AR226_1058

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Mary Dominiak/DC/USEPA/US@EPA on 02/19/2002 08:43:23 AM

To: NCIC OPPT/DC/USEPA/US@EPA
cc:

Subject: AR226: Comments on Telomer Research Plan

As indicated below, please include the attached email correspondence from Rich Purdy to Charles Auer in the file for AR-226.

Charles Auer/DC/USEPA/US@EPA
02/19/2002 08:40 AM

To: Mary Dominiak/DC/USEPA/US@EPA
cc: rpurdy@pressenter.com
Subject: comments on the telomer research plan

I asked Rich Purdy if this should be placed in the Administrative Record and he confirmed that this should be viewed as comments on the testing approach and should therefore be placed in the Administrative Record.

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rich purdy <rpurdy@pressenter.com>
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02/19/2002 07:53 AM

To: Charles
cc: Mark.Lewis@ec.gc.ca
Subject: comments on the telomer research plan

Recently while reviewing EPA administrative record 226 I had chance to read
the visual aids of the Telomer Research Group's plan for determining properties of telomers that may be useful for evaluating the environmental
and toxicological natures of telomers (AR226-1033). There appear to be some potential deficiencies. Listed below are some that were noticed. Because all plan details were not provided to the public, there are some limitations to these observations.

1. The test chemical: Why the 8:2 telomer alcohol and not the 10:2 or 12:2? The 8:2 is quickly metabolized to PFOA (Hagen et al. Anal. Biochem. 118 336-343 (1981)), and there are already long term toxicity studies on PFOA in AR226. The predicted metabolite of 10:2, PFDA, is more toxic than PFOA (L A Kinney, Fd Chem Tox 27 465-468 (1989);C T Olson and M E Anersen, Tox & App Phar 78 p362-372(1983); C T Olsen, Dissertation Ohio State 1982).

It causes a decrease in sphingomyelin and PFOA does not (Chem. Res. Toxicol. 11 428-440 (1998)). This may be an unshared mechanism of toxicity for these two chemicals. As you are aware they both share the uncoupling of oxidative phosphorylation mechanism of toxicity.

PFDA does not depurate from liver in 28 days at all while PFOA is 100% depurated (AR226-0951). This is probably because "PFOA is more readily excreted in the urine while PFDA is preferentially carried in the bile" and has the property of being persistent in enterohepatic recirculation (Chem. Res. Toxicol. 9, 689-695 (1996); Chem. Res. Toxicol. 5, 512-519 (1992)).

One possible reason to choose to test 8:2 over longer homologs might be because more is made and/or released, but that does not appear to be the case. The concentrations in products are about the same (AR226-1042, MSDS of DuPont, Daikin and Clarient). Their concentrations in air are within two fold of each other (J W Martin et al Collection of Airborne Fluorinated Organics and Analysis by Gas Chromatography/Chemical Ionization Mass Spectrometry. Anal Chem in press 2002). This difference could be due to the difference in vapor pressures of the two telomers.

2. Hydrolysis: Why perform hydrolysis studies on an alcohol that is not going to hydrolyze and ignore the esters that will? Most products containing the telomer alcohols bind them via ester bonds. It would be very useful to know the rate of this hydrolysis for predicting the rates at which the alcohols are released into the environment from product under storage, use and disposal. We have no way to estimate these rates now other than QSARs that sometimes disagree considerably for some of the parent substances containing telomer alcohols.

3. Tissue levels: There appears to be no mention of determining the level of the starting telomer alcohol or the perfluoro fatty acid metabolite in tissues. It is very useful in performing risk assessment to have the liver and sera levels of these at all dose levels. The LOEL and NOEL can then be expressed in terms of tissue level. The tissue level NOEL/LOELs can be compared to tissue levels found in wildlife and humans to give an estimation of risk. Many (Most?) toxicologists prefer this type of data.

4. No additive toxicology studies: The ultimate degradation products of all telomer products are probably additive. In addition they are probably

additive with perfluoroalkylsulfonates. Therefore additive toxicity should
be evaluated. But this program, like the 3M program, ignores this important issue.