CANTOX INC.

Consultants in Toxicology
Health and Environmental Sciences

FACSIMILE COVER LETTER

DATE: October 27, 1992 **TIME:** 10:05am

TO: Dr. Ronald McCreedy
Dow Chemical USA

FROM: Dr. Earle Nestmann
CanTox Inc.

NO. OF PAGES (including cover): 7

FAX NO.: (517) 636-9899

CANTOX PROJECT NO.: 31800

CONTENTS OR MESSAGE:

Attached please find a copy of the letter sent to Mr. Robert Burnett of the Vinyl Institute regarding the PVC proposal.

NOTE: If there were any problems with this transmission, please call our office at (416) 542-2900.
Our Facsimile number is (416) 542-1011.

Mississauga office:
2233 Argentia Road, Suite 308, Mississauga, Ontario, L5N 2X7

CANTOX INC.

Consultants in Toxicology
Health and Environmental Sciences

October 26, 1992

Mr. Robert Burnett
Executive Director
Vinyl Institute
155 Route 46 West
Wayne Interchange Plaza 2
Wayne, NJ 07470
USA

Dear Mr Burnett:

Following a request by Dr. Robert Hinderer, B.F. Goodrich Company, for a proposal to prepare an updated review of polyvinyl chloride (PVC) for inclusion in a new edition of *Patty's Industrial Hygiene and Toxicology*, an outline and cost estimate of the work to be accomplished were forwarded to Dr. Hinderer on October 8, 1992 (attached). Last week, a request was received from Dr. Ronald McCreedy, Dow Chemical, for a detailed breakdown of the estimated costs, including a description of the work additional to that already carried out for the Chlorine Institute by CanTox Inc.

After speaking to Dr. Hinderer today regarding this proposal, he suggested that we contact you to follow up with this information. He also suggested that one person should be designated to be the contact for the Vinyl Institute, with the thought that he and Dr. McCreedy would act more as advisors than in project management. Limiting communication to a single management contact would help to prevent confusion *etc.*

In addition to the original letter dated October 8, 1992, please find attached (1) a detailed breakdown of the anticipated cost involved in the preparation of the PVC article ($15,000 ± 15%) and (2) a description of the work to be accomplished in the preparation of this article that differs from that already carried out for the Chlorine Institute.

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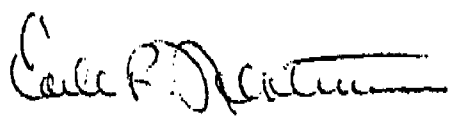
If you require any further clarification or have any questions, please do not hesitate to call me or Dr. Jon Daniels.

Yours sincerely,
CanTox Inc.



Earle R. Nestmann, Ph.D.
Principal

Encl. (3)

CANTOX INC.

1. Detailed Breakdown of Anticipated Cost of Preparing the PVC Article

As indicated in the original letter to Dr. Robert Hinderer of October 8, 1992, the anticipated cost for the preparation of the PVC article (*i.e.*, items one and two in the letter) for inclusion in an upcoming edition of *Patty's Industrial Hygiene and Toxicology* will be $15,000 ± 15%. Item three, with the anticipated cost of $5,000, merely reflects the time involved in reviewing the sections prepared by the other authors (*i.e.*, vinyl chloride monomer and thermal degradation/combustion), and ensuring consistency and continuity throughout the entire document.

As it has been a long time since the last edition of *Patty's* was published, extensive searching of scientific databases will need to be done. As pointed out in the October 8, 1992, letter to Dr. Hinderer, such searches will need to be thorough and comprehensive given the prestige of this publication and its use as a reference book. It is unclear how many new articles relating to PVC will need to be acquired and critically evaluated, given the exhaustive nature of the database searching that will be conducted. From work carried out for the Chlorine Institute in this area, we have identified approximately 80 primary references concerning PVC that will require reviewing/evaluating for this project. The costs associated with conducting the literature searches and acquiring the articles and reports is anticipated to be approximately $ 3,300. This includes approximately $1,000 for searching and $ 2,300 for acquisition).

At CanTox Inc., in an effort to reduce the cost to clients and still produce high-quality work, literature searches, the acquisition and compilation of scientific literature, and initial reviewing are carried out by junior staff. preliminary interpretation of the scientific data and initial preparation of reports *etc* are carried out by more senior scientific staff, which is critically reviewed by the Senior Toxicologists/Principals of the company.

It is believed that the final cost for the preparation of the article for *Patty's* will not differ by more than 15% of the proposed total of $15,000 (*i.e.*, $3,300 + 11,700).

2. Description of New Work Involved in Preparing the PVC Article

For work conducted on behalf of the Chlorine Institute regarding PVC and related chemicals, the source material that was used in the preparation the relevant reports was largely composed of review articles on the subject. This aspect was deemed necessary by both the Chlorine Institute and CanTox Inc. as a way to keep down the costs associated with such a large project. Under certain circumstances, such as when dealing with critical issues of areas of controversy, the primary literature (*i.e.*, original research articles) was examined. In the case of PVC, much of the information used by CanTox was obtained from such review material. Given the considerable reputation of *Patty's Industrial Hygiene and Toxicology* and its use as a reference text, it is deemed necessary to obtain much of the primary literature regarding PVC in order to assure accuracy and quality of the final article. A large number of such articles have been identified by CanTox during work conducted on behalf of the Chlorine Institute. Obtaining this material and critically reviewing it would need to be done.

For the project carried out for the Chlorine Institute, the areas of key interest regarding the chlorinated compounds were human health, toxicology (mammalian, aquatic, and terrestrial), and the environment. While these areas are obviously important for the PVC article intended for inclusion in *Patty's*, additional subject areas include methods of analysis, contamination during manufacturing, biological monitoring, advances made in the manufacturing process, *etc.* As such, there are additional aspects to be considered in this project as compared to that carried out for the Chlorine Institute. To thoroughly address these areas, they will also be the subject of comprehensive literature searches, acquisition, and critical review. In addition, there may be unpublished information available through the member companies of the Vinyl Institute regarding PVC that will require reviewing and incorporation into the final article. Such material has not been used in work conducted for the Chlorine Institute.

CANTOX INC.
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Health and Environmental Sciences

October 8, 1992

Dr. Robert K. Hinderer
B.F. Goodrich Company
6100 Oak Tree Blvd.
Independence, Ohio
44131

Dear Dr. Hinderer:

We have had an opportunity to consider your suggestion about CanTox working with you and others, on behalf of the Vinyl Institute, to help prepare an updated review of polyvinyl chloride (PVC) for inclusion in the new edition of *Patty's Industrial Hygiene and Toxicology*. Given that considerable time has passed since the last edition, we suggest that we would:

1. Conduct extensive searches of available databases, acquire, and critically evaluate the relevant articles.

In keeping with the use of *Patty's* as a reference book with considerable prestige and the fact that this section must be comprehensive and able to withstand scrutiny, the searches must be complete, with a need to obtain primary references as opposed to simply relying on review articles, *etc.* Furthermore, changes in processing and manufacturing of PVC during the past decade could mean that much of the existing section may not be relevant. Areas that will be searched and included in the final review on PVC will include: production and uses; physical-chemical properties; methods of analysis; laboratory animal toxicity and metabolic fate; environmental concentrations; biodegradation and environmental fate; human epidemiology and case studies, including industrial/occupational exposure; biological monitoring; industrial experience; contaminants and by-products of production; and regulatory standards and exposure limits. Unpublished studies and information from member companies of the Vinyl Institute may be more useful or up-to-date than the published literature.

2. Prepare an article, either in the format previously used in past editions of *Patty's*, or in a format new to the upcoming edition.

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We recognize that there must be consistency in the preparation of this section with the other related parts (*i.e.*, vinyl chloride monomer and thermal degradation/combustion toxicity), and further effort will entail integration of the three major parts.

3. Integrate PVC write-up with the other elements as they become available.

Since the other elements involve toxicology, we should be involved in their critical review to ensure consistency with our most recent efforts related to this subject matter.

To complete the above work, the anticipated cost will be approximately (*i.e.*, +/- 15%) $15,000 for items 1 and 2, and $5,000 for item 3. With the nearing deadline for submission, work on this project at CanTox would begin immediately upon receipt of approval. Once work has begun, I expect a first draft to be completed by early November, thus providing time for input from the Vinyl Institute and coordination among the authors.

If there are any questions regarding this project, please do not hesitate to call myself or Dr. Jon Daniels.

Yours sincerely,
CanTox Inc.

Earle R. Nestmann, Ph.D.
Principal