



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

JUN 30 1986

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: Low Volume/Minor Use Waiver Request for propylene oxide

TO: Geraldine Werdig, Chief
Data Call-In Staff
Registration Division (TS-767)

FROM: Margaret L. Jones *M.L. Jones 6/25/86*
Review Section III
Toxicology Branch (TS-769)

THRU: Marcia Van Gemert, Ph.D., Chief *M Van Gemert 6/27/86*
Review Section III *W. Burnam 6.27.86*

and William Burnam, Deputy Chief
Toxicology Branch

Chemical: propylene oxide; propene oxide

Caswell No.: 713A

Record No.: 163954

Petitioner: ABERCO, Incorporated

Action Requested: Determine whether toxicology data requirements can be waived for propylene oxide because the petitioner claims low volume/minor use exists.

Conclusion: Propylene oxide is distributed by the petitioner for use as a fumigant for cocoa. The pesticide is registered as a food additive under 21 CFR 193.380. Normally, a full complement of toxicity studies is required for food-use pesticides. There are no data on this chemical in Toxicology Branch files. In a previous request for low volume/minor use status (Record No. 170492) from this petitioner, Benefits and Use Division recommended the petition for waiver be accepted based on a restricted amount of production and distribution. Toxicology Branch responded on 5/8/86 stating there would be a minimum amount of data required to decide on the safety of propylene oxide. The attached 5/2/86 memorandum from Burnam to Barton was included with that response.

The present request includes a feeding study in which dried fruit fumigated with propylene oxide was fed to rats for 90 days. Studies of this nature are generally not adequate to judge the toxicity of a fumigant since the level of exposure is very low. The present request concerns use of the pesticide on cocoa, which was not examined in the feeding study.

The World Health Organization (WHO) has published a summary of the toxicity data on propylene oxide, which includes studies completed up to 1984. The conclusions of that report are quoted below:

- "- As data on humans are scarce, the evaluation of the health risks of propylene oxide to man is mainly based on experiments with animals.
- Aqueous propylene oxide is severely irritating to skin and eyes. It may sensitize the skin.
- The vapour of propylene oxide is severely irritating to eyes and respiratory tract. It may cause lung oedema and affect the nervous system.
- Propylene oxide can be toxic to the fetus of rats and can affect the spermatogenic functions of monkeys. It cannot be excluded that propylene oxide affects reproduction in man after inhalation.
- Data are insufficient to assess the teratogenicity of propylene oxide.
- Propylene oxide is a direct alkylating agent and mutagenic in all short-term in vitro tests, but not in all in vivo tests. Data on humans are scarce and confounded by mixed exposures. It cannot be excluded that propylene oxide is mutagenic in man.
- Propylene oxide is carcinogenic to rodents. It induced tumours in rats and mice mainly at the site of administration: the nasal cavity, the forestomach and the site of injection.

Based on the above data it can be concluded that propylene oxide ~~is~~ maybe carcinogenic to man. However, in the absence of more adequate morbidity, mortality, and mutagenicity studies on human populations a final assessment cannot be made. Nevertheless, exposure to propylene oxide should be avoided and preferably be negligible."¹

A copy of the WHO paper is attached. Although the Agency does not normally consider secondary sources in making decisions on pesticides, the weight of the evidence presented in the paper cannot be ignored. Certain data are missing, such as a valid developmental toxicity (teratology) study. In addition, the petitioner is encouraged to submit data which demonstrate the safety of propylene oxide although at present there does not appear to be a question of insufficient data.

Rather than consider data waivers on propylene oxide, perhaps the agency should consider the risks to humans from food uses, and to applicators.

1. World Health Organization, International Program on Chemical Safety; Short Health Risk Evaluation Nr. 6; Propylene Oxide; First Draft; T. Vermeire; National Institute of Public Health and Environmental Hygiene; P.O. Box 1, Bilthoven, The Netherlands.