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FROM R. T. Cheng

IN REPLY 801JM788
REFER TO RTC:81-18

TO H. E. Runion

DATE 2-5-81

SUBJECT FORMAL PROJECTION OF INDUSTRIAL HYGIENE ACTIVITIES AT GOCHEM-TAIWAN
FACILITIES DURING 1981

This report addresses proposed industrial hygiene surveys to be conducted at GOCHEM joint venture partnership companies in Taiwan. It is proposed that industrial hygiene visits to China Gulf Plastics Corporation, Asia Polymer Corporation, and Taita Chemical Company, Ltd. be made in November, 1981. Approximately twenty working days should be allowed for visiting the various chemical plants of the three companies.

Among all GOCHEM operations worldwide, it is believed that CGPC's polyvinyl chloride (PVC) plant and Taita's acrylonitrile-butadiene-styrene (ABS) plant can potentially impose the most severe occupational health hazards. The companies are working with or using human carcinogens (vinyl chloride, acrylonitrile, mercury, lead chromate), suspected carcinogens (formaldehyde, cadmium), teratogen (acrylonitrile) and many highly toxic materials. CGPC was last surveyed in October, 1979. Taita was never visited by a Gulf industrial hygienist.

The need for continued industrial hygiene support to GOCHEM-Taiwan facilities was expressed by GOCHEM executives in a meeting held on March 5, 1980, in Houston. Present at that meeting were Messrs. W. C. Roher, C. E. O'Connell, C. R. Grimes, and J. R. Strausser.

Attachment I shows a detailed listing of the specific investigations to be conducted for each company.

This report should be provided to Messrs. B. H. Gambrill, C. R. Grimes and J. R. Strausser for response from GOCHEM.

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Attachment

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ATTACHMENT I

PROPOSED INDUSTRIAL HYGIENE VISITS TO GOCHEM-TAIWAN FACILITIES IN NOVEMBER, 1981

I. CHINA GULF PLASTICS CORPORATION

A. Last Industrial Hygiene Visit: October, 1979.

B. Audit and Survey Activities of Proposed Industrial Hygiene Visit:

1. Review CGPC's industrial hygiene program during the previous two years. Audit items will include employee exposure records, environmental monitoring records, respiratory protection program, health education and employee training, handling, transfer and storage of hazardous materials, ventilation system design, laboratory quality assurance, and laboratory analytical capability.
2. Conduct vinyl chloride survey to measure environmental and occupational exposure levels, and to assess effectiveness of engineering control measures.
3. Conduct solvent vapor survey to determine occupational exposures to MEK, toluene, benzene, MIBK, and other solvents, and to assess effectiveness of ventilation systems.
4. Conduct dust survey to determine occupational exposures to dusts of lead, barium, cadmium, chromium and PVC resin. Effectiveness of dust control measures will be assessed.
5. Conduct mercury vapor survey to assure that exposure to mercury vapor by Chlor-Alkali plant employees are still within allowable limits.
6. Survey Plating Room operations related to occupational exposures to chromate, cyanide, and other acid mists and assess effectiveness of ventilation systems.
7. Conduct noise dosimetry survey to assess noise exposures of Extrusion Plant and Drying Plant workers, calender operators, and Floor Tile Plant workers. Provide feasible noise control and hearing conservation recommendations.

C. Estimated Number of workdays:

Taipei	2 days
Toufen	5 days
Taoyuan	2 days
Total	9 days

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II. ASIA POLYMER CORPORATION

- A. Last Industrial Hygiene Visit: October, 1979.
- B. Audit and Survey Activities of Proposed Industrial Hygiene Visit:
 - 1. Review APC's industrial hygiene program during the last two years. Audit items will include employee exposure records, environmental monitoring records, respiratory protection program, ventilation system improvement, handling, transfer and storage of hazardous materials, and noise control activities.
 - 2. Conduct organic vapor survey with emphasis on monitoring n-hexane exposures of catalyst mixing workers.
 - 3. Conduct plant noise level survey and noise dosimetry survey to assess occupational noise exposures and provide feasible noise control and hearing conservation recommendations if required.
 - 4. Monitor occupational dust exposures to resin dust and to dusts of additives. Survey warehouse, bagging, and master batch operations.
 - 5. Monitor laboratory workers' exposure to carbon tetrachloride and other hydrocarbons. Also conduct mercury vapor survey in laboratory and instrument shop.
 - 6. Look into problems such as water treatment, radiation (liquid and density gages), fugitive ethylene emissions, pipe insulation (asbestos), film machine (ozone), welding fumes, sandblast, and molten salt bath.
- C. Estimated Number of Workdays:
Lin Yuan 3 days.

III. TAITA CHEMICAL COMPANY, LTD.

- A. Previous Gulf Oil Industrial Hygiene Visit: None
- B. Major Industrial Health Concerns:
 - 1. Acrylonitrile (AN) - confirmed carcinogen and teratogen, OSHA standard 2 ppm. AN exposures during ABS manufacturing could occur during conveyance of AN monomer to and from storage tank; due to leaks from valves, gaskets, pipes and sampling points; at the blending, flocculation,

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and dry operations; and due to residual AN in polymer processing.

2. Formaldehyde - A CIIT report stated nasal squamous cell carcinomas in rats exposed to 15 ppm of formaldehyde. A few rats had cancer at 6 ppm and 2 ppm level. Future exposure standard would require formaldehyde exposure of 1 ppm or less.
3. Other hazardous materials in Taita operations could include toluene diisocyanate (TDI), methylene diisocyanate (MDI), dimethylformamide (DMF), dimethylamine (DMA), and various glues, epoxy compounds, and phenolic compounds.

C. Proposed Industrial Hygiene Activities:

1. Review Taita's existing industrial hygiene program. Audit employee exposure record and plant concentrations of acrylonitrile, formaldehyde, and other hazardous materials. Review respiratory protection program and employee training and health education program.
2. Conduct acrylonitrile survey, formaldehyde survey, and surveys of other hazardous materials such as TDI, MDI, DMF, DMA, etc. to determine environmental and occupational exposure levels, and to propose effective engineering and work practice control measures.
3. Review plant sanitation, housekeeping and personal hygiene practices with emphasis on prevention of industrial dermatitis.
4. Other industrial hygiene activities can include noise survey, nighttime illumination survey, radiation survey, ventilation systems evaluation, dust exposures survey, welding fume evaluation, etc., depending on actual needs at Taita's plants.

D. Estimated Number of Workdays:

Five to eight days depending on how many Taita locations to be visited.