

Contrails / Chemtrails - Frequently Asked Questions

What are contrails?

Contrails form when the warm moist exhaust from aircraft mixes with the cold drier ambient air producing ice crystal clouds. If atmospheric conditions of temperature and humidity are favourable, the contrails can continue to spread forming persistent contrails that can last for several hours and become indistinguishable from naturally occurring cirrus clouds. The nuclei of some of the ice crystals in a contrail will contain minute products of combustion but they are essentially pure ice.

According to some reports contrails contain barium or compounds of aluminium and silicon (often called aluminosilicates). Is this correct?

We understand from the Department of Environment Food and Rural Affairs (DEFRA) that measurements undertaken in the UK since 2004 have shown no significant increase in concentrations of barium in rainwater measured at rural sites across the UK. Moreover alumina-silicates are common in clay soils and a wide range of other minerals, therefore measurements in air and soils are dominated by the ground level sources of aluminosilicates rather than any that might come from contrails.

Are DfT aware of chemtrails?

In the UK the Department is not aware of any other matter or aerosol being ejected from aircraft (known as chemtrails), other than the normal exhaust products from the aircraft.

We are aware that other countries have on occasions used weather modification techniques, such as cloud seeding, which causes precipitation by introducing substances into cumulus clouds that cause condensation. However, these techniques are aimed at reducing the locally damaging impacts of hail, or promoting rainfall, and have no impact on climate and should not be considered to be geoengineering. Since 1977, cloud seeding

February 2012

and environmental techniques have been subject to international regulation. In 1977 countries agreed the "Convention of the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD)". The treaty forbade the use of environmental modification techniques in hostile circumstances. For further details see: <http://www.publications.parliament.uk/pa/cm200910/cmselect/cmsctech/221/22102.htm>

Why do contrails seem to form grid like patterns in the sky and why are they long lasting? Should they not disappear within a few minutes?

Aircraft often follow similar routes separated by altitude, time or lateral distance and that is why you see grid like patterns in the sky. There is now widely accepted scientific evidence that contrails can grow and and persist in the sky to form larger clouds that become indistinguishable from natural cirrus clouds. The Committee on Climate Change report "Meeting the UK aviation target- options for reducing emissions to 2050", states that "depending on meteorological conditions, the flight of aircraft can also cause formation of linear ice clouds (contrails) and can lead to further subsequent aviation-induced cloudiness".

Are there any ill health effects caused by contrails?

There is no evidence that contrails cause health problems. The main impact of aviation on ground local air quality relates to emissions during the landing and take-off phase up to about 3000 feet. Above this height the oxides of nitrogen and particulate matter which can cause respiratory problems become dispersed.

Are there any climatic implications from Contrails?

We are interested in understanding the formation and coverage of contrails from a climate change perspective. DfT has a contract with Manchester Metropolitan University (MMU) lead by Professor David Lee to provide evidence, technical modelling and scientific expertise covering areas of climate change and air quality in aviation. This includes the non CO2 climate effects of aviation to which contrails and contrail cirrus will likely have a major role. Professor David Lee works closely with Reading and Leeds University who are also involved into climate change caused by contrail cirrus. The contribution from anthropogenic (man-made) cirrus remains the most uncertain component from aviation. However, current scientific understanding is that they cause an additional warming of the atmosphere. Further information can be found in the MMU Report "DfT Aviation Environment and Atmospheric Expert Technical Support" This can be found at http://www.dft.gov.uk/pgr/aviation/research/researchreport/finalreport/DfT_FinalReport_250310.pdf

The Department for Transport has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the Department's website in accordance with the W3C's Web Content Accessibility Guidelines. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact the Department.

Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
Telephone 0300 330 3000
Website www.dft.gov.uk
General email enquiries FAX9643@dft.gsi.gov.uk

© Crown copyright 2012

Copyright in the typographical arrangement rests with the Crown.

You may re-use this information (not including logos or third-party material) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/ or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: psi@nationalarchives.gsi.gov.