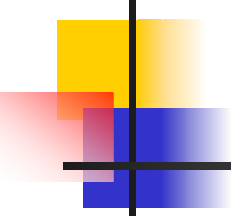




Environmental Health

In SCDC

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-
- To create an environment that is adapt for living and human activity changes the natural environment, and in the turn the changed environment influences the human health.
 - How to utilize favorable environmental factors and to control adverse environmental factors is an important problem to that humankind is facing.



Objectives

- To monitor environmental hazards and health effects
- To investigate relationship between environment and health
- To discover how to utilize favorable environmental factors and minimize or eliminate adverse environmental factors



Objectives

- To suggest countermeasures for controlling environmental pollution and improving health
- To assess the effects of countermeasures and offer data and evidence for policy making



Historical Review of the Work on Environmental Health in SCDC

There are three periods since establishing the Department of Environmental Health in fifties of last century.

1. The first period
(during fifties and sixties)



Historical Review of the Work on Environmental Health in SCDC

- Human health mainly are affected by infectious diseases. We mainly studied biological factors and the countermeasures were taken to control infectious diseases.
- We took monitoring air pollution, water pollution, well water in rural area, and garbage management in city



Historical Review of the Work on Environmental Health in SCDC

- Creating national environmental criteria and regulations
 - Sanitary regulations for drinking water
 - Sanitation criterion for factory' designing etc
- Environmental health prevention
 - Inspecting of factories, towns, pre-evaluation of building' designs
 - Monitoring for drinking water distribution



Historical Review of the Work on Environmental Health in SCDC

2. The second period

(during seventies and eighties)

Environmental pollution by industries was critical.

Many monitoring techniques and methods were
developed



Historical Review of the Work

on Environmental Health in SCDC

- We took amount of surveys, including ground water pollution, underground water pollution, sea water pollution, health effects of coal burning
- We took monitoring for ambient air, network water in town and rural area, and infectious diseases associated with drinking water



Historical Review of the Work on Environmental Health in SCDC

- Implement projects for safe drinking water and faeces management in rural area
- We participated in the project of United Nations for globe ambient air monitoring and biological factors since 1979
- Study area were extended
From biologic factors to biologic, chemical, and physical factors



Historical Review of the Work on Environmental Health in SCDC

- Some branches of environmental health developed in this period
 - Environmental epidemiology
 - Environmental monitoring
 - Environmental technology and engineering
 - Environmental microbiology
 - Environmental toxicology etc

Historical Review of the Work

on Environmental Health in SCDC

3. The third period (during nineties)

- A large number of missions associating environment were transferred since establishing EPA.



Historical Review of the Work on Environmental Health in SCDC

- The meetings of environmental health sponsored by China Health Ministry in 1983, 1986 and 1991 suggested that the elemental missions of environmental health are preventing disease and improving human health . Mainly :
 - Epidemiological surveillance
 - Studies of relationship between human health and environment
 - Supervising drinking water; public places and cosmetics.



Historical Review of the Work

on Environmental Health in SCDC

- Large scale surveys associated with human health effects induced by environmental pollution.
 - “Project of drinking water quality and waterborne diseases ”
 - “Environmental epidemiological survey for pesticide”
 - “Project of health effect related to indoor air or outdoor air pollution”, etc.



Historical Review of the Work

on Environmental Health in SCDC

- Program for building drinking water network, reconstructing toilets and building clean town in rural area
- Project for city sanitary inspection

Historical Review of the Work

on Environmental Health in SCDC

- Environmental health monitoring
 - “Air monitoring plan”
 - “Biological monitoring plan”
 - “Indoor air monitoring in public places”
 - “Drinking water monitoring plan in rural and urban area”
 - “Promoting the reform of plants and factories releasing pollutants based on investigation, monitoring , supervision”

Historical Review of the Work

on Environmental Health in SCDC

- Revising or Creating Standards
 - “Assessment of health effect associating environment pollution”
 - “Discharging criterion of water from hospitals”
 - “Quality stander of drinking water”
 - “Sanitation stander of inhaled articles in ambient air of resident area”
 - “Sanitation stander of public places” etc.

Conducting Topics of

Environmental Health in SCDC

1. Drinking water and health

- In worldwide, waterborne infectious diseases are weekly reported
 - over 400 residents were infected with cholera drinking polluted water, in Shanghai ,In 1994
 - over 300 students were stricken with pathogenic coli. through swimming pool, In 1998
 - some cases of skin infection, over-disinfected water cause irritation of eyes , through swimming.

Conducting Topics of

Environmental Health in SCDC

- Monitoring data of drinking water last year
 - Biologic pollution was critical in rural area
 - Blue algae $10^5 \sim 10^7$ per liter in source water, it's a health problem
 - Bacteria and heavy metal not meet stander in some samples from 280 taps after staying for 24 hours



Conducting Topics of

Environmental Health in SCDC

- In water tanks located at the top of buildings, algae blooming is often reported by citizens in summer
- Investigating controlling countermeasures against water pollution and methods for remaining cleaning pool water is routine job.

Conducting Topics of

Environmental Health in SCDC

- Over 100 years, disinfecting water with chlorine has been used.
 - Solving health problem related to chlorination by- products is also cared by my colleagues

Conducting Topics of

Environmental Health in SCDC

2. Air, Heat Waves and Health

- Health Impact Study of Air Quality and Temperature in Shanghai ---Supported by WHO
 - During 1998 heat waves, the average daily mortality increased by 300% in comparison with that in 1997.
 - The quantities of CO, HC and NO_x from vehicle were 380, 100 and 81.5 thousands tons in 1996

Conducting Topics of

Environmental Health in SCDC

Goals:

- Conduct assessment, analysis and correlation of health mortality data with air quality and temperature
- Establish a dose-response relationship
- Provide relevant health education and promotion material to the target population
- Minimize potential increase of relevant diseases or illnesses in Shanghai



Conducting Topics of

Environmental Health in SCDC

- Classify and control of pathogenic microbes in air condition system ---supported by ICA

We study the prior microbes and methods for controlling pathogenic microbes

- We took a survey on indoor air pollution by decorating or air conditioner system

Conducting Topics of

Environmental Health in SCDC

- We also study and participate in setting regulation for prohibiting harmful decorating materials and managing buildings

Conducting Topics of

Environmental Health in SCDC

3. Environmental Health Monitoring

- Drinking water system monitoring
 - source water
 - water after treatment
 - tap water
 - tank water on building top



Conducting Topics of

Environmental Health in SCDC

- Air monitoring

Ambient air surrounding resident area near main traffic and large plant releasing pollution

- Environmental monitoring of garbage burring

- Harmful factors monitoring in public places
swimming pool, hotel, hair salon, etc.

Conducting Topics of

Environmental Health in SCDC

4. Environmental Epidemiological surveillance
 - Mortality or morbidity change related with air pollution, e.g. COPD, asthma
 - Residues of organochlorine pesticide in women's milk and blood lead in children
5. Risk Assessment of Environmental Exposure and Constructing Project

Conducting Topics of

Environmental Health in SCDC

6. Health education and health improvement

- Health information issue

Creating “Environmental Health Indicators”

according to WHO DPSEEA model

- Media Paper, magazine, radio, TV

- Community health propaganda

Conducting Topics of

Environmental Health in SCDC

7. Offer suggestions for making standards and regulations for central and local government
 - quality standard of water of swimming pool
 - We are going to make managing regulation for air conditioner system

Conducting Topics of

Environmental Health in SCDC

8. Emergency Program for Water Pollution

- Project for emergency associated with water pollution
- Training professional staff from communities and districts
- Check up polluting causes and resources, polluting area and residents' health impact in time
- Suggesting methods for controlling or reducing pollution

Conducting Topics of

Environmental Health in SCDC

9. Information Gaining and Document Preserving

(Database Construction)

- Information about population, diseases, waters, climate, ambient air, soil, pesticide and plastic use, factories related with pollution emission, etc.
- Information is classified and preserved.

Conducting Topics of

Environmental Health in SCDC

10. Health Predicting

Creating model after studying relationship between temperature and health impact and forecast health hazards caused by high temperature

11. Quality Controlling and Assurance in Each Program



In the Future

Combine with other discipline to improve ability of study and enlarge scope of study

1. Develop Monitoring and Detecting Techniques

- Monitoring environmental hazards is a technically challenging because it often requires techniques that should be able to detect very low level of exposure, such as one per billion.



In the Future

- We are developing techniques that can detect dioxins in environment at 10^{-12}
- We will try to develop techniques that can detect different exposure to environmental hazards in small amount in blood and urine.



In the Future

2. Data Gaining and Analysis

- Data from environment exposure monitoring and epidemiological surveillance are diverse, therefore gaining and analysis are difficult.
- We will try to adopt GIS system or other models (Model-3/CMAQ) to gain data, analyze data, predict health impact



In the Future

3. Researches

- Researches on human health problem associated with air pollution
 - Clinical and laboratory research,
 - Community epidemiologic studies
 - Predictive models for selected toxic compounds with quantitative relationship among exposure , dose, and body's response



In the Future

- Research program on micro-particulate matter
Harmful characteristics, physical mechanism causing health problem, sensitive population, control strategies, personal exposure, cardiovascular adverse effect predictive models, etc.
- Study methods for controlling pathogenic microbes in air conditioner system



In the Future

- Survey environmental level of dioxins and health impact
- Heat wave in association with temperature-related morbidity and mortality, air-related health effects, water- and food-borne diseases, insect-borne diseases



In the Future

- Assessment of the potential effects of heat waves on urban air quality
- Information on potential association of exposure to disinfection by-products in drinking water with reproductive problem
- Risk assessment and management for water pathogens and environmental toxic chemicals



In the Future

4. Risk Assessment and Risk Management For Environmental Hazards

- Risk assessment

exposure assessment, hazard identification, dose-response assessment , risk characterization.

- Risk management

determining whether and how the risks from stressors should be managed or reduced.



Thanks !