

# Clouds & Particles

## Basics

### 2. Particles

#### Solution Worksheet 3

##### 1.

Daily activities which may lead to release of aerosols into the atmosphere:

- sneezing (releases droplets),
- scratching one's head (releases skin fragments),
- beating a rug (releases all kinds of dust particles),
- driving a car (releases particles through the exhaust as well as tearing off small fragments from the ground and the rubber of the tires),
- burning wood in the fireplace, etc.

##### 2.

Primary aerosols are directly emitted as particles, whereas secondary aerosols are the result of chemical reactions.

##### 3.

Aerosol concentrations are higher in urban than in marine environments because in urban areas, there are lots of aerosol sources in a small area: Aerosols from biomass or fossil fuel burning, from traffic, industry and all kinds of human activity.

##### 4.

Aerosols can stay in the atmosphere for very long times (months) if they enter the stratosphere (high levels of the atmosphere). This is the case for aerosol particles coming from volcanic eruption. Once they enter the stratosphere there is little exchange of air masses across the boundary to the stratosphere, and so the aerosols may stay for months.

##### 5.

- Coal miners inhale coal dust and other mineral dust;
- cotton/clothes factory workers inhale small cotton fragments;
- bakers inhale flour dust;
- construction workers inhale concrete and mineral dust;
- carpenters inhale for example sawdust;
- veterinarians inhale fragments from the animals' skin and coat, etc.