

# Environmental Radiation Monitoring in Hong Kong

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## Content

- Brief Introduction to HKO
- Environmental Radiation Monitoring
- Radiological Impact Assessment
- Training, Exercise and Public Education

### Environmental Radiation & Meteorological Measurements

- Environmental Radiation Monitoring Programme;
- Radiation laboratory, quality assurance & radiological protection;
- Upper-air sounding & meteorological measurements; and
- Maintenance of radiation measuring equipment.

### Training and Exercises

- Meteorological training;
- Radiological training & exercises;
- Public education; and
- Nuclear accident consequence & assessment.

### Weather & Radiation Observation Networks

- Weather observation network;
- Radiation monitoring network;
- Radiological surveys; and
- Maintenance of weather observing equipment.

### Emergency Preparedness

- Operation of Monitoring and Assessment Centre;
- Departmental contingency plans for nuclear & other security-related emergencies;
- Emergency data management & communication; and
- Food and water contamination monitoring systems.

Radiation Monitoring and Assessment Branch

## Early History

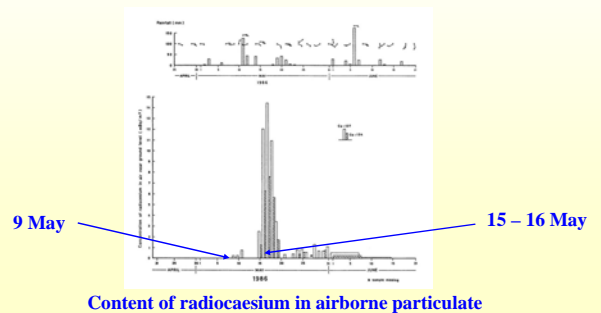
- Radiation monitoring in Hong Kong started in 1961
- HKO participated in worldwide monitoring programmes organised by IAEA, WMO, UKAEA
- Monitored beta and gamma activity in air and rain

## Chernobyl Accident

- 26 April 1986
- Worst nuclear accident
- Release of vast amount of radionuclides

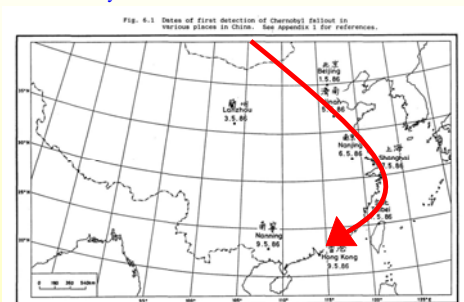
## Chernobyl Accident

- First detection in Hong Kong on 9 May
- Sharp increase in a second peak around 15-16 May
- Additional dose equivalent for local population around 6 – 20 uSv (< 1% of annual dose)



## Chernobyl Accident

- Fallout reached northern China in early May
- Spread southward to eastern China and Taiwan by 7 May
- Increase in radioactivity in HK coincident with arrival of northeasterly winds down the Taiwan Strait



## Environmental Radiation Monitoring Programme

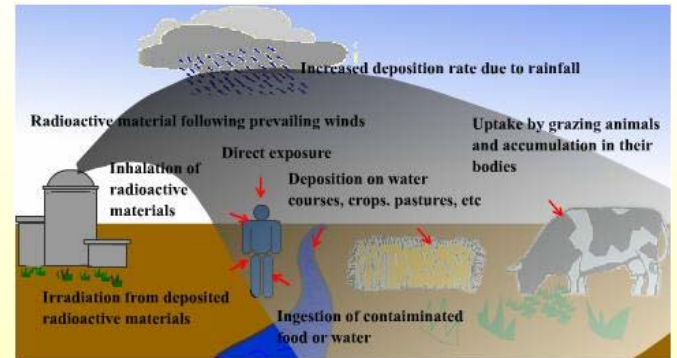
- 1980's in connection with construction of nuclear power station at Daya Bay



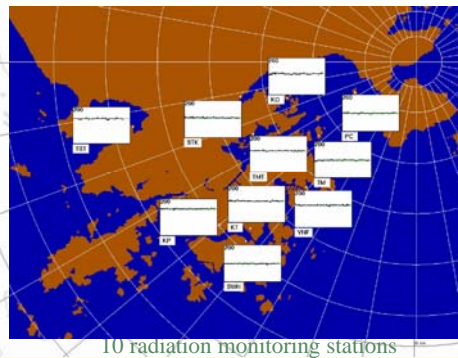
## Environmental Radiation Monitoring Programme

- 1987 – 1991 established baseline radiation level
- Since 1992, on-going programme for long term changes
- Emergency response to nuclear incidents

## Exposure Pathways



## Radiation Monitoring Network



## Automatic Gamma Spectrometry System at Ping Chau



- 12 km from Daya Bay
- 'Frontier' post
- Round-the-clock, unmanned operation

## Sample Collection



- Around 400 samples per year, including
- Atmospheric samples (air particulates, rain, etc.)
  - Terrestrial samples (Food, soil, etc.)
  - Aquatic samples (water, seafood, seaweed, sediment, etc.)

## Atmospheric Samples



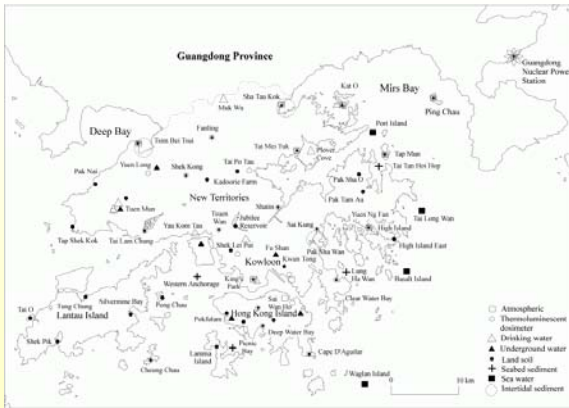
## Terrestrial Samples



## Aquatic Samples



## Sample Collection Locations



## Laboratory Analysis



King's Park  
Radiation  
Laboratories

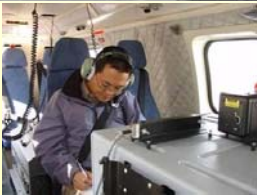
## Radiological Impact Assessment

- Emergency monitoring
  - enhanced monitoring, aerial survey, mobile ground survey
- Assessment of radiation impact using computer models

## Enhanced monitoring



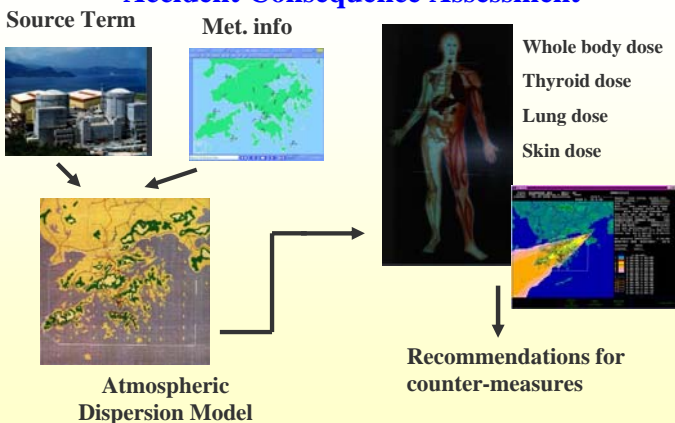
## Aerial Survey



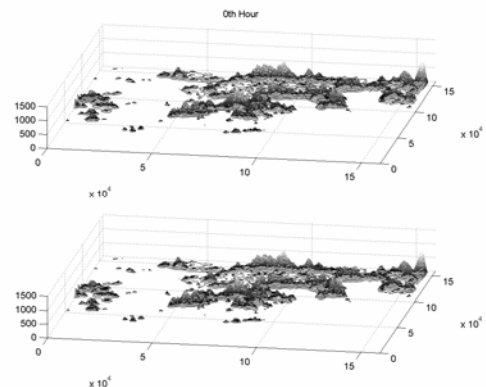
## Mobile Ground Survey



## Accident Consequence Assessment

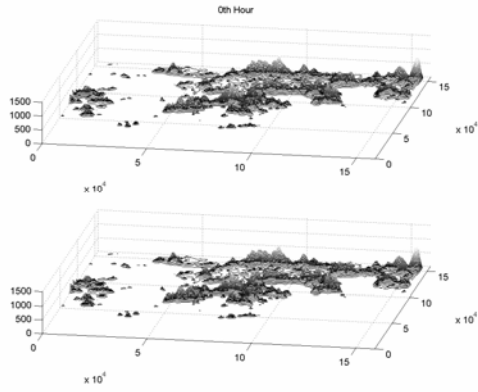


## Particle Dispersion Model - 0th Hour

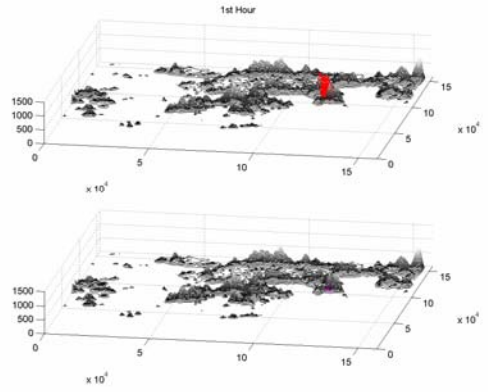




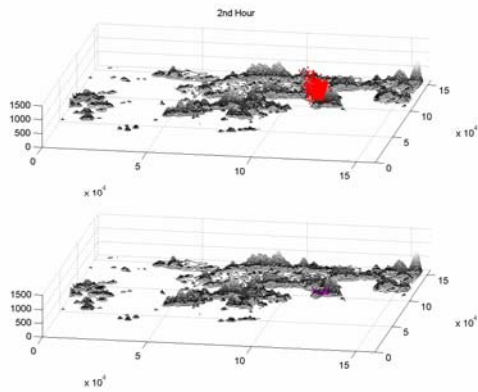
### Particle Dispersion Model - 0th Hour



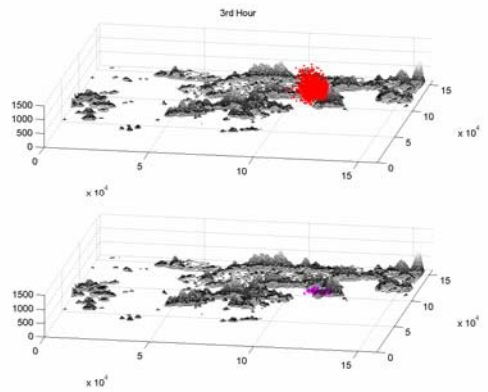
### Particle Dispersion Model - 1st Hour



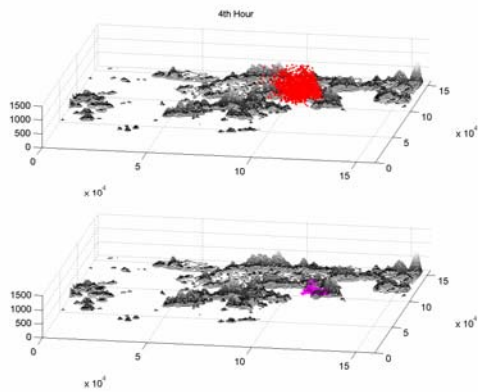
### Particle Dispersion Model - 2nd Hour



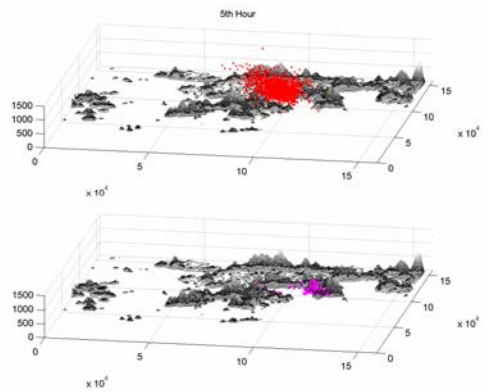
### Particle Dispersion Model - 3rd Hour



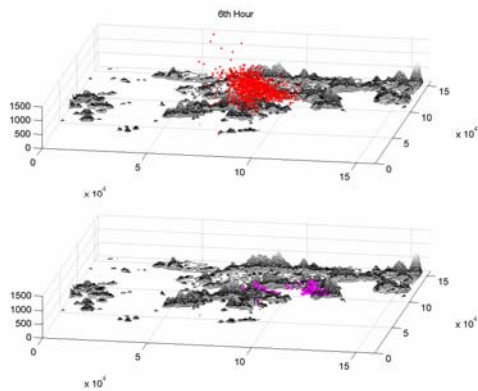
### Particle Dispersion Model - 4th Hour



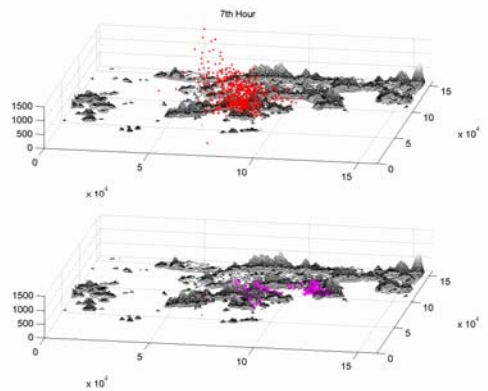
### Particle Dispersion Model - 5th Hour



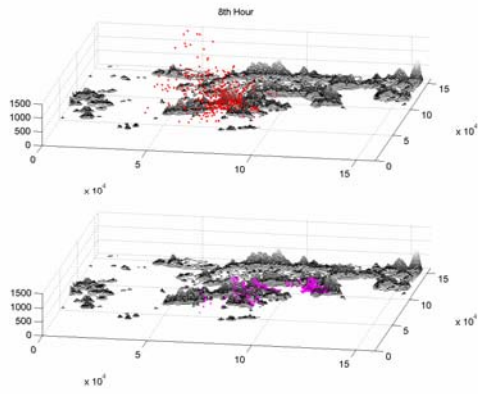
### Particle Dispersion Model - 6th Hour



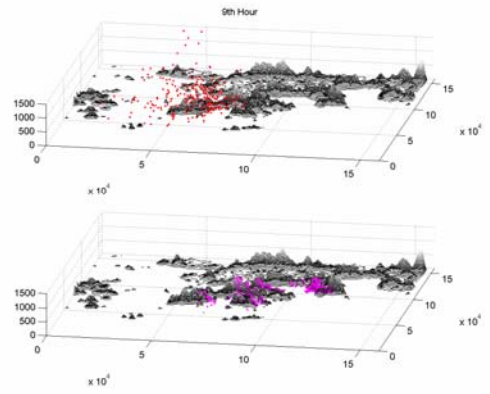
### Particle Dispersion Model - 7th Hour



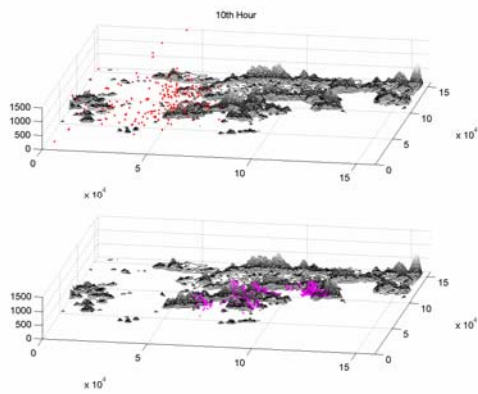
### Particle Dispersion Model – 8th Hour



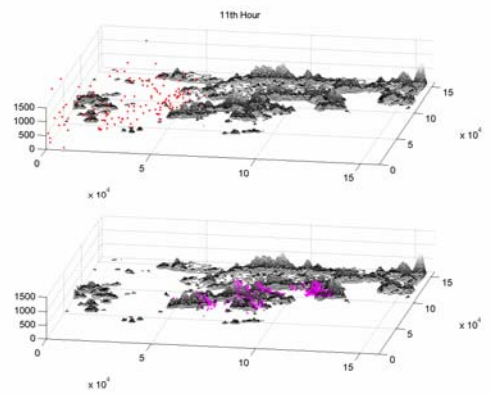
### Particle Dispersion Model – 9th Hour



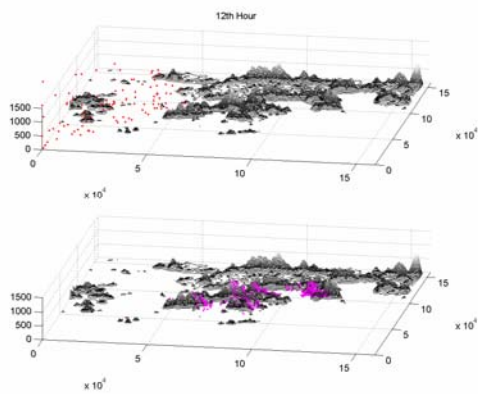
### Particle Dispersion Model – 10th Hour



### Particle Dispersion Model – 11th Hour



### Particle Dispersion Model – 12th Hour



### Training



In-house course

On-the-job training

Seminars by int'l experts

### Drills and Exercises



Syndicate exercise, communication tests



Ground and air movement



Full-scale exercise

### Public Education



Public lectures



HKO's web site

## Public Education



**HKO's e-bulletin**



**Pamphlets, brochures, videos  
and technical reports**

**THANK YOU**