITUTE OF
HEALTH & ENVIRONMENT

Transportation

1. Exit at Deokseong Station on Metro Line 2 at exit 9.
2. Exit at Mandok Station on Metro Line 3 at exit 3.
3. Take Village/Neighborhood Bus 9 and exit in front of BIHE

Livestock Sanitary Control Center
724, Gijum-dong, Buk-gu, Busan
TEL: 051-331-0909 FAX: 051-338-8266

Office of Agricultural Products Inspection
11, Nonsanmunhjang-ro 140-beon-gil, Suyeong-gu, Busan
TEL: 051-327-8601 FAX: 051-327-8603

Office of Agricultural Products Inspection
628, Suyeonggang-ro Sunan-dong, Haeundae-gu, Busan
TEL: 051-666-6855-1-6 FAX: 051-666-6857

http://ihe.busan.go.kr
Busan Metropolitan City Institute of Health and Environment

Busan Metropolitan City Institute of Health & Environment is a municipal research institute specialized in hygiene, environment and livestock, thereby supporting the implementation of the city’s policies in public health & environment.

In the face of rising urban problem, Busan City established BIHE as a research institute in 1964. Since its establishment, BIHE has been conducting diverse and thorough research in hygienic and environmental areas, such as diagnosis of disease, inspection of food and drug, livestock disease control, air and water pollution, waste management and analysis of toxic chemicals.

To make a marine tourism capital in the Northeast Asia, Busan City is pushing ahead with Healthy & Safe City and Eco-friendly Green City Strategy. In the line with that, BIHE is devoted to performing forward-looking research with creative ideas to build a healthy and green Busan.
Busan Metropolitan City Institute of Health & Environment

**HISTORY**

- **1964. Feb.**
  - Established
  - 「Busan Hygienic Laboratory」

- **1976. Oct.**
  - Name Changed to 「Busan Metropolitan City Institute of Public Health」

- **1987. Oct.**
  - Transfer to new office building (Kwangan-dong)

- **1991. May**
  - Name Changed to 「Busan Metropolitan City Institute of Health and Environment」

- **1993. Sep.**
  - Absorb 「Livestock Sanitary Control Center」 as associated center

- **1995. Mar.**
  - Regulated to Institute under Mayor’s direct control

- **2005. Feb.**
  - Accredited 「Korea Laboratory Accreditation Scheme」 (KOLAS)

- **2012. Jan.**
  - Expanded to 2 Departments and 10 Divisions

- **2012. May**
  - Move to new Office Building (Mandeok-dong)

**ORGANIZATION**

- General Director
  - 1 Division, 2 Departments, 9 Divisions, 1 Office, 1 Center (1 Division, 1 Lab.)

- Div. of Health Research
- Div. of Environment Research
- Livestock Sanitary Control Center

- Div. of Drug Analysis
- Office of Agricultural Products Inspection
- Div. of Soil & Waste
- Div. of Industrial Environment

- Div. of Virology
- Div. of Microbiology
- Div. of Food Analysis
- Div. of Aquatic Environment & Ecology
- Div. of Air Preservation
- Div. of Water Analysis

**VISION**

- Mission 1: Healthy Citizens
- Mission 2: Green Busan
- Mission 3: Dynamic Advanced Research

- The Center of High-Tech Precise Analysis
- The Center of Practical Research

**STAFF**

- Total: 127
- Researcher: 90
- General: 23
- Technical: 14
- Ph.D: 22
- Master: 60
- Bachelor: 8

**BUDGET**

- Total: 11.2 million US$
  - 10.5: city government grant
  - 0.7: open market revenue

**BUDGET**

- 90
- 23
- 14
- 22
- 8
- 60
- 22
- 8
Division of Virology

The division of virology performs examination and research of infectious viral disease including confirmatory test of HIV/AIDS, Measles, Mumps, Rubella virus, food-borne virus and norovirus from groundwater in Busan. We classify infectious disease vector mosquitoes and announce Japanese encephalitis warning all over the country. Also, we perform surveillance of Influenza virus, Respiratory syndrome, Enteric virus, Enterovirus and research for these epidemics.

Activities
- Diagnosis of viral infectious disease
- Confirmatory diagnosis of HIV/AIDS infection
- Laboratory diagnosis of Measles, Mumps and Rubella virus
- Surveillance of Influenza virus and Respiratory Syndrome
- Surveillance of Enteric virus
- Enterovirus sentinel surveillance
- Investigation of JEV vector mosquitoes

Research Projects
- Retrospective Study on Indeterminate Results by Anti-HIV Western Blot Assay for Recent 3 Years in Busan
- Molecular Epidemiology of Human Enterovirus 71 isolated in Busan, 2010-2013
- Clinical Features and Prevalence of Gastrointestinal Infections in Immunocompromised Patients
- Clinical Features and Prevalence of Adenovirus and Bocavirus Infections in Pediatric Patients with Respiratory Illness
- Prevalence and Molecular Epidemiological Characteristics on Water & Food Borne Viral Disease for Recent Years in Busan

Division of Microbiology

The division of microbiology performs examination of water, food, drugs and research of infectious bacterial disease including diagnostic test of Cholera, Typhoid, Tsutsugamushi disease, Legionellosis, Brucellosis, etc. Also, we perform surveillance of food borne poisoning disease and PFGE (pulsed field gel electrophoresis) network. We provide pathological inspectors of Public Health Center with education program to control bacteriological quality management.

Activities
- Diagnosis of nationally notifiable infectious disease
- Diagnosis of water and food-borne disease
- Training technicians of Public Health Center
- Investigation of Vibrio species in coastal area

Research Projects
- Seroepidemiological Surveillance of Legionella Species in Atypical Pneumonia Patients in Busan by Indirect Fluorescent Antibody Assay
- Microbiological Contamination and Sanitary Management of Aquarium Water in Busan
- Genotypic Characterization of Pathogenic E. coli isolated from Diarrhea Patients in Busan

env gp120
env gp41
gag p17
gag p24
RNA
### Division of Food Analysis

The division of food analysis contributes to improve the safety of food sanitation through the inspection of standard levels in various kinds of food products, apparatus and vessels and packing films, etc. so as to prevent from the hygienic injury caused by foodstuffs. And it also examines the harmful components of foodstuffs by request of the related agencies (the prosecution, the police, the district office).

**Activities**
- Quality inspection of food
- Quality inspection of marine products
- Quality inspection of health functional food
- Quality inspection of tools, containers, and packing for food
- Safety test on Food additives
- Quality inspection of Hygiene Items
- Radioactivity test on food
- Survey on mycotoxin contamination of food

**Research Projects**
- Determination of Sweeteners in Children’s Favorite Foods by HPLC-MS/MS and Monitoring
- Survey of Heavy Metals in Children’s Favorite Foods and Packages
- Research on the Harmful Heavy Metals of Seafood in Busan
- Study on the Contents of Harmful Substance in the Extractions of Coffee Bean
- Analysis of Trans Fatty Acid and Saturated Fatty Acid Contents among Crude Fat of Bakery Foods in Busan

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### Division of Drug Analysis

The division of drug analysis make possible effort to contribute to use safe and effective drug for citizen’s health. The main work of the division is quality inspection of domestic and first imported medicines (include crude drug and herbal extracts). Also, we help consumer to be able to use safe cosmetics through safety and quality inspection of the commercial cosmetics. We provide testing & inspection service to help company’s quality management of drug and cosmetics.

**Activities**
- Quality inspection of commercial pharmaceuticals and quasi-drug
- Quality inspection of first imported medicine
- Quality and safety inspection of herbal medicines
- Quality and safety inspection of commercial cosmetics
- Quality control inspection agency for medicines and cosmetics

**Research Projects**
- Study on the Sulfite and Harmful Heavy Metal Contents of Commercial Medicinal Herbs in Busan
- Monitoring of Caffeine Contents in Invigorating Drink by HPLC
- Analysis of Allergenic Ingredients of the Distribution Dyed using UPLC
- Monitoring of Steroid Contents of Distribution Cosmetics for Atopy
- Survey of Contents of Harmful Substances Children’s Cosmetics
- Research on The Nicotine Concentration of Indoor Air and The Passive Smoking in The Popular Facilities
Office of Agricultural Products Inspection

These offices are located in the City’s official Wholesale market (Eom-Gung, Ban-yeo). The main function of these laboratories is to prevent the distribution of unqualified agricultural products in the market. To secure safety of agricultural products, we are analyzing pesticide residues, heavy metals and mycotoxin.

Activities
- Inspection of pesticide residues in agricultural products, commercial medicinal herbs
- Research of pesticide residue, heavy metals (Lead, Cadmium) and mycotoxin in agricultural products

Research Projects
- Monitoring of Pesticide Residues in Commercial Medicinal Herbs in Busan
- Risk Assessment on Pesticide Residues of Condiment Vegetables in Busan
- The Survey on Pesticide Residues of Commercial Imported Agricultural Products in Busan

Division of Aquatic Environment & Ecology

This division carry out field studies to prevent water pollution, improve water quality and conserve aquatic ecosystems of rivers and streams in Busan including Nakdong River.

We have a water quality monitoring system to survey the degree and sources of pollution, identify the behavior and toxicity of chemicals. Besides we survey ecological characteristics of major streams to research the distribution of pollution indicator. Also, we are monitoring the sea water quality in port and coastal area including swimming beach.

Activities
- Management of stream water quality monitoring network
- Measurement of water pollutants of TMDL (Total Maximum Daily Load) management in Nakdong River
- Monitoring and assessing Aquatic Ecosystem Health (algae, fish, aquatic insects)
- Measurement of sea water quality in seaport and coastal areas
- Measurement of sea water quality in swimming beach

Research Projects
- Study on Ecological Variations of Urban Streams after Maintenance Water Supply
- Study on Release Characteristics of Nutrients from Sediment in the West-Nakdong River
- Water Quality and Ecological Characteristics of Small Reservoirs in Busan Area.
- Study on Ecological Characteristics of Oncheon Stream After Maintenance Water Discharge from Nakdong River.
- Assessments of Ecosystem Health in Middle Reaches of Suyoung River
Division of Air Preservation

Division of air preservation takes charge of the ambient and indoor air quality monitoring. The monitoring items in ambient air are O₃, PM10, PM2.5, SO₂, CO, NO₂, benzene, asbestos, radionuclides, heavy metals and ionic components in fine particulate matter, ionic components in wet precipitation, and the monitoring items in indoor air are O₃, PM10, PM2.5, CO, C0₂, NO₂, formaldehyde, and asbestos. Also we have been operating forecast and alarm system in order to protect citizen’s health from the harmful effect of O₃ and PM10. We also perform various researches and studies to keep citizen’s health and clear air environment from toxic pollutants.

Activities
- Management of air quality monitoring network system
- Operation of air quality monitoring mobile laboratory
- Management of indoor air quality monitoring network system
- Measurement of indoor air quality in public utilization facilities
- Analysis of heavy metal level in ambient air
- Operation of acid deposition monitoring network
- Management of O₃ and PM10 forecast and alarm system
- Asbestos survey
- Measurement of radionuclides in ambient air

Research Projects
- Investigation of the Cause of High Ozone Episode Days Using Trajectory Analysis
- The Analysis of Atmospheric Environment Features Using the Urban Atmospheric Environment Map
- Study on Distribution Characteristics and Improvement of Indoor Air Quality in Socially Disadvantage Class
- Asbestos Exposure and Health Risk Assessment in Asbestos-containing Public Buildings
- Evaluation of Pollution Characteristics and Chemical Composition of PM2.5 in Ambient Air in Busan

Division of Water Analysis

The division of water analysis takes charge of the analytical test of drinking water including tap water, groundwater, spring water, etc., swimming pool water, bath water and hot spring water. Also, we conduct the analysis of wastewater to identify whether sewage treatment plants are working well and discharged water complies with the applicable regulations.

Activities
- Test of drinking water (tap water, groundwater, spring water)
- Test of water quality on emergency water supply facilities
- Test of bath water, swimming pool water and hot spring water
- Test of water pollution of industrial wastewater
- Test of ecotoxicity using Daphnia magna

Research Projects
- Study on the Water Characteristics of Small-Scale Waterworks in Busan
- Functional Mineral Characteristics of Groundwater in Busan
- Detection of Norovirus in Spring-water and Groundwater in Busan
- Characteristics of Ecotoxicity in Industrial Effluent using Daphnia magna
- Study on Mineral Characteristics of Spring Water in Busan
- Statistical Analysis of Groundwater Quality in Busan
- Study on Radionuclides of Ground water in Busan
Division of Soil & Waste

The division of soil & waste is investigating the contaminants in soil, sediments, industrial wastes, sewage, leachate in landfill and pesticide residues in golf courses. And we are also studying on contaminations of hazardous materials such as heavy metals, VOCs in playground, beach sand and children’s activity space.

Activities
- Measurement of soil contaminants
- Monitoring of sediments contamination in rivers and streams
- Test of heavy metal contaminations in children’s activity space
- Test of industrial waste
- Test of pesticide residues in golf course
- Test of sewage & leachate in landfill

Research Projects
- Characteristics of Polycyclic Aromatic Hydrocarbons (PAHs) distribution in Soils of Busan
- Study on the Characters of Heavy Metals of Soils and Mugworts in the Abandoned Mines and the Landfills in Busan
- Study on the Characteristics of Sediment in Suyeong River
- Survey of Environmental Hazardous Materials in Children’s Activity Space

Division of Industrial Environment

The division of industrial environment takes charge of examining air pollutants, noise, vibration offensive odor and fugitive dust originated from a various industrial site for the property of discharge permission standard. Besides, we are researching on Persistent Organic Pollutants including dioxins and PCBs generated from incineration facilities.

Activities
- Measurement of air pollutants from point sources
- Investigation on u-POPs in exhaust gas, bottom ash and fly ash from incineration facilities
- Investigation on POPs in atmosphere, streams, soil, river sediments and marine sediments
- Measurement of odor substance
- Investigation of noise in railroad, roadside and residential area
- Measurement of noise and vibration in environmental disputed area

Research Projects
- The Health Risk Assessment of Ambient VOCs in Busan Industrial Area
- Study on the Emission Characteristics of Odor Compounds from Industrial Complex in Busan
- Particle-Bound Polychlorinated Dibenzo-p-dioxins and Dibenzofurans in the Ambient Air of Busan
- Study on the VOC/HAPs Emission Characteristics & Control Technologies for Paint Plant
- Investigation Study on Popular Complaints of Construction Noise in Busan Area
- Study on Behavior of PCDDs/DFs and Co-PCBs according to Emission Sources
- Seasonal and Spatial Distribution of Dioxin and Dioxin like PCB in Ambient Air of Busan, South Korea
Division of Livestock Inspection & Disease Control

The main tasks of this division are visiting livestock farms for animal disease prevention, testing of bovine tuberculosis and brucellosis, coaching of disease control and carrying out the emergency control measures against outbreak of animal disease (AI, FMD, BSE etc.)

activities
- Animal disease surveillance and disease prevention
- Examination of foot & mouth disease
- Examination of bovine tuberculosis and brucellosis
- Serological test for disease control
- Examination of bovine spongiform encephalopathy
- Diagnosis of animal disease
- Examination of avian influenza

Research Projects
- Antimicrobial Resistance of Enterococcus faecalis and Enterococcus faecium isolated from Cow in Busan
- Study on Prevalence of Mycobacterium paratuberculosis (Johne’s disease) in Korean Native Cattle and Diary Cattle in Busan Area
- Seroprevalence of Antibodies to Neospora Canium in Cattle Raised in Busan
- Research on the Examination of the Avian Influenza of Poultry at Korean Traditional Market and Restaurant
- Examination of Bovine Tuberculosis in Busan
- Examination of Brucellosis in Busan

Veterinary Laboratory

The main tasks of the veterinary laboratory are analysis of harmful materials (residues, heavy metals, microorganisms) in meats and livestock products, hygienic examination of raw milks and dairy products, and identification of genes in cattle meats.

Activities
- Analysis of residues in meats
- Examination of microorganism in meats
- Antimicrobial susceptibility Test
- Analysis of livestock products
- Identification of Hanwoo gene in cattle meats

Research Projects
- Antimicrobial Effects of Garlic Extract Against Pathogenic Bacteria
- Study on antimicrobial resistance of Escherichia coli isolated from domestic meat (beef, pork, chicken and duck) for sale
- Detection of Enterotoxin by Polymerase Chain Reaction of Staphylococcus aureus isolated from Pig and Cattle Carcass
- Differentiation of Hanwoo and Other Breeds of Cattle Using PCR-RFLP and Allele-specific PCR
- Investigation on antimicrobial resistance genes of Salmonella schwarzenberg isolated from pigs
BIHE has developed technology, experience and know-how with by professional staff and state-of-the-art equipment in the area of hygiene, livestock and environment. BIHE after receiving accreditation as an Korea Laboratory Accreditation Scheme(KOLAS) in biosafety & environment components in 2005, has been leading the way to solve the problem of hygiene and environment.

BIHE is providing a variety of quality education services to enhance public understanding of the public health and environment. Also, BIHE offers laboratory practice program targeted to the primary & middle school students and undergraduate to develop regional human resource. Anyone who want to visit BIHE is welcome.

BIHE offers one-stop service of testing and inspection in the area of hygiene, food & drug, livestock and environment, etc. BIHE provides the best testing and inspection service to improve the quality of life and enhance business competitiveness.