CHEMICAL MANUFACTURERS ASSOCIATION

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Environmental Affairs

November 1, 1979

To: Vinyl Chloride Research Coordinators

Subject: Meeting on November 28, 1979

Gentlepersons:

The Chairman, Dr. T. R. Torkelson, is calling a meeting of the Research Coordinators on Wednesday, November 28, 1979, Room 407, 8:30 a.m., CMA Offices. The agenda for this meeting is attached.

Drs. Adams, Duffield, and Stafford of ICI, U. K. will be present by invitation and have a number of important topics to discuss relating to VCM monomer and PVC, not the least of which is a possible program on PVC dust.

We are pleased to announce that Mr. John Lawrence of SPI will be present for this meeting.

Dr. Torkelson requests that I emphasize that the agenda will be a crowded one and members should plan on an all-day meeting.

Sincerely,

J. T. Seawell
Project Administrator
Vinyl Chloride

JTS:das

Enclosure

1825 Connecticut Avenue NW • Washington DC 20009 • Telephone 202 328-4200 • Telex 89617 (CMA WSH)

SL 095414

Chemical Manufacturers Association

VINYL CHLORIDE RESEARCH COORDINATORS

CMA Offices
Conference Room 407 Washington, D. C.

November 28, 1979
8:30 a.m.

PROPOSED AGENDA

1.0 Update on Termination Negotiations with IBT Management Regarding the IBT/VC Study

2.0 PVC Dusts

2.1 Update on Recent Developments in Europe

2.2 Current Thinking On:

2.2.1 Epidemiological Studies

2.2.2 Animal Study(s) Involving "Conventional" Inhalation Techniques

2.2.3 Animal Study(s) Involving Exposure via Intubation

3.0 Status Report on Actions on the Five-Year Update of the Basic Epidemiological Study Completed by Equitable Environmental Health

4.0 Status Report on Current Research

4.1 Domestic

4.2 International

5.0 CPSC Study Review & possible need for audit.
6.0 Containment of final audit report of IBT Study By T/F assigned.

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ATTENDANCE RECORD

Date November 28, 1979

Meeting Vinyl Chloride Research Coordinators Location CMA Conference Room 407

PLEASE INITIAL	NAME	COMPANY	ADDRESS (ENTER CURRENT TELEPHONE NUMBER)
	Chairman, R.T. Torkelson	Dow Chemical Company	2030 Dow Center Midland, MI 48640
	T.J. Benya	Ethyl Corporation	451 Florida Avenue Baton Rouge, LA 70801
	Z.G. Bell, Jr.	PPG Industries	One Gateway Center Pittsburgh, PA 15222
	W.D. Harris	Uniroyal, Inc.	Oxford Management & Research Center Middlebury, CT 06749
	M.N. Johnson	The BFGoodrich Company	500 South Main Street Akron, OH 44318
	V.L. Kirkland	Shell Chemical Company	One Shell Plaza Box 4320 Houston, TX 77210
	W.M. Smith	Air Products & Chemicals, Inc.	P. O. Box 538 Allentown, PA 18104
	R.N. Wheeler	Union Carbide Corporation	P. O. Box 8004. S. Charleston, WV 25303
	PRESENT BY INVITATION:		
	Dr. Stafford	ICI	PLASTICS DIVISION BESSEMER ROAD WELWYN GARDEN CITY ENGLAND
	Dr. Adams	ICI	[illegible] (Jl. Wellington 23400)
	Dr. Duffield	ICI	ICI Runcorn Cheshire, England Runcorn 73456.
	J [illegible]	SPI	355 Lexington Ave N.Y. N.Y. 10017

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(1) Enfuel 2-3/4 oz of 53 oz, one year
US 20/4 oz 5 oz man people

IC/CMA Research Coordinators Meeting 11/28/79

1. Distribution of minutes to entire panel - will continue to send to all original sponsors - 19 UGL 11 Non-Sponsors of original 31.

2. Appeal to audit Committee from IAT for settlement - Research Coordinators

Duffield, Stafford, Bill Adams. John Lawrence. present as guests

IOM STATUS

Final report received by ICI -
one copy to CMA + one to SPI only

Summary prepared by IOM -
IOM - independent organization - write summary for employees
ICI not keen on their summary. Nothing can be done
to change this report. Comments submitted were not
well received. Some agreed all together.
Dr. B. Adams set up study of IOM -
ICI America to send final copy to U.S. Sponsors and meet with U.S. Attorney
to send to U.S. Government. Not as Rec).
ICI has given near final report to workers and to the
British Government.

Bill Adams, M.D.

[redacted]

Abstract - of IOM reports

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- Finch Number of papers published on 1970 - All inconclusive reports.
- ICI ask IOM to conduct study - highly reputable institute. -
original charter of IOM was for investigating pneumoconiosis cases for the Nat'l Coal board - 60% funds for NCB. Independent of Industry.

Plants

6 pvc productions

2 compounding plants

Category A - Highest dust exposure -

N D lowest. efficiency etc.

Dust 66 grops. 1 to 5 responsible dust factor.

Pressure monitoring covered 60 jobs.

Dust in lung. Exposure x duration.

1990 total complete -

818 men involved - Current, retired, + those who left

[redacted]

Controls for study. IOM did not use concurrent controls - No other plant controls used.

1. Questionnaire given. MRC type
2. X-rays performed - ?
3. Lung function performed, Transfer factor (CO_2) worked out.
4.

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* Question, precision x-rays, pulmonary function, etc? ~~8~~(50).

FEV, (5.2 ml/year loss) whole group exposed. ~~yr~~ years reduction of group

219 ml reduction in FVC — 264 ml for FEV, (Diffusal Group 1 50 men w. X-R related opacities on lungs.)

- mean loss 35 ml/10 years for ~~age~~ age correction -

- 20 cigarettes per day mean loss of 6.5 ml/year

- Gas transfer - no significant change -

- X-rays - independently by 3 radiologists - highly experienced readers

(were radiologist at work in TOM?) Coal Board readers.

(were the radiologist informed of what to look for?) Dust of some kind.

(Quality of films?)

- individual rereading consistency as important -

Were there any previous or Baseline x-rays? Some earlier x-rays done by another unit and not very good quality - (B. ADAMS)

X-ray remainder 1300 people

Same readers used

Ask original readers to reread the 81 already done.

Look at clinically ones with drop in lung function

Look for lung tissues ~~of~~ of workers who have worked at plant + died of another disease or accidents -

Specimens of lungs. one hospital in area - easily checked out

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accept lung change

Do not accept x-ray changes as due to PVC exposure

✓ Repeat study in 4-5 years - follow-up study of original Population in this study.

one worker walked in to be rechecked -

Diffused marked fibrosis - some lung function reduction -

Was originally noted in study - high exposure + long term duration

- biopsy - idiopathic reaction due to dust.

man 56-57 years - smoker - paste production -

asked to stain for PVC dust - have not used stain staining method.

Childhood illness as a possible cause for the fibrosis -

Correct for age, height and race but for weight.

U.S. does not correct FEV, + FVC for weight.

- Paste is from emulsion process. -

Nick Wheeler - PVC dust content of monomer - (organic acids / 10 ppm residue of VC.

Today 1-2 ppm residual in PVC.

Duffield - Readers Comment - Reader II 17 results correlated with FEV results -

Did radiologist know pulmonary function results.

B. ADAMS

No big difference between emulsion & suspension PVC dust.

Check respirable fraction deposition
Engr. aspects - getting rid of the dust via Engr. controls -

Likely to go below 3 mg/m^3 respirable dust -
UK likely to go to 5 mg/m^3.

Recommendations on x-ray - not only
age related according to Doppel.
Reader #17 correlated with age also.
Also related to smoking by reader #17.

Very little experience at or among U.K. workers -

The 50 workers with change have not been reported out
as to Emulsion / Suspension process.

Suspension
~~Emulsion~~ resins of VC greater than ~~Suspension~~ Emulsion PVC.

Clarification PVC plants no plasticizers → no chance of plasticizers being cause.
Question: plasticizers as possible cause -?

Yes.

BP work on PVC workers (B.P.) Bristol petroleum.
Major study - Up coming in U.K.

Website plant
Expanding plant.

UK
Send out letter that hygiene procedures are good for PVC dust.

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CEH epi Study did not breakout respiratory Causes of Deaths Specifically?

U.C. - 4 people - Bulk resin formed - Contractors - Sued for CA and respiratory disease
1 - lung cancer -
1 - rectum - colon
1 -

PVC + dust exposure at ~~Cincinnati~~ by NIOSH

Dr. ~~Growth~~ R. Groth Dietc. Trust Lowe - results available - No findings with PVC dust.

Air product 5 yrs duration of employment.
Exp. to PVC known Cancer causation
29 years old - liver cancer. maybe not primary -
Maintenance man.
PA. Compensation to Diseases and not Cancer -

U.K. No ~~mandated~~ announced change in Level of 10 mg/m³ total Dust.

1. IOM says There are no reasons to repeat this study as it stands.
2. U.K. Does not support doing any animal studies -
3.

- copy of whole transmitted to NIOSH + to CMA + SPI

CMA to transmit [redacted] copy to sponsors -

No animal studies

Member / ICI Authority

No U.S. Studies

Inform participating companies and suggest that be transmitted to the workers.

- OSHA Reform
exempt
Routine inspections

- EEH extension -
Proposal for a proposal -
5 year update on VC.
addition of those who have died since last report.
Specifically concentrate on brain tumors
+ Get working on this aspect. -

$30,000 (A. 7-10 for brain study investigation
(B. ADMINISTRATIVE costs
C. Review of EEH material.

- Lymphatic - 9

- all 31 companies to receive Proposal.
- Capacity today - for 6 Females.
  Pre-data Share -

Blood Lipids -
Lungh
Bostex - Blood sample 2x/yr for past 4 years

3 groups - { 1. started before 1974
2. 74-75
3. after 1975

Control group - Sugar factory close by - 3 groups
matched -
Fasted for 24 hrs drawn & Blood spun -

Results - Control group
Cholesterol - small difference One 175
Triglycerides - Sign increase -
higher Pre-75 ↘ no diff.
HDL Cholesterol
SAP.
G GPT -

Reports

Chlordecol

triglycerides → 19 higher
← 32 lower

Cholesterol → 18 higher
← 36 lower + dose

NO vinC after 1977 - if anything in it is not after 1977.

high lipids pre '75 to see if there are decreasing -

Check - T.G, cholesterol, HDL cholesterol level of employees exposed to VC.

Report to be published in U.K.

CPSC STATUS -

Torkelson - Nothing - from CPSC

Wheeler - Did not write

Hatfield - Unknown response - but did right.

Pneumonia ⊕ irritation ⊕ Rats ⊕

⊕ mice ⊕ anything upon long inh. admin.

- Sex differences -

Little attention to CPSC Study as responded by the V/C.

~~NTOS~~

NIEHS Study - Lyp. Different periods of their life span -

Duffield

γ-DCB

TCE = Maltoni, DNA

EDC = UNUSUAL TUMORS.

EO = Reproductive Leukemia, Lumps + Bumps on liver.

John Stafford - ICI would not take Dr. Maltoni works without review.
- Does not believe thresholds.

Angiosarcomas of Liver worldwide

	US.	Canada	U.K	France	Ger	Sweden
				2	3	
1977	1	1	0	2	4+2	1
78	2	0	0			0
79	[redacted]0 reported	0	2	2	0 so far.	0

ICI 7 years since last case (2 now in 1979)
previous 2 cases-

B.P. 5 yrs since last Case-

SL 095427

11/28/79

VINYL CHLORIDE RESEARCH PROGRAM

FINANCIAL STATEMENT
November 1, 1979

Date Phase Began January 12, 1979
Date Phase Completed _____

Phase VII - 17 Companies

Authorized Budget as of December 13, 1978

Research Techniques	$260,734
Whole	13,500
Metabolism Isolated Mammalian Liver Cells	13,550
TOTAL	$287,784
Administration carried from Phase VI	37,271
TOTAL PLEDGE	$325,055

	Invoiced	Received	Project Commitment	Disbursements: Administration	Disbursements: Research	Disbursements: Total	Unpaid Balance on Commitments	Available for Commitment: Panel	Available for Commitment: Mgt.
Carryover from Phase VI		$ 37,271							
Invoiced 2/8/79	$296,217	$296,217							
RESEARCH									
VC 7.0-DP/PREV-UL			$ 287,784		$71,982.80	$71,982.80	$215,801.20		
ADMINISTRATION			$ 37,271						
Time through 10/31/79				$ 3,003.37					
Travel				$ 0.00					
Miscellaneous				$ 52.92					
SUBTOTAL ADMINISTRATION				$ 3,056.29		$ 3,056.29	$ 34,214.71		
TOTAL PHASE VII	$296,217	$333,488	$ 325,055	$ 3,056.29	$71,982.80	$75,039.09	$250,015.91	$ -0-	$8,433

*Final $20,000 to be withheld pending receipt and acceptance of final report.

SL 095428

VC/EMR meeting 11/28/79

INSTITUTE OF OCCUPATIONAL MEDICINE

SUMMARY OF THE RESULTS OF A SURVEY* OF THE RESPIRATORY HEALTH OF WORKERS IN A FACTORY MANUFACTURING POLYVINYLCHLORIDE

Eight hundred and eighteen men selected from the present and past workforce of a factory manufacturing polyvinylchloride (PVC) were studied to determine whether PVC dust caused any measurable effects on the lungs of workers exposed to it. Respiratory symptoms such as cough or breathlessness, the results of breathing tests and appearances of the chest X-ray were compared with estimates of the amount of fine PVC dust to which each man had been exposed during his employment at the factory. In studying the effects of PVC dust, allowance was made for the known effects of ageing, smoking and physique on the lungs.

Shortness of breath on exertion

It was found that men who smoked cigarettes and who had also been exposed to higher amounts of PVC dust reported slight shortness of breath on exertion more often than smokers who had been exposed to lower amounts of dust. This symptom was associated more strongly with ageing and with smoking as such. The dust effect was not seen among non-smokers and ex-smokers.

Breathing tests

There was a relationship between the amount of dust to which men had been exposed at work and their ability to perform well in breathing tests: in general, the higher the exposure, the poorer the breathing test. This was particularly noticeable among cigarette smokers. The diagram shows that for cigarette smokers the effect of the average exposure is small compared to the effect of ageing, and smaller than the effect of smoking itself. But addition of the estimated effect of higher than average exposures to the results of ageing and of smoking could be sufficiently great to contribute towards chest illness in some men.

Chest X-rays

Even highly trained doctors often disagree on the presence or absence of spots on a chest X-ray. All X-rays in this study were read independently by three readers all of whom had been shown previously to be able reliably to detect progressive degrees of change in response to dust exposure but who

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* For details of the study, Technical Memorandum TM/79/2 should be consulted.

differed from each other in their interpretation of what was just normal or just abnormal.

One reader recorded very few spots on the X-rays, regarding most X-rays as within normal limits. One reader recorded small spots in a larger number of men and found these spots were more common in older men. The third reader recorded spots in the largest number of men and we found that these X-rays on which he had recorded spots occurred more commonly in older men, but also in men who had been exposed to higher amounts of dust. We are confident from this that the more dust a man is exposed to, the more likely he is to have small spots on his X-ray. Having said this, the number of spots on any X-ray was relatively few and all films were on the borderline between what is just normal and what is just abnormal. Nevertheless, the breathing tests of men with spots on their X-rays were on average poorer than those of men without such spots, even when age and height had been taken into account.

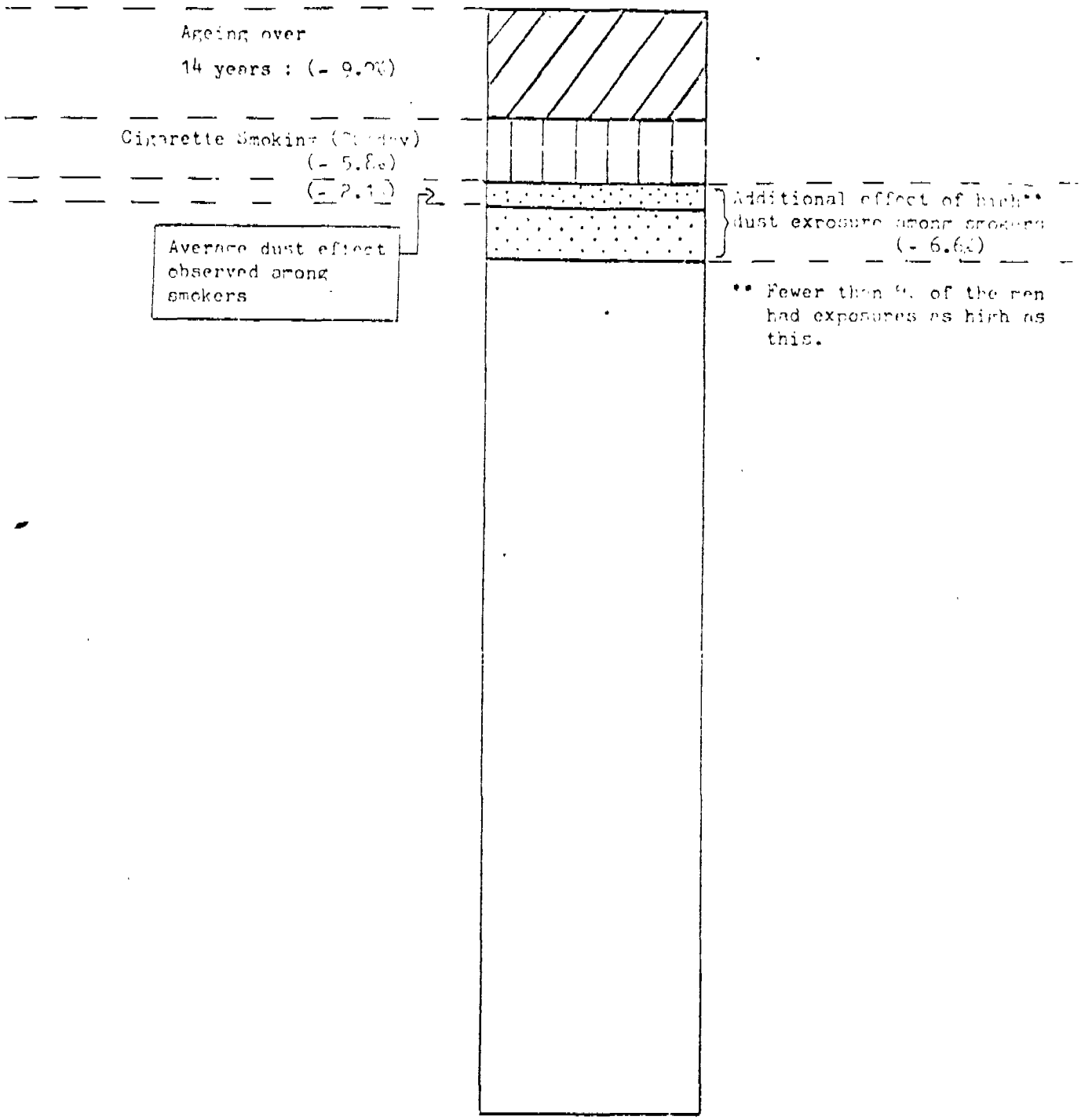
Conclusions

Careful selection and study of both current and past workers at the factory with measurement of current dust levels in different jobs in the production of PVC has allowed us to draw conclusions about the effects of PVC dust on the lungs. These effects stem from past dust levels which are generally believed to have been higher than they are now, but in the absence of knowledge of what these levels were it is sensible to regard them as potentially applying to the present levels. The effects are poorer breathing tests and spots on the chest X-rays of men exposed to higher amounts of PVC dust. The effect on breathing tests is most marked in cigarette smokers, in whom there was also a relationship between dust exposure and slight shortness of breath on exertion. These findings show that PVC is more than just a nuisance dust, having a specific, though usually slight, harmful effect on the lungs. It is accordingly recommended that efforts should be made to reduce dust levels further and to ensure that workers are exposed to as little as is practicable.

9 November 1979

ESTIMATED LOSS OF BREATHING CAPACITY OVER 14 YEARS* DUE TO AGEING, CIGARETTE SMOKING AND EXPOSURE TO PVC DUST AMONG CIGARETTE SMOKERS.

(The figures in this diagram are based on additional work which supplements that reported in BJIM/79/2. These results are included in a paper which is being prepared for publication.)



* 14 years was the mean time worked in the factory by the men seen.

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