



"Contains NO CBI"

Chlorine Institute

THE CHLORINE INSTITUTE, INC., 2001 L STREET, N.W., WASHINGTON, D.C. 20036

202-775-2790
Fax 202-223-7225

8EHQ-1192-8574

November 4, 1992

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Document Processing Center (TS-790)
Office of Toxic Substances
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460
Attn: 8(e) Coordinator

RE: Two-Year Chlorine Bioassay in Rats and Mice
Contains No Confidential Business Information

Dear Sir/Madam:

The following information is being submitted by The Chlorine Institute, on behalf of its member companies, pursuant to current guidance issued by EPA indicating EPA's interpretation of Section 8(e) of the Toxic Substance Control Act. Neither the Chlorine Institute nor any member company has made any determination as to whether a significant risk of injury to human health is actually presented by the findings.

The preliminary findings from a two-year bioassay are contained within the attached abstract. The abstract was obtained from the Chemical Industry Institute of Toxicology. No other report of the results is currently available to the Chlorine Institute. The information contained within the abstract has been communicated to the member companies in order that each may independently consider what, if any, action is appropriate in connection with individual operations.

Sincerely,

THE CHLORINE INSTITUTE, INC.

Arthur E. Dungan

Arthur E. Dungan
Vice President
Safety, Health and Environment

AED/dgb.18
BIOASSAY.ltr

Attachment: Status Report on Two-Year Chlorine Bioassay in Rats and Mice
by Douglas C. Wolf, D.V.M., Ph.D., CIIT



8EHQ-1192-8574
INIT 11/13/92



88930000056

NOV 13 1992

2 pgs.

Status Report on Two-Year Chlorine Bioassay in Rats and Mice
Douglas C. Wolf, D.V.M., Ph.D.
CIIT Scientific Open House
October 20, 1992

Chemicals have typically been selected for evaluation in rodent bioassays using multiple criteria including potential for toxicity/carcinogenicity and the potential for human exposure. Accordingly, chlorine was selected by CIIT for evaluation in a rodent bioassay because it is a reactive gas, a respiratory tract irritant, produced in large volume and has the potential for significant human exposure. Short term studies conducted at CIIT and elsewhere provided critical information for the design of the subsequent toxicity studies. These studies showed that the primary site of chlorine-induced injury in mice, rats and monkeys was the upper respiratory tract.

The rodent bioassay included a 2 year exposure of male and female F344 rats and B6C3F1 mice to 0, 0.4, 1.0 or 2.5 ppm of chlorine gas for 6 hours/day. Mice and male rats were exposed for 5 days/week while female rats (on the basis of previous studies) were exposed for 3 days/week (Monday, Wednesday, and Friday). No exposure related neoplasms were found at the end of 2 years of exposure. Chlorine-induced lesions were confined to the nasal mucosa. They included respiratory epithelial hyperplasia, mucous metaplasia of the transitional epithelium, intracytoplasmic eosinophilic inclusions and perforation of the nasal septum. A number of these lesions were seen at all exposure concentrations being most severe in the front of the nose and decreasing in severity caudally.

In summary, lesions of the nasal mucosa were induced by exposure of rats and mice to chlorine concentrations of 0.4, 1.0 and 2.5 ppm for 2 years. Similar exposures have primarily resulted in nasal and mild tracheal epithelial lesions in exposed monkeys.

The results of the 2 year rodent bioassay, which ascertained the potential effects of chlorine under conditions of the bioassay (species used, exposure conditions, etc.), must take into account species-specific biological characteristics. Integration with other data will be essential for human hazard identification and exposure response characterization. The issue of tissue dosimetry is especially critical for a reactive gas such as chlorine where inter-species differences in exposure concentration-tissue dose are to be expected. An understanding of exposure-dose relationships is also essential for evaluating potential species differences in response to a given regional tissue dose. Research on these topics is underway at CIIT and should contribute to a better understanding of the potential risks for humans chronically exposed to airborne chlorine.