# ﻿Notes on *Dangerous Weather: Fog, Smog and Poisoned Rain*

## Chapter one: Water in the air, pp. 1-39.

1. The wide dispersion of air pollutant

* The movement of the atmosphere, leading to the form of a cycle
* vortex of the atmosphere according to the air pressure
* general circulation of atmosphere.

1. Direction of fluid—CorF
2. The three-cell model
3. Air mass

* The air mass can carry the pollutant in the air, and disperse it to the whole world

1. Font

* Can both clear the air and carry the pollutants and aggravate the pollution, depending on the weather caused by font.

1. OH

* Formation:
* The use: can efficiently absorb toxic gases including

1. Water—the alkahest

* Condensation
* Humidity
* Evaporation
* Latent heat—for water to escape, the conservation of heat, the transition of energy, the emission of H

1. The classification of smog.

* Mist, haze
* DALR, temperature lapse rate—the determinant of the formation of smog
* Stability and instability—depending on environmental lapse rate, dry adiabatic lapse rate, and saturated adiabatic lapse rate.
* Cheyenne fog
* Radiation fog—the heat and radiation from the sun
* Advection fog—the horizontal heat transition between air or water.
* Steam fog—caused by the evaporation of water, e.g. sea fog.
* Frontal fog—the fog with the most moisture, caused by the contact of hot front and cold air.
* Pogonip—can cause the frozen of water.

## Chapter two: fire, cars, fog and smog, pp. 40-119

1. Fuel

* Air pollution caused by burning fuel
* The definition of combustion—oxidization
* The result of incomplete combustion—formation of CO, N, and S
* Floating dust and its recycling.

1. Fossil fuel

* Definition: fuel consisting of the remains of organisms preserved in rocks in the earth's crust for a long time
* Peat: partially carbonized vegetable matter saturated with water; can be used as a fuel when dried, but can cause great pollution in cities.
* Coal: fossil fuel consisting of carbonized vegetable matter deposited in the Carboniferous period, the final form of peat, produces CH4 when burned, but the higher the quality, the less the pollution it causes.
* Charcoal & coke: carbonaceous material, obtained by heating wood or other organic matter in the absence of air, usually used for barbecue, can also emit CO2 and SO2 when burned.
* Petroleum and natural gas: the formation is similar to that of coal, a fossil fuel in the gaseous state, used for cooking and heating homes.
* Ways of purification: coal does not need purification for using it; petroleum and natural gases should be purified or processed before being used; in most cases, fractionation of crude oil is used for purification by taking advantage of different boiling point of different matters.

1. Heavy fog
2. Automobile exhaust
3. Photochemical fog
4. Fog and smog in the past
5. Exhaust in factories and power plants
6. Stack effluents and smoke plume

## Chapter three: Acid in the air, pp. 120-145

## Chapter four: Ozone and ultraviolet radiation, pp. 146-159

## Chapter five: Natural polluters, pp. 160-203

## Chapter six: atmosphere controlling, pp. 204-275