

UNION  
CARBIDE

INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

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DATE

September 8, 1976

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SUBJECT

VCM Symposium

FROM

Following is a summary of the VCM Symposium held at the 172nd ACS National Meeting in San Francisco September 1 and 2:

### Risk/Benefit Analysis (Paper available)

Dr. Richard Wilson, Harvard University

Dr. Wilson presented data on the incidence of cancer vs VCM exposure; he made several points:

- 1) In the laboratory, about 200 rats per experiment at high dosage rates are used; this must be extrapolated to 200 million people at much lower dosage rates;
- 2) Incidence of liver cancer in rats showed a linear relationship to exposure to VCM, from ~2.5% at 50 ppm to ~6% at 250 ppm
- 3) Occupational Wiggard data -

| occupation                 | lifetime risk | annual risk |
|----------------------------|---------------|-------------|
| fire fighters              | 0.03          | 0.001       |
| steel workers              | 0.005         | 0.0006      |
| PVC workers (liver cancer) | 0.00001       | 0.000004    |

UCC 095068

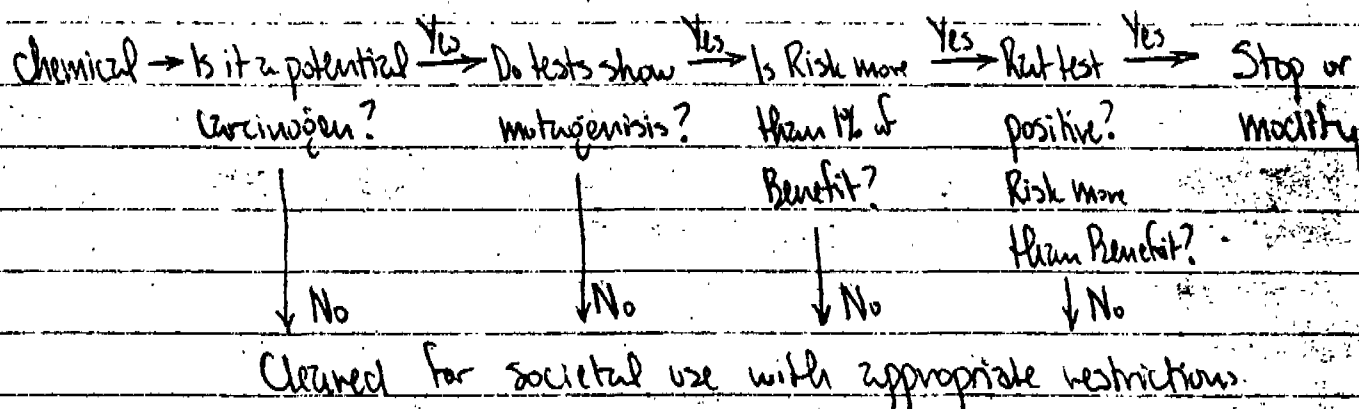
#### 4) Individual risk data -

| Source                 | risk                 |
|------------------------|----------------------|
| inhaling VCM           | $1 \times 10^{-7}$   |
| small pox vaccinations | $3 \times 10^{-6}$   |
| Cars                   | $3 \times 10^{-4}$   |
| Smoking                | $3 \times 10^{-3}$   |
| Cancer - all types     | $1.6 \times 10^{-3}$ |

#### 5) Benefits of PVC use

| Source                     | MM \$/yr                                                 |
|----------------------------|----------------------------------------------------------|
| PVC sold worldwide         | 6 000                                                    |
| Food packaging             | 100                                                      |
| plumbing and wiring        | 100                                                      |
| Coal mining conveyor belts | 10 lives/yr (est. saved by switching from rubber to PVC) |

#### 6) Proposed Decision Sequence -



#### PVC Industry in Europe

##### 1. Stafford, Imperial Chemical Industries

UCC 095069

- European standards vary from country to country but are generally within the range of 5-10 ppm annual average exposure; the notable exception is Sweden which has

adopted the USA-OSHA standard. Exposures in Europe have decreased from an average of 150 ppm in 1973 to 1-5 ppm with 15-30 higher excursions per month; these are monthly averages for PVC plants. Safe refuges, air hoods, and gas masks are used as appropriate.

Metabolism tests are in progress in Europe; early data suggest a "safe" exposure level of 50 ppm or less.

### Monitoring Methods

Dr. R.E. Lazzaric, Conoco

The only noteworthy item here is that there is now commercially available a sample tape for use in VCM personnel monitoring. This method involves a treated tape which reacts with VCM producing  $Cl_2$ ; the  $Cl_2$  colors the tape and the discoloration can be read with a photometer. The equipment involved and the potential for analytical error are both reduced.

### OSHA Response

UCC 095070

Grover Wrenn, Chief of Division of Health Standards, Washington

This was basically a recapitulation of what OSHA did and why. Wrenn felt the most significant aspect of the standard was the feasibility section of the preamble. He stated in his opinion, industry made no challenge to the Emergency Temporary Standard because of "a

X

groundswell of public opinion." Further, despite Industry's gloomy predictions, only one plant had closed (not solely from regulatory costs), and PVC prices have held and the industry expanded in spite of the standard.

He felt the standard was valuable because,

- 1) it showed a rapid, efficient, and successful response by OSHA,
- 2) it redirected OSHA to health emphasis,
- 3) it showed OSHA is a technology enforcing agency and can require industry to develop the technology to handle a hazard,
- 4) it caused industry to rethink its approach to its part in the regulatory process.

### EPA Response

Susan R. Wyzatt, Emission Standards and Engineering Division, Raleigh, NC

This was basically a recapitulation of what EPA did and why. The standard promulgation date is set for October 1976. Up to 20 community deaths annually are anticipated from any cancer resulting from VCM exposure; two cancer deaths have been reported, but have not been linked to VCM.

There has been extreme difficulty in defining a threshold level of effects because of a combination of no data, poor extrapolation, and long latency.

UCC 095071

VCM question today, they would probably handle it differently, but of necessity rather than by choice. As for the proposed standards for fourteen other carcinogens, he said these would need to be rewritten along the lines of the VCM standard, but probably without the action level provision.

Grover is Nick Wheeler's most frequent OSHA contact; he is one of its more reasonable members and prefers a participatory rather than adversary approach to regulation.

Sue Wyatt (EPA) comes across as personable, knowledgeable, and sharp. However, as a chemist with no industrial experience, she lacks an engineer's familiarity with and understanding of processing equipment.

She stated that Train's recent statement that individual risk should be weighed against economic benefit is not in contradiction to the VCM standard's "best available technology" approach. Train's statement followed issuance of the standard, and the standard does include a risk/benefit analysis of sorts.

Overall, it was a good meeting. Nothing earth shaking was brought up, but it was informative and worthwhile.

to reduce residual VCM.

### Specialty Resin Plants (paper available)

R.N. Wheeler, UCC, South Charleston  
Great PR.

### Bulk Plants

RJ Abramowitz, Technology Director, Hooker

Again, the same boat and a similar response. They rely on Bendix 7000 GC's as their main monitoring effort; these alarm at 5 ppm with a horn and rotating beacon, and again at 100 ppm (!). They are computerized, storing data on cassettes with an eight hour summary printout of point averages, high and low, and standard deviations. Abramowitz mentioned that Hooker is working on a "continuous fluidizing process" to reduce residual VCM to less than one ppm; latest bulk PVC rigid and plasticized packages show no detectable VCM.

Diamond-Shamrock has recently licensed for the PSG bulk process and is expected to build its plant in Canada.

UCC 095073

In later conversation with Grover Wrenn (OSHA), he stated his disapproval of Risk/Benefit Analysis. While he admitted it is done, he felt it should not be -- that no dollar value should be attached to human life. He said if OSHA had to approach the