

RR1027 - Ventilation of vehicles used for carriage of acetylene

Following a fatality caused by an acetylene gas explosion involving a van carrying oxy-acetylene welding equipment, HSE commissioned research to investigate foreseeable gas leak rates, vehicle ventilation rates and possible vehicle modifications that would increase the ventilation rate and hence help to mitigate the explosion risk.

The experimental and modelling study showed that older vans are likely to be considerably leakier than newer better sealed vans. A five-fold increase in ventilation rate was predicted between the best and worst sealed vans tested.

For a small gas leak, which is likely to be emitted from a poorly fitting joint or a small hole in a pipe, indications were that for a medium sized transit van, air change rates greater than about 1 hr⁻¹ will lead to gas concentrations typically less than 50% of the lower explosion limit (LEL) for acetylene. The ventilation rate required increases to 6 air changes per hour for larger leaks, such as those produced by a leaking cylinder valve.

The minimum wind speed required to generate these ventilation rates fell significantly with the introduction of roof ventilators and side vents.

- [Full report](#) ^[1]

This footage demonstrates what can happen when acetylene gas leaking from welding equipment, that is being stored in the back of a van, mixes with oxygen in the air and is ignited.

Assistance in the use of Adobe Acrobat PDF files is available on our [FAQs](#)^[2] page.



Link URLs in this page

1. Full report
<http://www.hse.gov.uk/research/rrpdf/rr1027.pdf>
2. FAQs
<http://www.hse.gov.uk/faq.htm>