

Rotorua's hydrogen sulphide does not worsen asthma

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In a recently published collaborative study by the University of Otago, Wellington, the University of California, Berkeley, and Stanford University it has been shown that there are no ill effects from low level hydrogen sulphide gas on asthma symptoms or diagnosis in Rotorua. Hydrogen sulphide or H₂S is responsible for the characteristic "sulphur" smell of Rotorua.

There has long been medical and scientific debate about the health impacts of H₂S gas in the workplace and residential areas, and this study is the largest ever of associations between ambient H₂S and [respiratory health](#).

Concentrations of toxic [hydrogen sulphide](#) gas can be produced in factories as a by-product of [industrial processes](#), as well as naturally in volcanic and geothermal regions like Rotorua.

The five year study examined a variety of [health effects](#), including asthma, amongst over 1600 adult Rotorua residents. With a population of nearly 60,000, Rotorua is the largest centre anywhere with long term exposure to hydrogen sulphide and is recognised as an ideal place to research the health effects of H₂S.

Exposure to H₂S was estimated from measurements taken around Rotorua in summer and winter, and then each person's exposure was estimated from where they lived and worked. H₂S exposure was divided into four groups from lowest to highest, with a mean concentration of

20ppb (parts per billion), higher than other studies of community H₂S exposures.

Overall the findings show there is no evidence that people in the highest exposure group are more likely to have been diagnosed with asthma or have any more asthma symptoms than those in the lowest group. In fact, [asthma symptoms](#), particularly wheezing, were less often reported in the highest exposure group, raising the slight but intriguing possibility that low levels of H₂S might be beneficial for people with asthma.

"The results, showing no ill effects, are reassuring not only for people in Rotorua, but also for those with asthma who are exposed to lower levels of H₂S in industrial or work situations," says respiratory specialist and co-author, Professor Julian Crane, from the University of Otago, Wellington.

However Professor Crane points out that H₂S can be toxic at higher concentrations and no conclusions can be drawn from this study about health impacts of very high levels of this gas in industrial situations or occurring naturally.

One of the objectives of this research project is to provide further evidence of the toxicity of H₂S so this can be used to provide guidelines for industry internationally, where many deaths have been reported from H₂S poisoning, particularly in confined areas.

Recently H₂S has been shown to occur naturally in humans and takes part in many of the body's processes. In animal studies H₂S has been shown to reduce inflammation after injury and may have a number of other potentially beneficial effects. However, it is too soon to conclude that this anti-inflammatory effect is working in Rotorua.

The researchers will be examining the effects of H₂S on the nervous

system and the eye, particularly cataract, in future analyses.

This study has been published in the international journal *Environmental Research*.

Provided by University of Otago

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