Sulphur dioxide

What is sulphur dioxide?

Sulphur dioxide is formed by the combination of one atom of sulphur and two atoms of oxygen. At normal temperature and pressure it is a gas. Sulphur dioxide dissolves in water to give an acidic solution, which easily changes to sulphuric acid.

Certain people may be exposed to sulphur dioxide through their work e.g. those working in heavy industry.

Sulphur dioxide is produced mainly at large power stations and is discharged from tall chimneys situated in rural locations.

Sources of sulphur dioxide?

The majority of sulphur dioxide is likely to have resulted from human activities:

- burning coal, oil and other fuels by power stations
- burning coal and oil by industry and commerce
- domestic burning of coal, oil, wood etc.
- diesel motor vehicle engine exhaust fumes
- cigarette smoking (the major exposure source for tobacco smokers)

Air quality standard

The level recommended by the Expert Panel on Air Quality Standards for sulphur dioxide is 100 parts per billion (ppb) measured over a 15 minute period.

Health effects of sulphur dioxide

Changes brought about by the Clean Air Act 1956 and subsequent developments have had the effect of limiting general population exposures to sulphur dioxide. Exposures today tend to be for short periods rather than prolonged periods. Exposures tend to occur at locations down wind from a power station rather than in urban areas.

Sulphur dioxide is an irritant gas, which stimulates nerves in the lining of the nose, throat and lung airways. It produces a reflex cough, irritation and a feeling of chest tightness. It may provoke an asthmatic attack in those pre-existing asthma or chronic lung disease.

Exposure to very high concentrations (over 10,000 ppb over a 15 minute period) causes painful irritation of eyes, nose, mouth and throat and produces short-term chemical injury to the linings of the airways, which causes severe breathing difficulties and even death.
Normal healthy volunteers exposed to sulphur dioxide in exposure chambers have been shown to have demonstrable narrowing of airways after exposures of 4,000 to 5,000 ppb for 5 minutes. Effects were not detectable at concentrations under 1,000 ppb.

This factsheet has been adapted from http://www.ncbugs.com/
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