Met Office

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Our ref: 0031519

12 February 2014

Dear Mr Simpson

Request for Information under the Environmental Information Regulations 2004

Your correspondence dated 27 January 2014 has been considered to be a request for information in accordance with the Environmental Information Regulations 2004.

You asked:

1. ***Please provide me with accurate figures describing how many emails from the public you receive each week that question the condition of the skies.***
I refer particularly to hazy skies, strange clouds and chemtrails or persistent contrail. I would like to know the full figures, and how they are broken down so I can ascertain what percentage of your total emails are from concerned member of the public about the strange skies we now see.

I spoke to an advisor of yours last week and she suggested it might be as many as hundreds of thousands each week.

2. Please provide me with the official figures you supply to the public that describe the conditions needed for persistent contrails to form.
By this I mean what altitude and temperature they are able to form at. There seems to be some confusion about this information.

3. Please provide me with any copies of any documentation that you provide your telephone support people to assist them in explaining away all these strange clouds to concerned members of the public.
I would like to know what you tell your employees about how to deal with 'difficult questions' that the public may ask with regards their concerns about the state of our skies.

4. Please confirm in general terms if the atmosphere over the UK has changed significantly in the last 30 years, and if so how?
Global warming has now been proven to be a untrue, so if the climate really is changing, how exactly is it changing, and why should this give rise to new types of clouds?

4. Please provide me with evidence of how and when all the new types of clouds were invented, and exactly by whom.
I refer to names of new types of clouds that have been created, to explain all the strange formations we now see that are as a direct result of matter ejected by planes in flight over the UK. There were once 11 types of clouds and now there seem to be many more. Coincidentally all the new types seem to be the ones that derive from aircraft emission.

The Met Office holds some of this information.

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1. Please provide me with accurate figures describing how many emails from the public you receive each week that question the condition of the skies.
The Met Office does not hold this information. Email enquiries are not recorded by content.

The Weather Desk receives regular telephone calls / email enquiries on this matter. However, I can confirm it is not in the region of hundreds of thousands, as an estimate, the enquiries team suggest it is more likely to be between 10 and 30 enquiries a week.

2. Please provide me with the official figures you supply to the public that describe the conditions needed for persistent contrails to form.
The Met Office does not hold this information.

We do not have official figures supplied to the public that describe the conditions needed for persistent contrails to form. The information we provide to the public is mentioned in response to Q3 below.

3. Please provide me with any copies of any documentation that you provide your telephone support people to assist them in explaining away all these strange clouds to concerned members of the public.
The Met Office holds this information.

Our Support People, the Advisors, refer to the two attached templates when responding to enquiries on these types of matters.

4. Please confirm in general terms if the atmosphere over the UK has changed significantly in the last 30 years, and if so how?
The Met Office holds this information.

The thing that has most changed in the last 30 years concerning the formation of persistent contrails is not so much the atmosphere itself but the jet aircraft. Modern jet aircraft engines will generate contrail formation at warmer temperatures than older engines, as a result of their increased fuel efficiency. This is well-documented in an authoritative reference, details are included below. Contrails are initiated when the environment temperature is colder than a threshold temperature. The value of this threshold temperature is around -45C but is warmer for more efficient engines and colder for older low-efficiency engines. The referenced report gives much more detail. Such temperatures typically occur at altitudes above about 30,000ft and so may be found at the cruising altitude of much jet aircraft traffic.

Title: On conditions for contrail formation from aircraft exhausts.
Author: Schumann, U.
Corp Author: Deutsche Forschungsanstalt fur Luft- und Raumfahrt
Publication Details: Oberpfaffenhofen : Deutsche Forschungsanstalt fur Luft- und Raumfahrt, 1995
Description: Pp.ii+32+6pls. ; 30cm.
Series: Institut fur Physik der Atmosphare Report, NO. 44

Summary: The formation of contrails (condensation trails) from aircraft exhaust has been investigated since 1919. Related studies are reviewed. The thermodynamical foundation of the Appleman threshold criterion for contrail formation has been first described by Schmidt in 1940. The Schmidt/Appleman criterion is re-examined, including the effects of the conversion of part of the combustion heat into kinetic energy of the motions in the wake of the aircraft causing higher threshold temperatures for contrail formation than without this conversion. The criterion is also derived including the kinetic energy of the jet plumes but this effect changes the threshold temperature only a little. The analysis is applied for a measured test case with the so-called ATTAS aircraft and for typical modern wide body aircraft of type B747. If the aircraft would burn liquid hydrogen (liquid methane) instead of kerosene fuel, contrails would appear at typically 10 K (4.5 K) higher ambient temperatures and would be geometrically thicker and longer. However, this does not necessarily mean that such alternative fuels have a

stronger impact on climate because such fuels will cause less and larger particles with smaller optical thickness and faster sedimentation.

5. Please provide me with evidence of how and when all the new types of clouds were invented, and exactly by whom.
The Met Office does not hold this information.

To be of assistance, you may be interested in the following Wikipedia article: http://en.wikipedia.org/wiki/Clouds#Classification. This provides background and shows how some sub-types and refinements have been introduced.

I hope this answers your enquiry.

If you are dissatisfied with the handling of your request, you have the right to ask for an internal review. Internal review requests should be submitted within two months of the date of receipt of the response to your original letter and should be addressed to me in the first instance. Please remember to quote the reference number above in any future communications.

If you remain dissatisfied following an internal review, you may take your complaint to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not investigate your case until the internal review process has been completed.

The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF, or online: http://www.ico.gov.uk.

Yours sincerely,
FOI Manager