



P H Y S I C I A N S  
C O M M I T T E E  
F O R  
R E S P O N S I B L E  
M E D I C I N E

5100 WISCONSIN AVENUE, N.W. • SUITE 400

WASHINGTON, DC 20016

T: (202) 686-2210 • F: (202) 686-2216

PCRM@PCRM.ORG • WWW.PCRM.ORG

May 14, 2002

The Honorable Christine Todd Whitman  
Administrator  
U.S. Environmental Protection Agency  
Ariel Rios Building  
Room 3000, #1101-A  
1200 Pennsylvania Ave., N.W.  
Washington, DC 20460

Subject: Comments on the Epoxy Resin Systems Task Group's HPV Test Plan and Robust Summary for Alkyl (C12-C14) Glycidyl Ether

Dear Administrator Whitman:

The following comments on the Epoxy Resin Systems Task Group's (ERSTG's) test plan for alkyl (C12-C14) glycidyl ether are submitted on behalf of the Physicians Committee for Responsible Medicine (PCRM), People for the Ethical Treatment of Animals (PETA), the Humane Society of the United States, the Doris Day Animal League, and Earth Island Institute. These health, animal protection, and environmental organizations have a combined membership of more than nine million Americans.

The ERSTG has put forth a complete test plan, including helpful information about the regulatory history of the glycidyl ethers. In its submission to the HPV program, the ERSTG has grouped together alkyl (C12-C13) glycidyl ether and alkyl (C12-14) glycidyl ether. Alkyl glycidyl ethers are epoxy resin additives derived from glycidol and used in flooring and adhesives. Characterizing the health effects of these substances has been a priority issue for the EPA for more than a decade. Many tests far beyond the scope of the HPV program have been conducted with these chemicals, and we agree that no further health effects testing needs be done. However, the ERSTG has proposed an aquatic toxicity test with alkyl (C12-C14) glycidyl ether and has also failed to include a structurally similar HPV substance, alkyl (C10-C16) glycidyl ether.

The following terms of the October 1999 Agreement are violated by the ERSTG test plan:

1. In analyzing the adequacy of existing data, participants shall conduct a thoughtful, qualitative analysis rather than use a rote checklist approach. Participants may conclude that there is sufficient data, given the totality of what is known about a chemical, including human experience, that certain endpoints need not be tested.
2. Participants shall maximize the use of existing and scientifically adequate data to minimize further testing.
3. Participants shall maximize the use of scientifically appropriate categories of related chemicals and

structure activity relationships.

Our two main recommendations are:

- The ERSTG should expand its chemical category to include the HPV substances alkyl (C10-C16) glycidyl ether (CAS #68609-97-2).
- Given the low solubility of these substances and the availability of nonanimal test methods, the ERSTG should withdraw its proposed aquatic toxicity test, which would kill 60 animals.

**The ERSTG should expand its chemical category to include the HPV substances alkyl (C10-C16) glycidyl ether (CAS #68609-97-2).**

Not only is the ERSTG's grouping of the two glycidyl ethers completely reasonable, since alkyl (C12-C14) glycidyl ether and alkyl (C12-C13) glycidyl ether are mixtures of nearly identical chemical species, this grouping is also consistent with a category of glycidyl ethers authorized by the EPA under an Enforceable Consent Agreement.

The EPA issued a proposed test rule for the category glycidol and its derivatives (56 *Federal Register* 57144 November 7, 1991). Rather than finalizing the rule, the EPA and chemical manufacturers negotiated an Enforceable Consent Agreement (Docket OPPTS-42185, *Federal Register*, March 22, 1996), which stated that alkyl glycidyl ether manufacturers could test alkyl (C12-C13) ether as a representative of the alkyl glycidyl ethers subcategory to meet the requirements of the proposed rule. The subcategory included the following six chemical substances: lauryl glycidyl ether (lauryl glycidyl ether (CAS #2461-18-9); hexadecyl glycidyl ether (CAS #15965-99-8); n-octadecyl glycidyl ether (CAS #16245-97-9); tetradecyl glycidyl ether (CAS #38954-75-5); alkyl (C10-C16) glycidyl ether (CAS #68081-84-5); and alkyl (C12-C14) glycidyl ether (CAS #68609-97-2). Manufacturers committed to testing the representative member of the subcategory for the following endpoints: subchronic toxicity, developmental toxicity, subchronic neurotoxicity, and genetic toxicity.

Given the long history of the EPA's extensive discussions and evaluations of the glycidyls and the close structural and toxicological similarity of the two mixtures addressed by the ERSTG HPV test plan, there should be no question that ERSTG has developed a sensible group. The EPA has already approved the idea that data on alkyl (C12-C13) glycidyl ether is representative of other glycidyl ethers, including alkyl (C12-C14).

However, alkyl (C12-C13) and (C12-C14) glycidyl ethers are also subsumed in another HPV substance, alkyl (C10-C16) glycidyl ether. The ERSTG should include this substance in its test plan, especially since it was part of the EPA-approved category in the consent agreement. Inclusion of alkyl (C10-C16) glycidyl ether would reduce animal testing under the HPV program. HPV participants should maximize the use of scientifically appropriate categories.

**Given the low solubility of these substances and the availability of nonanimal test methods, the ERSTG should withdraw its proposed aquatic toxicity test, which would kill 60 animals.**

The ERSTG's test plan for alkyl (C12-C14) glycidyl ether calls for an assessment of acute toxicity to fish, which is inappropriate given the low solubility of this substance and the availability of nonanimal methods. The solubility of alkyl (C12-C14) glycidyl ether, as reported in the test plan, is 0.01444 mg/L. With such a

low solubility, it is unlikely that the chemicals would be bioavailable to fish. Aquatic toxicity tests with algae and *Daphnia* would provide information to meet the ecotoxicity endpoint of the HPV program without killing any animals.

Additionally, nonanimal methods are available. ECOSAR, an established QSAR program that estimates toxicity to fish, invertebrates, and algae, may be appropriate for characterizing this endpoint and should be considered. The EPA encourages the use of ECOSAR in its draft guidance document *The Use of Structure-Activity Relationships (SAR) in the High Production Volume Chemicals Challenge Program* (viewable at <http://www.epa.gov/chemrtk/sarfin11.htm>).

*In vitro* tests, such as the TETRATOX assay, with the protozoan *Tetrahymena* are frequently used as a measure of aquatic toxicity in ecological risk assessments.<sup>1</sup> The biochemistry and physiology of *Tetrahymena* have been thoroughly investigated since the 1950s, and *Tetrahymena*, especially *T. pyriformis*, have been used for aquatic toxicity testing since the 1970s. Moreover, the genomics of the organism are currently being elucidated. The *T. pyriformis* population growth test is quick, easy, and cheap, and has considerable breadth.<sup>2</sup> Both the *in vitro* TETRATOX assay as well as QSARs provide more humane, efficient methods to predict aquatic toxicity at the screening level.

Thank you for your attention to these comments. I can be reached at 202-686-2210, ext. 302, or via e-mail at [ncardello@pcrm.org](mailto:ncardello@pcrm.org). Correspondence may be sent to my attention to PCRM, 5100 Wisconsin Ave., N.W., Suite 400, Washington, DC 20016.

Sincerely,

Nicole Cardello, M.H.S.  
Staff Scientist

#### References

1. Larsen J, Schultz TW, Rasmussen L, Hooftman R, Pauli W. Progress in an ecotoxicological standard protocol with protozoa: results from a pilot ring test with *Tetrahymena pyriformis*. *Chemosphere* 1997;35:1023-41.
2. Schultz TW. TETRATOX: *Tetrahymena pyriformis* population growth impairment endpoint —a surrogate for fish lethality. *Toxicological Methods* 1997;7:289-309.