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Orrouy, le 20/10/2014

To : Dr. Joan Marie Cranmer ; Editor-In-Chief, NeuroToxicology
Professor of Pediatrics and Toxicology
Department of Pediatrics - Mail #512-19C
University of Arkansas for Medical Sciences, & Arkansas Children's Hospital
1 Children's Way
Little Rock, AR 72202, USA

Dear Doctor Cranmer,

I have been posted a copy of the article by: de Ree H, et al. Health risk assessment of exposure to TriCresyl Phosphates (TCPs) in aircraft: A commentary. Neurotoxicology (2014), <http://dx.doi.org/10.1016/j.neuro.2014.08.011>

I am an environmental forensic scientist, a judicial expert by the Appeal Court of Amiens, France, and member of the Compagnie Nationale des Experts Judiciaires en Environnement. I also am associate editor of the International Journal of Environmental Forensics. Such positions are accompanied by well established deontology rules, which drive me to write to you today about this article and formulate the following comments to be used as a response to the publication of the above article in your Journal.

The comments will be editorial, scientific, technical and regulatory in nature.

Editorial comments :

Activating a link in the document connects directly with the extranet.cranfield.ac.uk, a university subsidized/co invested by Airbus, Boeing, British Aerospace, British Airways, according to the website.

The authors:

1. Mr Hans de Ree is an employee of KLM Health Services, with some background in nursing and psychology, holding a post as ergonomist. He has announced his professional affiliation

as a bias when submitting his article. Member of the informal commission of KLM regarding research into contaminated air (+ KLM comm).

2. Martin van den Berg, Prof. Veterinary Toxicology, member of the Independent Scientific Health Board in the Netherlands + KLM comm.
3. Teus Brand, newcomer and no previous knowledge or publications in the field of aerotoxic.
4. Gerard Mulder, Prof. Toxicology, retired, paid advisor for KLM + KLM comm.
5. Ries Siemons, senior physician TNO
6. Brinio Veldhuisen van Zanten, Director of KLM Health Services, main contractor for KLM, fervent supporter of the conclusion: "Aerotoxic syndrome does not constitute an occupational disease in the Netherlands" + KLM comm.
7. Prof. of toxicology: M. van den Berg, G. Mulder and J. de Boer (part time advisor for KLM, VU), are all part of a group to redefine the new REACH standard regarding TCP at the RIVM in The Netherlands.

These facts obviously did not alert the Elseviers' editorial board nor peer-reviewers of this article over potential biases nor flaws in the authors' article.

I and some other colleagues invite readership to be careful when reading this article over such biases, or the facts that the "comments" introduced by the authors represent vested interests in a complex, worldwide subject where thousands of crews and passengers have been exposed to (www.aerotoxic.org). This has given rise to the publication of dozens of other peer-reviewed publications, hundreds of media articles and TV documentaries, many litigation cases, several of which have been already ruled in favor of exposed citizens. More publications are due shortly, so are more litigation cases pending.

I doubt it would be Elsevier's nor International Journal of Neurotoxicology's interest to be abused by biased authors acting on behalf of the aviation industry.

Scientific content of the article :

The investigation conducted by KLM elected to work only on 5 of the 10 isomers of tri-cresyl-phosphate, and failed to work on at last 2 dozens of the other neurotoxic compounds found in aircraft lubricating oils. They worked on BP oil, when in fact the most commonly used by aviation industry is Mobil Jet Oil II, which neurotoxic ingredients are much better documented. They referred to the famous ginger jake events by US prohibition times, but failed to refer to the many other events recorded and published worldwide on organophosphate poisoning, which account for tens of thousands victims.

The study is limited to Boeing 737 aircraft only, where apparently today's KLM fleet is not fitted with Rolls Royce engines which are more prone to oil leaks. The study fails to consider, in the same way as Cranfield University has denied them in their previous investigations, incidental flights where cabin air has been contaminated by smoke, haze or fumes, would such events result from overfill of oil carters or leaking seals, which has been documented in thousands of flights worldwide –for example, the Federal Aviation Authority (US FAA) alone has reported 2000 of such events having been documented in one year.

For the readers' information, such incidental situations are normally reported in airlines flight logs, but some airline companies report much less than others, simply because they tell their crews that such smoke, haze or fumes are of no risk, or because the crews are so used to such events that they finally view them as "normal operation". This indeed seems to be the case of KLMs. Please note that the labels on aircraft engine oils clearly warn of the neurotoxic risks associated to the use and inhalation of these neurotoxic ingredients. Where it is fair to state that most flights are safe in terms of neurotoxicant exposures, worldwide statistics lead to a figure of 2% of flights to be "incidental" with respect to contamination by engine oil compounds, including their neurotoxic additives.

More severe flight incidents, where flight safety is involved, are normally forwarded by airline companies to aviation authorities. Such events include crew incapacitation, flight abortion, aircraft grounding, exposed passengers or crews being sent to hospitals emergency services upon arrival. Hundreds of such reports do exist worldwide, when it has been proven that several such reports have not been forwarded by airlines to their national aviation authorities.

This paper furthermore suggests KLM is performing this research out of their own free will because of "concerns among airline crew members". It was an affected pilot who started a legal case in which KLM was court-ordered to assign a laboratory, within 14 days, to start analyzing the cabin air in the B737 fleet. TNO was chosen. In about 50% of all the flights TCP was found with an already outdated technique (SKC106 tubes with too low flow sampling, 2l/min iso >18l/min, according Prof. van Netten) thus resulting in very low values of detected TCP isomers. PR strategy was focused upon ToCP only, a toxic isomer that could never be detected with the GCMS in use. It mentions the other isomers are also neurotoxic but fail to state what the combined effect may be on people exposed ergo what actually happened to the pilot re-exposed in this specific case. The "KLM comm" authors are fully aware of this and fail to mention this crucial point, which may shed a completely different light on the conclusions of this article.

This paper represents KLMs view that none of their flights is incidental and is further biased by looking only at a few of the neurotoxic compounds documented from aircraft engine oils.

For example, when to perform wipe samples on aircraft interior surfaces, the international community uses alcohol based solvents, for the sought contaminants are lipophilic, not water soluble. In KLM's investigation, the wipe samples were water based, resulting in an expected 100 to 1000 times abatement of contaminants measurements.

Further on, the analytical methods used were limited by poor detection limits, as compared to other international investigations, which were commonly 10 times higher, leading to the biased conclusion that half of the surveyed aircraft were not subject to contamination.

This article is however interesting to the international scientific community because KLM affiliated authors admit that aircraft engine oils contain most potent neurotoxicants, even if they fail to address them all, that cabin air can be contaminated by such leaking fluids, and that cabin air organophosphate signature matches aircraft fluids composition.

On the continued use of these neurotoxic compounds in aviation industry :

These compounds have historically been banned in the vast majority of their applications where risks did exist to contaminate the environment with a resulting public or workers potential exposure.

Such toxic compounds are also a real concern to governmental and intergovernmental organizations, or covered by international treaties.

May I cite here the European REACH program dedicated to ensure chemical safety, or the Rome treaty, which is backbone to European's adherence to the Precautionary Principle. De Ree should learn more about the conditions when to apply the Precautionary Principle: either because a risk is identified, or because of the left over uncertainties about the risk. Even his list of research items is clear enough to call for this precautionary principle.

May I also cite here the Aarhus Convention (1998), which grants every citizens the right to a healthy environment, the right of information and access to environmental justice. Can a flight where those neurotoxicants do leak even at low level in normal operation, or incidental flights be viewed as a healthy environment? Are the crew and passengers informed of the use of the neurotoxicants as additives in aircraft fluids: No, not even on incidental flights. So how can exposed aircrew and citizens benefit of proper medical care if they do not know what they have been exposed to? How to access environmental justice if biased authors keep misleading the general public by discarding incidental flights, discarding many of the sought contaminants, using improper sampling or analytical procedures. The professionals and public have the right to know about the issues, and not just from the vested views represented in this article. The authorities would also positively anticipate that hereby issues are getting closer to submission to the European Court of Human Rights.

Let us also inform readership of the International Journal of Neurotoxicology that alternatives to the use of the neurotoxic-compounds already exist for aircraft operations would it be by TCP free aircraft engines' oil, existing for decades, or new technical systems capable of serving cabin air by independent compressors, without the need to use engine bleed air which is by definition contaminated and cannot be free of these neurotoxicants.

Whatever you name the symptoms as Organophosphate delayed or chronic neuropathy, toxic poisoning by neurotoxic organophosphates, or Aerotoxic Syndrome, passengers and crew remain exposed worldwide ; way too many have already lost their health and jobs, when deaths are now clearly documented by recent post mortem research amongst young aircraft crew¹.

¹ AUTOANTIBODIES TO NERVOUS SYSTEM-SPECIFIC PROTEINS ARE ELEVATED IN SERA OF FLIGHT CREW MEMBERS: BIOMARKERS FOR NERVOUS SYSTEM INJURY

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