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The Dow Chemical Company
Midland, Michigan 48674

2020 DOW CENTER
April 5, 1994

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C.E. NUILA
Inorganic R&D

Dr. Has Shah
Chemical Manufacturers Association
2501 M. Street N.W.
Washington, D.C., 20037

VINYL CHLORIDE RESEARCH COORDINATORS

Dear Has:

Find enclosed three items which I agreed to develop for the CMA Vinyl Chloride Research Coordinators prior to our next meeting:

1. A list of bullet points outlining the benefits to member companies of updating the inter-industry epidemiology study (three additional slides are enclosed which members of the group also may find useful in discussions with their respective management.)
2. A draft of a Request for Proposals (RFP) which includes a scope of work for soliciting bids from contractors.
3. A list of names and addresses of potential contractors who are capable of undertaking the epidemiologic research (Note, other than ENSR, no effort has been made to contact these contractors to learn of their interest in such a project.)

I was assisted in pulling this material together by my Dow colleague, Dr. Jonathon Ramlow. As was mentioned to you and the members of the group at our last meeting, I anticipate that Dr. Ramlow will eventually replace me as the Dow representative. He is a fully qualified epidemiologist and should do an outstanding job. Dr. Ramlow and I anticipate jointly participating in the next several meetings to effect a smooth transition of responsibilities.

bcc: G. S. Dillon, 2020 Dow Center
J. Y. Domoradzki, 1803 Building
W. C. Hayes, 2020 Dow Center
R. L. McCreedy, 2020 Dow Center
C. E. Nuila, Freeport
J. M. Ramlow, 1803 Building
W. J. Stearns, 2020 Dow Center

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Dr. Has Shah
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I assume you will promptly distribute the attached materials to the other members of the group so that we can discuss them at our upcoming meeting. If you have any questions about this material do not hesitate to call on me.

Sincerely yours,



Gregory G. Bond, Ph.D., M.P.H.
Senior Manager
Chemicals TS&D and Environmental Affairs
(517) 636-9063

tlr

Enclosure

POTENTIAL CONTRACTORS

Howard Rockette, Ph.D.
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Graduate School of Public Health
University of Pittsburgh
130 DeSoto Street
Pittsburgh, PA 15261

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Harris Pastides, Ph.D.
School of Public Health
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Dr. Roy E. Shore
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Environmental Medicine
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DRAFT

Scope of Work

Update of Mortality Among Vinyl Chloride Workers

The Chemical Manufacturers Association (CMA) is interested in receiving proposals to update the mortality experience among an established cohort of workers employed in the vinyl chloride/polyvinyl chloride (VC/PVC) industry. This cohort was previously studied by Tabershaw and Gaffey (1974), Cooper (1981) and Wong, et al. (1991).

The Scope of Work for this project is outlined below and includes some key elements which should be addressed in any proposals submitted.

As you will note, the CMA is interested in receiving two major work products at the conclusion of the project: 1) A written technical report summarizing an epidemiologic evaluation of the mortality experience of the workers through 1992 and 2) A manuscript which is suitable for publication in the peer-reviewed scientific literature.

Background

The original records which formed the basis for prior reports of the mortality experience of this cohort are currently in the possession of ENSR Health Sciences located in Alameda, California. If a different study group is awarded the contract to conduct the update study, CMA will arrange the transfer of all pertinent records from ENSR to that contractor. However, as you will note in the attached correspondence between Dr. Shah of CMA and Dr. Whorton of ENSR, ENSR did make confidentiality agreements with some states precluding a direct transfer of death certificates for some of the cohort members. Therefore, submitted proposals will need to indicate how other contractors would proceed to obtain such death certificates for persons dying prior to 1983, the end date for follow-up in the most recent update.

Projected Scope of Work

All proposals submitted in response to this request should address the following issues:

1. Verification of the completeness of the database in comparison with the results of the most recent update (see Wong, et al. 1991, attached.)
2. How to obtain death certificates for employees dying before 1983 which could not be transferred directly from ENSR.
3. Ascertainment of vital status of cohort members who survived through the end of the previous update period (i.e., 12/31/92.)

4. Obtaining death certificates for employees determined to have died after 1982 and assigning a nosologically valid cause of death to each.
5. Conduct of a Standardized Mortality Ratio analysis comparing the cause-specific mortality experience of the cohort with age-, race-, gender-, and period-specific rates for the U.S. male population and individual state male populations. The analyses conducted should consider at least the following factors:
 - Age at first exposure
 - Year of first exposure
 - Type of plant (VCM or PVC)
 - Length of exposure
 - Elapsed time since first exposure

In addition to these points, any proposal should also include the investigators' thoughts on the feasibility and technical merit of the following:

1. Updating the exposure histories of surviving cohort members from 1982 through 1992.
2. Performing internally standardized mortality comparisons using such methods as Poison regression for comparing SMR's.

Technical Criteria

You may be interested in some of the criteria that the CMA Vinyl Chloride Research Coordinator's Group will use to evaluate the proposals received. These are listed below for your consideration when preparing your response. The criteria are not listed in any particular order and should not be viewed as having equal weight.

1. The curriculum vitae for each of the scientists who will comprise your project team.
2. Your proposed approach to each of the technical items listed in the Scope of Work.
3. Your proposed schedule for completion of the required deliverable work products listed below.
4. Your description of the technical and physical resources at your disposal for completion of this project.

Required Deliverable Work Products

The deliverables expected by CMA include the following:

1. A series of timely progress reports addressing the following:
 - Verification of completeness of the existing database against the tables presented in the 1986 report to CMA prepared by Wong, et al. (see attachment.)
 - Outcome of efforts to ascertain vital status of cohort members through 1992.
 - Outcome of efforts to obtain death certificates for employees dying after 1982, and for employees dying before 1983 if necessary.
2. A detailed technical report summarizing the epidemiologic analysis submitted to CMA for review and commentary by participating member companies.
3. A manuscript suitable for publication in the peer-reviewed scientific literature, submitted to CMA for review and commentary by participating member companies.

Timing

Investigators wishing to submit proposals should do so by June 15, 1994. CMA would like to receive proposals in two separate documents--one containing the technical proposal and one containing the cost and time-schedule proposals. This will allow us to evaluate the technical merits of the proposal independent of cost and time-schedule considerations. Please supply an original plus ten copies of the technical proposal, and an original plus two copies of the cost/time-schedule proposal.

CMA proposes to evaluate all proposals received in late June 1994, and will select a contractor in July 1994. CMA proposes to award a fixed-price contract to the successful applicant. If your project team prefers a different form of contract, please indicate your preference in your cost proposal.

Additional Information

Please contact Dr. Has Shah at (202) 887-1192 if you have any questions about this request or about contract administrative details. Our lead scientist for this effort is Dr. Jonathan Ramlow of The Dow Chemical Company. You may contact him at (517) 636-1276 with questions about the scientific aspects of this Scope of Work.

HISTORICAL PERSPECTIVE ON INTER-INDUSTRY VINYL CHLORIDE STUDY

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| 1960-1963 | Report published documenting anesthetic effects in animals and humans and liver injury in animals from chronic exposure. |
| 1967 | Acroosteolysis reported in humans exposed to high levels of VCM. |
| 1971 | Carcinogenicity of VCM discovered in animals, including angiosarcoma of the liver. |
| 1973 | CMA sponsors Tabershaw-Cooper Associates to conduct an epidemiologic study of 8,384 vinyl chloride workers from 34 plants. |
| 1974 | First reports of angiosarcoma of the liver cases in VCM workers. |
| 1974 | Tabershaw-Cooper report preliminary results confirming high risk of angiosarcoma of the liver and suggesting excess cancers of respiratory system, brain and lymphoma. |

HISTORICAL PERSPECTIVE ON INTER-INDUSTRY VINYL CHLORIDE STUDY

(cont.)

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|------|--|
| 1974 | OSHA holds hearings and revises PEL down to 1 ppm. |
| 1981 | Cooper expands original epidemiology study to include 10,173 workers from 37 plants--reports show angiosarcoma and brain cancer to be in excess through 1972. |
| 1986 | EHA updates inter-industry study with follow-up through 1982--reports angiosarcoma, brain cancer and emphysema to be in excess--no excess respiratory cancer or lymphoma/leukemia. |
| 1991 | EHA study is published. |
| 1993 | CMA letter to the editor and EHA response are published clarifying the brain cancer and emphysema findings. |
| 1994 | CMA Vinyl Chloride Research Coordinators meet to discuss updating study. |

“The study carried out by Environmental Health Associates on behalf of the U.S. Chemical Manufacturers Association is the largest and most informative investigation thus far undertaken.”

Sir Richard Doll
Scand J Work Environ Health 1988;
14:61-78

BENEFITS OF UPDATING INTER-INDUSTRY STUDY OF VINYL CHLORIDE WORKERS

- **Product Stewardship**
 - Demonstrates to workers, community residents, customers, and other audiences our collective commitment to characterize cancer risks associated with employment in VCM/PVC processes.
- **Scientific Knowledge**
 - Refines the estimate of the number of cases of human angiosarcoma of the liver (ASL) associated with operating VCM/PVC plants in the pre-1972 era in North America.
 - Provides basis for refining human cancer risk assessments which are used by government agencies for permitting facilities, etc.
 - Contributes ASL cases to the international registry.
 - Helps to resolve unanswered questions about alleged links to cancers of the brain, lung, and hematopoietic system as well as address non-cancer causes of death such as emphysema.
- **Litigation Defense**
 - VCM/PVC manufacturers continue to face toxic tort litigation alleging that numerous other types (non-ASL) of cancer are related to VCM/PVC employment. This type of research is useful in defending such litigation.

BENEFITS OF UPDATING INTER-INDUSTRY STUDY OF VINYL CHLORIDE WORKERS

(cont.)

- Chlorine Issue

- VCM/PVC continue to be a part of the general debate on health and environmental impacts of chlorinated organics. This type of research serves a valuable role in helping to debate the issues on the basis of good science.