



MANUFACTURING CHEMISTS ASSOCIATION

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CHEMICALS
RESEARCH

May 2, 1974 MAY 7 1974

To: MANAGEMENT CONTACTS OF COMPANIES SUPPORTING THE
VINYL CHLORIDE RESEARCH PROGRAM
TECHNICAL TASK GROUP ON VINYL CHLORIDE RESEARCH

Subject: NIOSH Request for Proposal for Study of
Vinyl Chloride Exposures

Gentlemen:

Enclosed herewith are the Statement of Work and Scope of Work sections of a request for proposal (No. CDC-99-OSH-128(4)) issued by NIOSH last March 28, and just now called to my attention. This material is being distributed for your information, so that you may be prepared to handle contractor visits should they select one or more of your plants for study.

Sincerely,

Kenneth D. Johnson, Ph.D.
Secretary -
Technical Task Group on Vinyl
Chloride Research

KDJ:mb
Attachment

cc : Mr. A. W. Barnes
D. P. Duffield, M.D.
Dr. Tiziano Garlanda

VVC 000006268

5/2/74

STATEMENT OF WORK

A. Background and Purpose

Information recently has been made available to the National Institute for Occupational Safety and Health (NIOSH) that indicates a serious health problem potentially exists in workers involved with the polymerization of vinyl chloride to polyvinyl chloride and polyvinyl chloride copolymers. Preliminary mortality information concerning one vinyl chloride polymerization plant has revealed there is a definite excess of deaths due to angiosarcoma of the liver in workers that have been involved with this processing.

It has been reported by Imperial Chemical Industries of Great Britain that angiosarcomas of the liver develop in animals exposed to vinyl chloride. Since vinyl chloride is definitely present in the environs of the plant mentioned above, vinyl chloride has been postulated to be an etiologic agent in the above mentioned excess employee deaths.

Since there is a large work force involved with vinyl chloride polymerization processing, NIOSH immediately initiated an extensive epidemiological investigation (including environmental surveys) into vinyl chloride polymerization operations and workers thereof. Vinyl chloride exposures, of course, also can occur in the production of the monomer and may occur in the processing of the polyvinyl chloride and its copolymers and during the commercial and industrial use of these polymers. Because these polymers have widespread use and there is potential for quite a large number of persons to be exposed to vinyl chloride, in addition to those people working in polymerization operations, there is a need to document the extent of vinyl chloride exposures in operations other than polymerization processing.

The purpose of this contract is to document past and present worker exposures to vinyl chloride during (1) the monomer production and the (2) processing of polyvinyl chloride and polyvinyl chloride copolymers. In addition to documenting worker exposures to vinyl chloride, information on work practices, environmental control procedures, industrial hygiene practices and worker exposures to other known liver toxins also will be documented. These data will be utilized to ascertain the extent of worker exposures to vinyl chloride and possibly other liver toxins so that the possible health effects impact in the industry can be determined and appropriate priorities for corrective measures, if needed, can be set. If vinyl chloride exposures are considered to be significant in these areas, then a very critical look at possible general exposures will be made.

B. Scope of Work

1. The Contractor shall furnish the necessary personnel, material, services, facilities, and otherwise do all things necessary for or incident to the performance of work set forth herein. Specifically, the Contractor shall perform the following:

Task I. Vinyl Chloride Monomer Production

There are 15 plants in the United States that produce vinyl chloride monomer according to NIOSH information (Attachment A). From these 15 plants, and any other plants that the contractor identifies, three plants shall be selected for on-site environmental/industrial hygiene surveys. Within 90 days of the initiation of the contract, the contractor shall present to the project officer (s) the list of vinyl chloride monomer plants and polymer processing plants that have been chosen for the environmental/industrial hygiene surveys. This presentation shall include the basis for the selection. The actual surveys shall not commence until this information has been reviewed and approved by the project officer (s). Maximum review time shall be five working days. The criteria for selection shall include, but not be limited to: (1) information gained from preliminary site visits; (2) information gained from literature searches; (3) information gained from personal contacts; (4) the representativeness of the plants to industrywide operations; (5) the plants having the greatest potential for work exposure to vinyl chloride; (6) the plants having the greatest gradient of worker exposures to vinyl chloride; (7) the availability of historical inplant air measurements of vinyl chloride; and (8) the plants having the longest history of vinyl chloride monomer production.

The surveys at the selected three plants shall consist of documenting past and present worker exposures to vinyl chloride and past and present work practices, environmental control procedures and industrial hygiene practices that involve the reduction of worker exposures to vinyl chloride. At a minimum, the following specific information shall be obtained and/or constructed: (1) a general description of the vinyl chloride monomer processing operation; (2) 8-hour daily time-weighted average exposures (TWAs) of vinyl chloride for each different job-type/job-operation in the monomer processing area, including a specific job description for each of the job-types; (3) general area (stationary) samples of vinyl chloride in areas of suspected high concentrations; (4) raw material and product lists and quantities thereof that relate to the past and present vinyl chloride levels; (5) ventilation design and ventilation measurements, including documentation of dates of ventilation changes and the extent of changes and how they relate to past and present vinyl chloride levels; (6) documentation of past and present environmental control procedures and work practices that have been instituted to lower vinyl chloride levels and how they relate to past and present vinyl chloride levels; (7) photographs, sketches, etc. to document existing conditions; and (8) documentation of past and present industrial hygiene practices, including utilization of protective clothing (i.e. type, frequency of change, laundering practices, etc.), protective devices (i.e., respirator-usage, frequency type, etc.) housekeeping practices, shower requirements, eating, smoking and drinking practices in production areas, etc.

Task II. Processing of Polyvinyl Chloride and Polyvinyl Chloride Copolymers

Environmental/industrial hygiene surveys shall be conducted in production areas where polyvinyl chloride and polyvinyl chloride copolymers* are processed including, but not limited to, the following operations: (1) compounding; (2) extrusion; (3) molding; (4) calendaring; (5) thermoforming; (6) binding; (7) foams; (8) fibers; and (9) plastisol processing. The surveys shall be conducted so that each processing operation is sampled at three different plants (locations). The criteria for the selection of these three plants shall include, but not be limited to: (1) information gained from preliminary site visits; (2) information gained from literature searches; (3) information gained from personal contacts; (4) representativeness of the operations to industrywide processing; (5) operations having greatest potential for worker exposures to vinyl chloride; (6) operations having the greatest gradient of worker exposures to vinyl chloride; (7) availability of historical inplant air measurements of vinyl chloride; and (8) the operations having the longest history of polymer processing. The information that shall be obtained and/or constructed shall be the same as the eight items listed above for the vinyl chloride monomer production operations. In addition, to these eight items past and present TWA worker exposures to other known liver toxins (if present) including, but not limited to, mercury, 2,2-dichlorovinyl dimethyl phosphate, ozone, dioxane, beryllium, lead, dimethylnitrosamine, arsenic, (amyl, methyl, ethyl, butyl, propyl and vinyl) acetate, copper, trichloroethylene, carbontetrachloride, arsine and tetrahydrofuran shall be measured and/or constructed.

Task III. Sample Collection and Data Analyses

All vinyl chloride sampling and analytical techniques shall be specified in the contract proposal. If sampling is required for other known liver toxins, the sampling and analytical procedures must be approved by the project officer(s) prior to use by the contractor.

The contractor should be cognizant of the fact that vinyl chloride is considered a potential human liver carcinogen and all employees and agents of the contractor should be provided with appropriate protective equipment. These equipment needs will be discussed with the project officer(s) prior to the field surveys.

The sample collection shall be conducted in such a manner as to provide statistically valid data that are representative of present worker exposures (categorized by different job-types) to vinyl chloride and other liver toxins, if found. Past worker exposures (by job-type) shall be constructed based on the information that is collected on the changes in processing, ventilation, environmental control, work practices and industrial hygiene practices that have occurred over the years and on historical

* Polyvinyl chloride-acetate, polyvinyl chloride-propylene and polyvinyl chloride vinylidene chloride

air sampling data (preferably personal sampling data) collected in the plant, if deemed reliable and accurate. All assumptions that are made in arriving at the constructed concentrations shall be presented. All of the above information on processing changes, ventilation changes, etc. shall be presented as part of the report on the surveys.

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