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 NCIC HPV

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cc:  
cc:

Subject: Environmental Defense comments on zinc dialkyldithiophosphate  
category

03/26/2003 12:47 PM



Richard\_Denison@environmentaldefense.org on 03/26/2003 10:13:11 AM

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Subject: Environmental Defense comments on zinc dialkyldithiophosphate category

(Submitted via Internet 3/26/03 to oppt.ncic@epa.gov, hpv.chemrtk@epa.gov, boswell.karen@epa.gov, chem.rtk@epa.gov, MTC@mchsi.com, and sarah\_loftus@americanchemistry.com)

Environmental Defense appreciates this opportunity to submit comments on the robust summary/test plan for the proposed zinc dialkyldithiophosphate category.

The American Chemistry Council Petroleum Additives Panel's Health, Environmental and Regulatory Task Group (HERTG), in response to the EPA High Production Volume Challenge Program, has submitted a Robust Summary/Test Plan for twelve zinc dialkyldithiophosphates. The letter of submission and Test Plan state that members of this proposed category are synthesized in oil by neutralizing dithiophosphate alkyl esters with zinc oxide. The resulting products are said to be used exclusively as petroleum lubricant additives. On examination of the chemical structures of these twelve chemicals, we agree that they are quite similar, should have similar chemical/physical properties, and should therefore be expected to have similar fates in the environment and to exert similar toxicity. Thus, we agree that these twelve chemicals should be considered together as a category.

The Robust Summary/Test Plan submitted for this category provides a good description of how these chemicals are synthesized and indicates they are used exclusively in motor oils. It is pointed out that opportunities for human and environmental exposure occur in the processes of synthesis, quality control, transport and use. It is not pointed out, however, that because these compounds are synthesized and transported in large quantities and may be discarded in used motor oil, there is significant potential for environmental exposure, for example, as a result of a spill or inappropriate disposal of motor oil. Further, it is not obvious that the testing proposed to address the desired SIDS elements is sufficient. Therefore, we have the following comments regarding this Robust Summary/Test Plan.

1. There is no mention of studies characterizing the fate of these compounds once oil containing them is released into the environment. Since data presented here indicate these compounds are not readily degraded in the environment, they may persist or even accumulate in the environment. This potential indicates a need for more extensive data on the environmental fate and ecotoxicity than proposed in this Test Plan.
2. The Test Plan states that these compounds degrade at temperatures over 120 degrees C. This raises a question not addressed in the Test Plan: what do they degrade into? Since chemicals in this category are zinc salts

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of the dithiophosphate alkyl esters, it should be clearly stated whether or not they degrade into the respective dithiophosphate alkyl esters. In the Robust Summary/Test Plan submitted by HERTG for the proposed dithiophosphate alkyl esters, it is stated that the dithiophosphate alkyl esters are produced and used in closed systems and would not be released into the environment. If, however, the zinc salts degrade to the dithiophosphate alkyl esters, then there is significant potential for release of the latter compounds into the environment, and more extensive data should be generated to address the required SIDS elements. If they are degraded to some other known product, that product should be described. If degradation occurs but the degradation products are unknown, they should be determined and that information provided.

3. Page 43 and Table 8: It is stated that no NOAEL was established for dermal toxicity even at doses of one of these compounds as low as 3%. These compounds may be used in motor oil at concentrations up to 3%, and hence there is significant potential for dermal exposure of humans. While we do not advocate animal testing due to the corrosive nature of these chemicals, if additional testing is done, dermal studies would seem to be in order.

4. Much is made of the fact that it was necessary to test these chemicals in oil because they are synthesized in oil and never separated. While this makes sense, it does not preclude determination of the effects of the chemicals by comparison to the results of testing of the oil in the absence of the chemicals. Has this been done? If so, where are the results?

5. The Robust Summary contains thorough summaries of numerous studies of chemicals in this category. However, many of these studies are inadequate, i.e. were not performed under GLP, or exhibited deaths among the control animals. Purity was not established for the test material used in any of the studies described, perhaps due to the fact that these compounds are synthesized in oil. If so, this should be explained and the appropriate control studies done or described.

In summary, this Robust Summary/Test Plan is not acceptable in its present form. We do not request additional animal testing given the corrosivity of these chemicals; however, it would seem in order to do more to address the requested SIDS elements than has been proposed in this Test Plan. For example, since data described indicate these compounds persist in the environment and are mutagenic in some systems, it would seem in order that photodegradation, biodegradation, and all the ecotoxicity elements should be determined for more than two or three chemicals. It would be preferable if all these chemicals could be tested in each of these systems.

[Note: EPA personnel responsible for posting this document should be aware that numerous pages in the Test Plan will not print. Further, when one tries to print them they are lost from the text and can be regained only by reloading the entire document.]

Thank you for this opportunity to comment.

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