UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

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MEMORANDUM

SUBJECT: Immunotoxicity Potential of Triphenyltin Hydroxide

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Our technical staff have reviewed the package of published and unpublished immunotoxicity studies on triphenyltin hydroxide and its chemical analogue, triethyltin hydroxide. Our comments are summarized below.

The studies reviewed are adequate to establish that triphenyltin hydroxide has immunotoxic potential. However, they are insufficient to define the full spectrum of potential immunotoxic activity, nor the no-effect level associated with the effects reported.

Low doses of triphenyltin hydroxide (i.e., 2.5., 10 or 20 ppm) caused a similar depression on white blood cell in rats, mice and guinea pigs. The amount of depression was dose-related. Organ weight and cellularity of the spleen and thymus were depressed also at higher doses (although the thymus is a relatively insensitive indicator). These results showed a parallel with published results on triethyltin hydroxide, in which a depressed white cell count was associated not only with spleen and thymus depression but also with an increased incidence of mycotic infections following exposure to triethyltin hydroxide. Whether exposure to triphenyltin hydroxide might increase susceptibility to the same or different organisms was not demonstrated in the studies reviewed. The available data are, however, consistent with an increased likelihood of infection.

Although the response of triphenyltin hydroxide was dose-related, but the low end of the dose-response curve was not sufficient to permit a no-effect dose to be identified. Effects were seen as low as 2.5 ppm. A number of other parameters for immunotoxic effects could be studied and each of these endpoints could have its own threshold and no-effect level. For example, triphenyltin hydroxide exposure could be paired with challenges with various pathogenic organisms (mycotic and other organisms). Other possible studies include antibody and lymphocyte function tests.

There are three apparent options in support of regulation:

1.) Perform no more test, but extrapolate on the basis of the data already at hand. 2.) Repeat the tests at lower doses to better characterize the no-effect level (if possible). 3.) Conduct a comprehensive battery of immunotoxicologic studies to identify the most sensitive effect, as well as no-effect levels. The first two options are cost- and time-effective. The third option is more ambitious.