

February 23, 2006

Robert D. Colau
Associate Program Manager- Toxicology
Rohm and Haas Company
727 Norristown Road
P.O. Box 0904
Spring House, PA 19477-0904

Dear Mr. Colau:

The Office of Pollution Prevention and Toxics is transmitting EPA's comments on the robust summaries and test plan for Hexaoxatricosane posted on the ChemRTK HPV Challenge Program Web site on October 18, 2004. I commend Rohm and Haas Company for its commitment to the HPV Challenge Program.

EPA reviews test plans and robust summaries to determine whether the reported data and test plans will provide the data necessary to adequately characterize each SIDS endpoint. On its Challenge Web site, EPA has provided guidance for determining the adequacy of data and preparing test plans used to prioritize chemicals for further work.

EPA will post this letter and the enclosed comments on the HPV Challenge Web site within the next few days. As noted in the comments, we ask that Rohm and Haas advise the Agency, within 60 days of this posting on the Web site, of any modifications to its submission. Please send any electronic revisions or comments to the following e-mail addresses: oppt.ncic@epa.gov and chem.rtk@epa.gov.

If you have any questions about this response, please contact Mark Townsend, Chief of the HPV Chemicals Branch, at 202-564-8617. Submit questions about the HPV Challenge Program through the "Contact Us" link on the HPV Challenge Program Web site pages or through the TSCA Assistance Information Service (TSCA Hotline) at (202) 554-1404. The TSCA Hotline can also be reached by e-mail at tsca-hotline@epa.gov.

I thank you for your submission and look forward to your continued participation in the HPV Challenge Program.

Sincerely,

/s/

Oscar Hernandez, Director
Risk Assessment Division

Enclosure

cc: W. Penberthy
J. Willis

EPA Comments on Chemical RTK HPV Challenge Submission: Hexaoxatricosane

Summary of EPA Comments

The sponsor, Rohm and Haas Company, submitted a test plan and robust summaries to EPA for Hexaoxatricosane (CAS No. 143-29-3) dated September 30, 2004. EPA posted the submission on the ChemRTK HPV Challenge Web site on October 18, 2004.

EPA has reviewed this submission and has reached the following conclusions:

1. Physicochemical Properties. The submitter needs to provide a melting point value for this chemical and address discrepancies in partition coefficient and water solubility values.
2. Environmental Fate. The submitter needs to supply measured stability-in-water data and to address issues in the biodegradation study.
3. Health Effects. The submitted data are adequate for the purposes of the HPV Challenge Program.
4. Ecological Effects. EPA reserves judgement on the need for further testing of this chemical until issues pertaining to log Kow, water solubility and stability in water are resolved.

EPA requests that the submitter advise the Agency within 60 days of any modifications to its submission.

EPA Comments on the Hexaoxatricosane Challenge Submission

Test Plan

Physicochemical Properties (melting point, boiling point, vapor pressure, water solubility, and partition coefficient)

The data provided by the submitter for boiling point, and vapor pressure are adequate for the purposes of the HPV Challenge Program.

Melting point. The submitter did not determine the melting point because "the test substance is a liquid below 0 °C". This qualitative statement is inadequate. Estimated values under 0 °C, are adequate for the purposes of the HPV Challenge Program. The submission needs to include the estimated value.

Partition coefficient. The submitter provided a measured log Kow value of 6.2. This value appears anomalous for this class of chemicals (polyglycol ethers); EPA found a calculated log Kow of 1.67 (EPIWIN v. 3.12). Because these values differ significantly, and for other reasons discussed below under Water Solubility, the submitter needs to address the apparent discrepancy. The robust summary for this endpoint did not state whether any of the reference compounds were structurally related to the test substance, as recommended in the cited guideline; the method used may not be appropriate for this type of substance.

Water solubility. The submitter provided a semi-quantitative measured water solubility value of <0.0001 mg/L at 20 °C. However, in the acute toxicity to invertebrates robust summary (section 4.1) a 92.3 mg/L test solution was clear and colorless with no visible precipitate or surface film throughout the study. In addition, the measured values for water solubility (< 1 µg/L) and log Kow (6.2) do not agree with the expected characteristics of this class of chemicals (polyglycol ethers). A structurally analogous polyglycol,

BB300 (butyl[OCH₂CH₂]_n-O-butyl where n =3 to 5) has a water solubility of 2 wt% (20 mg/mL). The deviations from expected values and from observed behavior (solubility in invertebrate study) send a strong signal of problems that the submitter should have addressed. A common factor in the solubility and log Kow measurements is the initial absorption of the test substance onto a silica or treated silica substrate, which may account in some way for the apparently anomalous results in the two tests. The submitter needs to address the conflicting water solubility and partition coefficient issues.

Environmental Fate (photodegradation, stability in water, biodegradation, fugacity)

The data provided by the submitter for photodegradation and fugacity are adequate for the purposes of the HPV Challenge Program.

Stability in water. The submitter argues that the compound has no water-sensitive groups and that low water solubility precludes this test. However, as already noted, solubility in the ecotoxicity testing was apparently not an issue. Furthermore, hexaoxatricosane contains an acetal group, which is typically susceptible to hydrolysis at acidic pH. Therefore, the submitter needs to supply measured stability-in-water data according to OECD TG 111.

Biodegradation. Although the results, “Not readily biodegradable” are adequate for the purposes of the HPV Challenge program, the submitter stated that “The abiotic sterile control system indicated that CO₂ production in the test substance systems may be attributed to biodegradation since abiotic degradation was 6.0 % ThCO₂ by day 29.” However, 6% ThCO₂ in an abiotic control is too high and suggests possible problems with the technique such as: (1) the inhibitor did not work as intended (concentration too low, wrong inhibitor, etc.); (2) that the air used in the test was not CO₂-free air as required by the method; or (3) the air was not adequately scrubbed free of CO₂ during the test. The submitter needs to address the discrepancy.

Health Effects (acute toxicity, repeated-dose toxicity, genetic toxicity, and reproductive/developmental toxicity)

The submitted data are adequate for the purposes of the HPV Challenge Program.

Ecological Effects (fish, invertebrates, and algae)

EPA reserves judgement on the adequacy of ecological effects data pending resolution of water solubility, log Kow and stability-in-water issues.

Specific Comments on the Robust Summaries

Vapor pressure. On page 8 of the robust summary, the submitter reports a value of <.00978 hPa (<0.978 Pa) and on page 9 a value of < 9.78 x 10⁻⁵ Pa. The submitter needs to correct this substantial conversion error and harmonize the units.

Followup Activity

EPA requests that the submitter advise the Agency within 60 days of any modifications to its submission.