

CIRC: ① ~~THAN / LEE / ECK / DENNIS / ALVARE~~ (ENC 02/24/95)
② vcm Data base
RECEIVED RECDRAFT FOR PUBLIC COMMENT - DO NOT CITE OR QUOTE
MAR 01 1995 MAR 08 1995
W. W. BAY L. E. LARSON

ABSTRACT

The Agency for Toxic substances and Disease Registry conducted a health study of the area surrounding the Calvert City Industrial Complex (CCIC), an industrial site located in Calvert City, Kentucky. The objective of the study was to assess the current health status of residents living near the CCIC compared with residents of a similar, "nonexposed" comparison community. Calvert City is a community of approximately 2,500 people in the western part of Kentucky in Marshall County. The CCIC is located on the northern side of Calvert City and the southern bank of the Tennessee River. The CCIC is presently occupied by 17 separate companies, many involved in manufacturing and handling chemical compounds. Some residents of the area were concerned that chemical releases from the CCIC were causing adverse health effects in the community.

A total of 720 randomly selected participants from the Calvert City area and a similar comparison area were administered a standardized symptom and illness prevalence questionnaire, performed pulmonary function tests, and provided blood and urine specimens for chemical exposure tests and biomedical tests of subclinical organ dysfunction. In general, target area study participants reported illnesses slightly more often, but symptoms less often, than comparison area study participants. No clear pattern of symptoms or illness was discerned. No statistically significant differences were found in reproductive histories. Biological test results of the hepatobiliary, renal, immune, and hematopoietic systems revealed no clear differences between target and comparison study groups or in comparison to reference levels. No statistically significant differences were seen between target and comparison groups in pulmonary function tests. Of the 31 chemicals analyzed in the volatile organic chemical blood exposure testing, only acetone was statistically significantly higher in target area participants than in comparison area participants.

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SYMPTOM AND ILLNESS PREVALENCE
WITH BIOMARKERS HEALTH STUDY FOR
CALVERT CITY AND SOUTHERN LIVINGSTON COUNTY, KENTUCKY

INTRODUCTION

The Calvert City Industrial Complex (CCIC) is located on the northern side of Calvert City, a small community situated on the southern bank of the Tennessee River in Marshall County, Kentucky. This industrial complex had its beginnings in the late 1940s, when the first manufacturing facilities were built to take advantage of the electric generating capacity of the Tennessee Valley Authority (TVA) and the accessible barge and railway transport facilities. The CCIC is presently occupied by 17 separate companies, many involved in manufacturing and handling chemical compounds. One of these companies is a commercial solid and hazardous waste treatment facility that has been operating hazardous waste incinerators since 1978. Two U.S. Environmental Protection Agency (EPA) National Priority List (NPL) sites are also within CCIC boundaries.

Meetings held by Agency for Toxic Substances and Disease Registry (ATSDR) staff with the local community have elicited a number of concerns that can be divided into three areas: (1) exposure to toxic substances, (2) increased prevalence of various symptoms and illnesses, and (3) excess cancer deaths. Chemicals which are of concern to local residents were various organic chemicals (such as vinyl chloride and ethylene dichloride), neurotoxic chemicals, heavy metals, hydrochloric acid, hydrogen fluoride, sulfuric acid, asbestos in drinking water, dioxin, and radioactive substances. Some members of the community have stated that there is a high rate of birth defects in the Calvert City area. Other symptoms and illnesses of concern to local residents were cancers, infertility, miscarriages, low birth weight, skin rashes, chronic obstructive pulmonary disease, respiratory problems (sore throat, shortness of breath, and severe cough), asthma, eye irritation, neurologic disease, lupus erythematosus, and silicosis.

In response to a petition request filed in May 1987 by a resident of Livingston County, ATSDR initiated a public health assessment at the site. A Health Assessment was completed in 1992 which recommended that ATSDR consider the Calvert City and southern Livingston County area for future health studies (1). In 1991, the Health Investigations Branch (HIB) of the Division of Health Studies (DHS) of ATSDR became involved and a health study was initiated in June 1993. Information on site history, community concerns, contamination testing, and potential health problems associated with chemical exposures for the site was previously published (2).

CONCLUSIONS

1. Target area study participants reported illnesses slightly more often and symptoms less often than comparison area study participants. No clear pattern of symptoms or illness was observed. Confounding and interaction were assessed and controlled for in necessary cases in the analysis of collected data.
2. No statistically significant differences in reproductive histories were found between target and comparison area women.
3. Biological test results of the hepatobiliary, renal, immune, and hematopoietic systems revealed no clear differences between target and comparison study groups, nor any differences between the target population and established reference levels.
4. No statistically significant differences were seen between target and comparison groups in regard to pulmonary function tests.
5. Of the 31 chemicals tested for in the VOC exposure testing, only acetone was found at a statistically significantly higher mean concentration in target area participants than in comparison area participants. However, both target and comparison levels were below the national reference level. Low levels of bromoform were detected in both target and comparison groups. There appeared to be no association between area of residence and VOC exposure, nor excessive recent exposure occurring in either study community.

Plant doctors
(list compiled 12/94)

Avon Lake

Dr. Nepomuceno

Deer Park and LaPorte

Vu Doan Theriot 7/92-present

Deer Park

Aurel E. Mircea 3/86-7/92

Deer Park

David K. McDonald 1/82-3/86

Henry

Arnold Faber

Long Beach

Stephen Lake(contract basis. Twice a month)

Louisville

John Creech

P'town

Dr. Norton

P'town

Dr. Boyer

P'town

Dr. Quigley (temp while Boyer
had surgery)

Plaquemine

J.E. Grace

Terre Haute

Dr. Ray of Ambucare Clinic

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Plant Industrial Hygienists
(list compiled 12/94)

Avon Lake

none
(Safety engineers = Jim Alten
Richard Hardesty
Bob Accarino
Bill Gunning - 60's & 70's
C. Balaj
D. Demus
C. Saltis
A. Campana

Deer Park

none since 11/87
Jerry Miller before 11/87
Safety engineers =
Robert DesJardins 10/87 - present
Jerry Miller 1/82 - 11/87 (actually from
6/81 with Diamond Shamrock)

LaPorte

John Sanders (currently Med Tech)
Jerry L. Miller
(Safety engineers =
Tim Lancelin (current)
Ron Taylor (past)
Joe Riddle (Diamond Shamrock)
Dave McMillin (Diamond Shamrock)

Plant Industrial Hygienists
(list compiled 12/94)

P'town

Safety/Industrial Hygiene Mrgs & Engineers:

Jim Kiel
Dennis O'Keefe
Don Cross
John Gressler
Greg Kaswell
Jerry Hinton
Tony Montalbano
Rick Hollis
Al Moran
Todd Bretz
Chuck McCann
Jane Jackson (industrial nurse)
Karen Emmerling (industrial nurse)

Plaquemine

same as safety engineers =

Dan Langlois
T.J. Guillot
Jeff Conklin
Mackie Comeaux

Terre Haute

never had a plant industrial hygeinist.
Safety engineer, Mike DeMent does monitoring
and medical testing.

PLAQ

I N T E R O F F I C E M E M O R A N D U M

Date: 19-Dec-1994 03:02pm EDT
From: COMEAUXM
 COMEAUXM@PLQADM@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@a1

Subject: PAST DOCTORS, SAFETY ENGINEERS, INDUSTRIAL HYGIENISTS

PLANT DOCTOR - J.E. GRACE
SAFETY ENGINEERS - DAN LANGLOIS, T.J. GUILLOT, JEFF CONKLIN, MACKIE COMEAUX
INDUSTRIAL HYGIENISTS - SAME AS SAFETY ENGINEERS

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T. HAUTE

I N T E R O F F I C E M E M O R A N D U M

Date: 15-Dec-1994 06:18pm EDT
From: DUBYJ
DUBYJ@TRHND2@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: Doctors

Terre Haute uses Dr. Ray of Ambucare Clinic as the plant doctor. We do not use any specialists

Mike DeMent is our current and only Safety Engineer

We do not and have not ever had a plant industrial hygienist. Mike does any monitoring of noise levels and arranges medical testing. He also does environmental tasks.

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ANGC

INTEROFFICE MEMORANDUM

Date: 05-Dec-1994 05:49pm EDT
From: GRIFFINJ
GRIFINJE@ALTCECLE@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@a1

Subject: RE: In Search of...

HI MARGIE. I AM UNSURE HOW FAR BACK YOU WANT US TO GO, BUT HERE ARE NAMES FROM THE PAST 10 YEARS:
DOCTOR NEPOMCENO, NOT MUCH IN THE FORM OF TOXICOLOGY SINCE WE USED THE BATH FOLKS SUCH AS WALLY B. AS TO SAFETY ENGINEERS, B.HOLMES, G.KRUPP, J.ALLEN, C.BALAJ, D.DEMUS, B.ACCARINO, C.SALTIS AND A.CAMPANA.
TO MY KNOWLEDGE, WE HAVE NOT HAD AN IH. JIM

RECEIVED

JAN 10 1995

W. W. BAN

*Woody - Doctor info you requested,
for ALLEN, Hicks etc litigation.*

Margie 1/9/95

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23953006

ALTC

I N T E R O F F I C E M E M O R A N D U M

Date: 07-Dec-1994 11:04am EDT
From: KISSLINGR
 KISSLINGR@ALTC@CLE@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: RE: In Search of...

Bill Gunning was the safety manager at the Avon Lake plant back in the 1960's and perhaps the 1970's. After that Bob Accarino held the safety position.

Jim Alten was the safety engineer for ALTC and Richard Hardesty also had responsibility for it.

Bob Kissling

BFG28814

23953006

I N T E R O F F I C E M E M O R A N D U M

Date: 06-Dec-1994 09:29am EDT
From: HANCOCKB
HANCOCKB@LPT@MSGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: In Search of.....

Here is the info you requested from LaPorte:

Plant Physician:	VuDoan Theriot
Safety Engineers:	Tim Lancelin (current) Ron Taylor (past) Joe Riddle (past) Dave McMillin (past)
* the last two were Diamond Shamrock employees prior to BFG	
Plant Ind. Hygienist	John Sanders (currently Med Tech) Jerry L. Miller

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I N T E R O F F I C E M E M O R A N D U M

Date: 05-Dec-1994 05:49pm EDT
From: MILLERW
Dept: MILLERW@HNY@MRGATE@CLE
Tel No:

TO: MCQUOWN, MARGIE@a1

Subject: RESPONSE TO "IN SEARCH OF..."

MARGIE:

FOLLOWING IS A LIST OF THE INDIVIDUALS WHO HAVE WORKED IN THE REQUESTED
AREAS - PAST AND PRESENT.

1. PLANT DOCTOR - DR. ARNOLD FABER. (DR. FABER HAS A PRIVATE PRACTICE
IN HENRY AND WORKS AT THE 1 TO 2 DAYS PER WEEK ON
A CONTRACT BASIS.)
2. SAFETY ENGINEER - H. ROBERT CALDER IS OUR CURRENT SAFETY ENGINEER.
(PREVIOUS SAFETY ENGINEERS HAVE BEEN: MIKE
DEMENT CURRENTLY AT TERRE HAUTE, AND BRIAN
ARENDT CURRENTLY AT LOUISVILLE - BFG.)
3. INDUSTRIAL HYGIENISTS - SCOTT JOHNSON IS OUR CURRENT ENVIRONMENTAL
/INDUSTRIAL HYGIENIST. (PREVIOUSLY THIS
POSITION WAS HELD BY DIANA FRIEZE WHO IS
EMPLOYED BY THE BFG - HENRY PLANT.)

IF YOU NEED ANY ADDITIONAL INFORMATION PLEASE GIVE ME A CALL.

CORDIALLY,

BILL MILLER
X9438

BFG28816

23953008

I N T E R O F F I C E M E M O R A N D U M

Date: 07-Dec-1994 11:19am EDT
From: ECKARDD
ECKARDD@DPK100@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: In Search Of...

Re: Deer Park Plant

To respond to your questions:

1. Plant doctors, including any epidemiologists, toxicologists that have worked for each plant.
We have had none of the latter, but our plant physicians have been:
 - * Dr. Vu Doan Theriot 7\92 - present
 - * Dr. Aurel E. Mircea 3\86 - 7\92
 - * Dr. David K. McDonald 1\82 - 3\86 (He was the plant physician for Diamond Shamrock before 1\82; no start date is available. Please advise if you need this date).
2. Plant safety engineers, past & present:
 - * Robert DesJardins 10\87 - present
 - * Jerry Miller 1\82 - 11\87 (Actually started here with Diamond Shamrock as a safety engineer on 6\81).
3. Plant Industrial Hygienists past & present.
 - * None currently. Since 11\87, we have received help from other BFG\Geon resources, like Jim Griffin, Avon Lake.
 - * Before 11\87, Jerry Miller likely provided these services, as he was a degreed industrial hygienist.

Please advise if you need additional information.

Dale Eckard

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23953009

L Beach

I N T E R O F F I C E M E M O R A N D U M

Date: 28-Dec-1994 03:40pm EDT
From: MARCHV
MARCHV@LNB280@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: RE: Doctors

Margie,
Long Beach currently retains Dr. Stephen Lake as a "plant doctor" on a contract basis. He usually comes into the plant twice a month.

Ken Delaney is currently responsible for safety, environmental and industrial hygiene. His position is being phased out and our current plan is to have these functions absorbed by the plant manager effective April 1st. Whether or not Paul's decision to take early retirement will affect this or not, I don't know at this time.

Vic M.

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23953010

LV

I N T E R O F F I C E M E M O R A N D U M

Date: 29-Dec-1994 11:03am EDT
From: WALSHJ
WALSHJ@LVLC@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: IN SEARCH OF....

1.PLANT DOCTORS: DR. JOHN CREECH

2.SAFETY ENGINEERS: WALTER CATO (DECEASED)
THOMAS BOLLY (DECEASED)
MAURICE D. SCHRADER (RETIRED)
RONALD L. MARTIN
MICHAEL THOMPSON

3.HYGIENIST: NONE

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23953011

P/Hawn

I N T E R O F F I C E M E M O R A N D U M

Date: 05-Dec-1994 05:49pm EDT
From: WORRELLT
WORRELLT@PED26@CLE@MRGATE@CLE
Dept:
Tel No:

TO: MCQUOWN, MARGIE@A1

Subject: RE: In Search of...

From: CLE::CLE::MRGATE::"A1::MCQUOWN, MARGIE" 5-DEC-1994 16:32:09.55
To: @Distribution_List
CC:
Subj: In Search of...

From: NAME: MARGIE MCQUOWN
FUNC: D/5440
TEL: <MCQUOWN, MARGIE@A1@CLE>
To: See Below

This note is going to plant HR Managers. The information we need is:

1. Plant doctors, including any epidemiologists, toxicologists that have worked for each plant.
2. Plant safety engineers, past & present.
3. Plant Industrial Hygienists past & present.

Thanks for your quick responses.

Margie

MARGIE: HERE'S THE PTOWN INFO. I'M NOT SURE IF IT'S 100% INCLUSIVE, BUT IT'S CLOSE.

DOCTORS: DR. NORTON
DR. BOYER
DR. QUIGLEY (TEMP- FILLED IN FOR BOYER WHEN HE HAD SURGERY)

SAFETY/INDUSTRIAL HYGIENE MGRS: JIM KIEL
DENNIS O'KEEFE

SAFETY ENGINEERS/INDUSTRIAL HYGIENE ENGINEERS: DON CROSS
JOHN GRESSLER
GREG KASWELL
JERRY HINTON
TONY MONTALBANO

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RICK HOLLIS
AL MORAN
TODD BRETZ
CHUCK MCCANN

INDUSTRIAL NURSE: JANE JACKSON
KAREN EMMERLING

HOPE THIS IS HELPFUL
TOM

BFG28821

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Science paused, and 17 died

At least 17 workers have been killed by vinyl chloride because research over the past 25 years was not followed up. And for over 10 years, workers have been exposed to concentrations of vinyl chloride 10 times greater than the safe limit imposed by one chemical company—Dow Chemical

Lawrence
McGinty

In January Dr John L. Creech, a works doctor at a Kentucky chemical plant, made public evidence that has finally forced a full investigation of an industrial health hazard that should have been eliminated many years ago. Creech's discovery was that four former employees of his company (B. F. Goodrich), who had been involved in making polyvinyl chloride (PVC) from vinyl chloride monomer (VCM), had died from a fatal liver cancer so rare that it kills less than 30 people a year in the US. The immediate implication that there is a causal relationship between industrial exposure to vinyl chloride vapour and development of the liver cancer (angiosarcoma) was reinforced less than a month later when an Italian researcher, Cesare Maltoni, revealed that he had found angiosarcomas in the livers of rats exposed to VCM.

That VCM causes angiosarcomas remains to be proved—although the evidence accumulating is so powerful that the chemical industry and government health inspectorates have little option other than to act on the hypothesis. But how to act? And why has action been delayed, perhaps fatally, for over 30 years?

The story could well begin in 1971, with the publication of a paper by another Italian, P. L. Viola. Researching the effects of exposing rats to an atmosphere containing 30 000 parts per million (ppm) of VCM (a massive dose), Viola found that "almost all animals developed tumours of the skin and lungs" and some developed bone cancers. The results came as something of a surprise because no-one had suspected VCM of being a carcinogen, and Viola had not set out to look for tumours. Criticism of the Italian research, as an indicator of VCM's carcinogenicity, was not slow in coming. The dose level was grotesquely high; so high that the rats' defence mechanisms may simply have been overwhelmed—leaving them susceptible to "spontaneous" tumours.

Nevertheless, such is the emotive impact of even a hint of a new carcinogen that four large European PVC makers (ICI, Montedison, Rhone-Progil, and Solvay) decided to sponsor a study by Cesare Maltoni, professor of Oncology at the Bologna Institute of Oncology. Viola allowed access to his raw data and Maltoni concluded that both the skin and lung tumours probably arose in the Zymbal gland, a sebaceous gland in the ear duct which in rats is particularly responsive to many carcinogens. Maltoni therefore began an extensive series of experiments on rats, mice, and hamsters exposed to ever decreasing concentrations of VCM. Simultaneously, ICI started an epidemiological study of workers at its PVC plant.

The exact sequence of events after this

point, and in particular the fate of Maltoni's results, has created a bitter controversy in the US. Following B. F. Goodrich's disclosure of the deaths among its ex-workers, the US Occupational Safety and Health Administration (OSHA) called an informal hearing. At that inquiry Maltoni gave evidence that he had discovered angiosarcomas in the livers of rats exposed to only 250 ppm of VCM. Because VCM was found to be carcinogenic at such low concentrations, Maltoni began a new series of experiments exposing larger numbers of rats to even lower VCM concentrations (250, 150, 100, and 50 ppm). At the time of the OSHA hearings, results from this crucial series of experiments were not available. It was only at a symposium organised by the American Cancer Society and the New York Academy of Sciences on 10-11 May that Maltoni was able to say that he had discovered angiosarcomas in the 50 ppm group of rats. On 15 April, the US Manufacturing Chemists Association (MCA) disclosed that research it had sponsored also showed angiosarcomas at 50 ppm—but this time in mice.

Was there a "cover-up"?

The controversy hinges on a tentative allegation in Chemical & Engineering News (20 May, p. 16) that the MCA, and individual chemical companies, "held in confidence for at least a year preliminary, albeit significant, scientific findings"—that is, the interim results of Maltoni's work. The MCA replied that it had been given access by the European sponsoring companies to the findings (after "months" of negotiation) only on the understanding that it would make no "unilateral disclosure".

Maltoni observed his first angiosarcomas in rats in August 1972. ICI readily admits that it was aware of these findings in January 1973. In that month the MCA sent a technical delegation to visit Bologna and received reports of the research there. Thus it is undeniable that the chemical industry knew that VCM was carcinogenic in rats at concentrations as low as 250 ppm at the beginning of last year.

ICI and the MCA both say that they passed on this fact to appropriate government agencies in July 1973. But the UK Employment Medical Advisory Service (EMAS) and the Factory Inspectorate say that the first inkling they had of the carcinogenicity of VCM (apart from Viola's paper) was in January 1974 from ICI, which notified them of the Goodrich cases. The US National Institute for Occupational Safety and Health (NIOSH) denies that it knew of the angiosarcoma risk until January 1974.

In fact, Maltoni's angiosarcoma discoveries were first made public, not at the February

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OSHA hearings, but at the Second International Symposium on Cancer Detection and Prevention held in Bologna on 9-12 April, 1973. At that meeting, Maltoni read a general paper about occupational oncology, during which he showed a table of preliminary results. There for all to see were angiosarcomas in the 250 ppm group of rats (as well as Zymbal gland carcinomas and nephroblastomas). It seems unlikely that the European companies sponsoring Maltoni's research would have allowed him to announce preliminary findings at this symposium, while denying the same data to MCA.

The impact of the results contained in the Bologna paper seems to have been minimal. The published version of the paper became available only three weeks ago. One British participant has no recollection of the report of angiosarcomas, despite a personal conversation with Maltoni at the symposium.

It is probably impossible to say whether the chemical industry deliberately and maliciously hid unfavourable research findings. It is, however, likely that, even if this were not the case, the results would not have caused much of a stir. For by this time, the epidemiological survey was showing negative results. ICI had found no deaths from angiosarcomas among ex-employees. Thus in January 1973 there was no human evidence of VCM's carcinogenic properties. Because extrapolating from animals about carcinogenicity is notoriously problematic, epidemiological evidence carries greater weight in the minds of industry and UK regulatory bodies. Thus it is unlikely that animal studies alone would have been convincing enough to force a reappraisal of industrial exposure standards. "Firm" evidence only arose after the Goodrich report, when other cases of deaths from angiosarcoma were unearthed. ICI updated its survey and found one ex-employee who died from liver cancer in 1973. Other cases were found in Sweden and the US; the total now stands at 19.

Twenty-five years' evidence

However, the history of the research on VCM's toxicity is much more disturbing than any allegation of a 12 month cover-up. "There has been evidence of potentially serious disease among vinyl chloride-polyvinyl chloride workers for 25 years that has been incompletely appreciated and inadequately approached by medical scientists and by regulatory authorities". That is how Irving Selikoff, director of the environmental sciences laboratory at Mount Sinai Medical School in New York, sums up the history.

The evidence he quotes goes back a long way. In a 1949 Russian study, 30 per cent (15 out of 48) of a group of PVC workers examined showed evidence of liver disease. The very fact that VCM was once considered as an anaesthetic, but rejected because it was found to be a cardiac irritant should, says Selikoff, have meant a closer examination of its industrial usage. Experiments in Britain in the 1960s linked VCM to acro-osteolysis—an ugly, but seemingly reversible, bone disease characterised by distortion of

the skin and bones of the toes and fingers. In 1961 toxicologists from the Dow company published reports of an extensive research programme using rats, rabbits, guinea pigs, and beagle dogs. After three months exposure to concentrations of VCM between 100 and 500 ppm, animals showed various kinds of liver damage. Even at the "low" concentration of 100 ppm, livers of subject rats were abnormally enlarged.

None of these studies even hinted that VCM is carcinogenic. They did, however, indicate a cause for great concern. Selikoff says, "We had evidence here and there that a number of organ systems and tissues were affected by VCM. . . . Most of us did not draw the appropriate conclusions—that it should be carefully studied."

Anomalies between limits

Nevertheless, restrictions on the concentrations of VCM allowed in plants have existed for some time. The first (500 ppm in both the US and UK) were imposed because of VCM's inflammability, not its toxicity. But once limits were created on the basis of medical and animal studies, gross international anomalies arose. In the UK, a threshold limit value (TLV) of 200 ppm was set after the discovery of the causal link with acro-osteolysis; incomprehensibly, the 500 ppm limit remained in the US. Even more baffling, the Germans set a maximum workplace concentration of 100 ppm in 1970 on the basis of the 1961 Dow research. But Dow itself restricted exposures in its factories to 50 ppm as long ago as 1961—on exactly the same evidence on which the Germans based their 100 ppm limit. No other section of the US or European industry followed Dow's lead. The reasons for this international confusion are obscure.

Maltoni's evidence at the OSHA hearings threw the whole question into the melting pot. A US temporary limit of 50 ppm was rapidly decided and the UK Factory Inspectorate suggested an interim limit of 50 ppm maximum exposure, and a time weighted average exposure of 25 ppm. But both UK and US limits were devised before it was known that rats exposed to 50 ppm VCM developed angiosarcomas. Now a permanent standard of 1 ppm has been proposed by OSHA—in effect that no worker should be exposed to any detectable VCM vapour. In the UK, it is unlikely that the permanent limit (shortly to be announced) will be less than 25 ppm.

Whatever final limit is accepted, there will be a fight between industry and the trade unions—particularly in the US. The zero exposure limit is strongly backed by Selikoff. "It is evident," he says, "that no threshold is known that would serve to prevent cancer among exposed workers." Not only does he believe it to be the only safe limit (as do other experts), he also thinks it practicable—if expensive. "I don't believe a zero limit will involve closing down the vinyl chloride factories," he states, "I have great confidence that engineers will be able to solve the problems." The industry, of course, does not agree.

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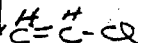
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Health Hazards Vinyl-Chloride Scare Points Up Dangers Of Other Chemicals

Substances Long Believed
Safe Now Are Regarded
With Greater Skepticism

A Hospital's Hidden Perils



By BARRY KAMMEN

Staff Reporter of THE WALL STREET JOURNAL

It's a simple molecule: two atoms of carbon, three atoms of hydrogen and a single atom of chlorine. At room temperature it is a gas. The molecule is called chloroethylene by chemists, but it is more commonly known as vinyl chloride.

The chemical structure of vinyl chloride has been known since the 1830s. Since a decade after the Civil War, scientists have known how to link, or polymerize, the vinyl-chloride molecules like beads on a chain to form a plastic called polyvinyl chloride, or PVC. Since the late 1930s, when B.F. Goodrich perfected a commercial process for polymerizing vinyl chloride, the plastic has come to be a staple in thousands of household products ranging from kitchen food wraps to construction materials.

Last January, the world learned something else about vinyl chloride: It can cause

This is the second of two stories concerning implications of the discovery that vinyl chloride can cause cancer.

cancer in humans. Twenty-six cases of a rare liver cancer have been discovered among workers in polyvinyl-chloride plants. All of the workers were exposed over many years to large quantities of vinyl-chloride gas. In recent months, further evidence has come to light indicating that the gas is also responsible for an increase of other cancers among the workers in the PVC plants. As a result, there now are standards regulating vinyl-chloride emissions in factories. Vinyl-chloride gas has also been banned for use as an aerosol propellant, and the Food and Drug Administration is toughening restriction of the amount of vinyl-chloride in PVC food wraps.

Vinyl chloride, of course, is far from the only man-made chemical known to cause cancer or, for that matter, other human ailments. Industry regularly works with toxic substances of all types known to cause ill effects ranging from skin disorders to damaged lungs, kidneys and livers. In fact, the findings about vinyl chloride point up the potential dangers of an entire group of similar chemicals, which, like vinyl chloride, contain hydrogen, carbon and chlorine. The chlorinated hydrocarbons, as the chemicals are collectively called, are used in a broad range of products to which every human being has multiple exposures.

where they haven't come into contact with products such as plastics, anesthetics, insecticides and herbicides, solvents and pharmaceuticals, all of which can be made from chlorinated hydrocarbons. As a result of their widespread manufacture and use, molecules from these products can be found everywhere on earth and in the upper atmosphere. Such molecules are also commonly found in human tissues.

What is particularly concerning some scientists is the fact that the compounds are rarely found in natural systems unless those systems have been exposed to man-made pollution. "Although all living things contain considerable amounts of chlorine ion, very few chlorinated organic compounds actually occur in living things," says Dr. Barry Commoner, director of the Center for the Biology of Natural Systems at Washington University in St. Louis.

Trial and Error

Dr. Commoner further notes that biologic evolution is a process of trial and error over millions of years; therefore, he says, the assumption can be made that since the chlorinated hydrocarbons are virtually absent from all living things, the compounds are likely to be "evolutionary rejects." And that means, he says, that if such compounds invade a natural system like that of man, they are likely to be toxic.

"This means that industrial operations that synthesize or make use of such substances, and agricultural and other operations that disseminate them into the environment, ought to be governed by the level of prudence that is demanded by the inherently dangerous situation," Dr. Commoner says. "That we now are discovering, with increasing frequency, health hazards due to dissemination of synthetic organic substances, both in the workplace and the general environment, is evidence that we have thus far failed to appreciate the need for such care."

It is interesting to consider that vinyl chloride, in the early days following its discovery, was actively considered as an anesthetic for surgery. But animal tests showed that the gas caused heart irritation, and it was abandoned for that use in favor of other substances. However, many anesthetics in use today are chemically related to vinyl chloride—and there is growing evidence that they aren't without harmful side effects.

For the past several years, for example, there have been scattered reports of ill effects suffered by those who administer anesthesia and among others continually exposed to anesthetic gases while working in hospital operating rooms. It has also been known for some time that there is greater-than-expected incidences of spontaneous abortion among female anesthesiologists and nurse-anesthetists and, more tellingly, a greater than expected rate of certain types of fatal cancer among anesthesiologists of both sexes. (There is no evidence that such anesthetics pose long-term dangers to surgical patients.)

Birth Defects

One recent survey of nurse-anesthetists in Michigan showed that of those who worked in the operating room during pregnancy, more than 10% delivered infants with birth defects, compared with a birth-defect rate of under 6% among nurse-anesthetists who stopped working during their

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Health Hazards: Scientists Take Another Look at 'Safe' Chemicals

Continued From First Page

Other surveys have found higher-than-expected rates of miscarriage and stillbirths among the wives of anesthesiologists, even though these wives presumably didn't enter an operating room until the time of their deliveries. One explanation advanced by observers is that the anesthesiologists somehow carried home sufficient amounts of anesthetic gas in their breath or on their clothes to affect their spouses.

Studies are currently under way to determine whether or not the wives of vinyl-chloride workers have been affected by minute amounts of the gas unwittingly carried home by their husbands from the plants. Of particular interest is the rate of stillbirths and miscarriages among these women. The studies are by no means simple, since the true rate of fetal wastage throughout the nation isn't exactly known and therefore a basis of comparison is difficult. Furthermore, the women's husbands are also ordinarily exposed to a wide variety of chemicals other than vinyl chlorides, hampering direct correlations.

There are, of course, other carcinogens, or cancer-causing agents, and toxic chemicals in widespread industry use that are even more dangerous than vinyl chloride. Before the Labor Department began setting standards for vinyl-chloride emissions in factories—by an emergency decree in May then by a "permanent" standard effective Jan. 1—it had issued standards for 14 other carcinogens.

The implications of all these studies and standards are clear: Industry will no longer be able to assume blithely that untested chemicals in the work environment are safe simply because they've never demonstrated any overt harm. Like vinyl chloride, which took years to take its toll on worker health, many chemicals thought to be harmless may be equally insidious. This may well mean that there will have to be extensive animal testing of new chemicals before they are introduced and that workers' health will have to be continually monitored to detect clusters of disease.

The task of such testing and monitoring would be mammoth indeed. There are currently 25,000 industrial chemicals. More than 500 new ones are introduced every year. With an array like this, it's likely that other vinyl chlorides are lurking in the background.

Allied Chemical Corp. and Dow Chemical Co., for example, recently reported to the Labor Department's Occupational Safety and Health Administration that they had found excess cancer mortality among workers at two plants that made pesticides with inorganic arsenic. One study, conducted by Johns Hopkins University's School of Hygiene and Public Health, found that of the 22 retired male workers from Allied's Baltimore pesticide plant who died between 1962 and 1972, 17 had died of cancer. At Dow's Midland, Mich., arsenical pesticide plant, which was closed down 20 years ago, Dow researchers found that of 173 workers who died between 1910 and 1972, 57 died of cancer. Both studies show higher-than-expected rates of cancer death.

Based on previous, less-conclusive evidence linking arsenic with cancer, the National Institute for Occupational Safety and Health last January recommended reducing maximum levels of arsenic in the air of factories from the present 0.5 milligrams per cubic meter of air to 0.05 milligrams. Industry has opposed that reduction, but there is growing pressure on the Occupational Safety and Health Administration to impose a "no detectable" limit on arsenic.

Obviously, it isn't enough to learn that workers exposed decades before to vinyl chloride, arsenic and asbestos—to name a few carcinogens—are dying today of cancer or of other toxic effects of those substances. But the question of how to go about determining whether chemicals are indeed lethal in the long term is the subject of some dispute.

Suggested Solution

One suggested solution is to test all chemicals already in the workplace and to test other chemicals before they are used. However, Dr. Irving J. Selikoff, an expert on environmental carcinogens at Mount Sinai School of Medicine in New York, claims that this would be "unrealistic and scientifically impossible."

"Resources are limited," he says, "so we can't go charging off in all directions at once." Instead, Dr. Selikoff says that he and Dr. E. Cuyler Hammond, the chief health statistician of the American Cancer Society, have worked out some tentative testing guidelines. First, he says, chemicals to be tested should be those to which large numbers of workers are exposed. If many consumers are exposed to the chemical as well, he adds, the substance is an even likelier target for study.

An example of one such chemical is carbon black, an ingredient in rubber tires and, consequently, a widespread air pollutant. "We ought to be taking a look at what's happening to carbon-black workers," the doctor says. (Scientists currently know that massive doses of carbon black painted on the skin of mice has caused tumors.) Other prime study targets, he says, are substances whose chemical structure is "suspicious" (or not unlike the structures of known carcinogens).

The testing envisioned by Dr. Selikoff would be a combination of animal trials, in which hundreds of animals would be exposed for long periods to the chemicals being studied, and statistical surveys of working populations that have handled the chemicals. "There are agents to which millions of people have been exposed which now can be evaluated in terms of long-term human experience," he says. "The human data is there waiting for us to evaluate it." (Because animal studies don't always predict what will happen in humans exposed to the same substances, he says, the human monitoring is essential.)

A Complication

All this testing would be complicated by the possibility that some chemicals in the workplace cause cancer only in combination with other chemicals. And the exposure of most workers to many chemicals at the same time would make it difficult to pinpoint the offending chemical.

The cancer danger of vinyl chloride was spotted only because it caused an exceedingly rare tumor, liver angiosarcoma, of which there are only slightly more than 100 cases in medical literature. If vinyl chloride were to cause a more common malignancy, such as lung cancer, it wouldn't have been so readily detected as a carcinogen.

But testing is only one part of the problem, the other part being what to do about toxic substances once their dangers are exposed. There's some risk in almost every activity, meaning that "acceptable" risks have to be determined for various substances. For example, even sugar, if injected in sufficiently large doses, will cause cancer in laboratory animals; yet no one is suggesting that sugar use be drastically curtailed among humans for that reason.

To arrive at a balance between risks and benefits, the risks must be fully understood. But very little is known about the dangers posed to workers by the thousands of substances they work with, and there is little optimism that such substances will be fully tested in the near future. Government agencies are understaffed and working with limited funds. A Toxic Substances Control Act, which the Labor Department says it needs to strengthen its hand in controlling industrial chemicals, is stuck in a House-Senate conference committee.

Of course, even if such an act were to be passed, even the most sanguine aren't suggesting that the workplaces of American industry will be cleared of danger. Nevertheless, it is becoming more and more evident that there is less willingness to accept chemical dangers as simply an inescapable part of working life.

"Whatever happens," editorializes Lancet, the British medical journal, "the vinyl-chloride episode will have provided a salutary lesson. It will not be quite so easy in the future as it has been in the past for any chemical manufacturer to assume, until proved otherwise, that a chemical to which workers are exposed is carcinologically safe. There must surely be more systematic evaluation of industrially used chemicals for carcinogenic risk to workers."

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Health Hazards

Vinyl-Chloride Risks Were Known by Many Before First Deaths

Insight Shows Weakness In Firms' Systems Aimed At Protecting Workers

The Tip of a Large Iceberg

By BARRY KRAMER

Staff Reporter of THE WALL STREET JOURNAL
A few weeks before Christmas in 1918, Earl Parks, then 24 years old, signed on as a helper-trainee at the large B. F. Goodrich Co. plastics factory in Louisville, Ky. The plant had been making polyvinyl-chloride (PVC) from vinyl-chloride gas since before the war, using a process developed by Goodrich in 1937.

It was a growing industry that Mr. Parks joined. Polyvinyl chloride—dubbed PVC for short—had found special, but limited, applications in the war years, especially as a fireproof coating for electric wiring in lighter planes and ships. But in the late 1940s, so-called vinyl consumer products, made from PVC, began coming into vogue: and by the time the 1950s were under way polyvinyl-chloride products such as containers, phonograph records and curtains were staples in American households.

The basic Goodrich process, still in use today, pipes vinyl-chloride gas into large re-

This is the first of two stories concerning implications of the discovery that vinyl chloride can cause cancer.

actor vessels; there, the gas is agitated together with a liquid and catalysts. The process polymerization, a linking together of the molecules of the gas (a monomer) into the long chains that give PVC its strength and other desired characteristics.

The First Years

In his first years with Goodrich, it was Earl Parks' job to crawl inside the reactors after each batch of PVC was drained off and to chip away that portion of the polymer that had congealed. During the hour-long task, repeated several times in the course of a eight-hour shift, Mr. Parks and other workers who performed the same function could unavoidably inhale the heavy, sweet-smelling fumes of vinyl-chloride gas that had escaped polymerization.

As the 1950s went by and the 1960s began, Earl Parks was working his way up in the job of foreman, a post that he had attained by the time that ill health forced his early retirement in the late 1960s. In the years he had worked with Goodrich, the PVC industry flourished as thousands of new uses were discovered for the polymer.

On March 3, 1973, at the age of 50, Earl Parks died of angiosarcoma of the liver, a type of cancer that is invariably fatal. His death attracted scant public attention at the time, but today the significance of Mr. Parks' illness is unquestionable and shattering in its implications. For Earl Parks came to be one more statistic in turning a hypothesis into a reality. Vinyl chloride can cause cancer.

Deadly Statistics

The link between angiosarcoma and vinyl chloride is further buttressed by other

What's News—

Business and Finance

ENERGY-SAVING MOVES are being studied by the administration in preparation for President Ford's economic speech. Possible conservation moves suggested to him include boosting sharply the tax on gasoline and seeking standby authority to ration the fuel, encouraging car pools and discouraging unnecessary auto commuting, and taxing nonessential use of electricity and natural gas. The resurgence of interest in conservation comes as officials warn further production cuts and price increases by oil exporters are possible.

(Story on Page 3)

High oil prices don't threaten world depression or financial collapse, Treasury Secretary Simon said, backing away from the administration's tough line. There isn't any immediate need for new mechanisms to handle huge oil-money flows, he added.

(Story on Page 2)

Shelving the tax bill until after the elections is planned by House Ways and Means Chairman Mills. That further dims chances of such legislation clearing this Congress.

(Story on Page 2)

Higher freight rates will be sought again by railroads, except for the Chessie System. Other Southern, Western and Eastern lines want boosts up to 7% as of Jan. 1, but expected shipper protests could delay the effective date.

(Story on Page 3)

Volkswagenwerk and other companies have been discussing sharing an equity stake in a car plant that VW is thinking of opening in the U.S. Some of these companies are understood to be American.

(Story on Page 4)

American Motors and United Auto Workers bargainers tentatively agreed on a two-year contract that seems to meet almost every union demand. Workers, on strike since Sept. 16, could be back on the job Monday.

(Story on Page 3)

North American Philips officials were charged by the Securities and Exchange Commission with using insider knowledge for their own gain in buying Magnavox shares before North American announced its offer for that stock. The three defendants are corporate-staff members.

(Story on Page 2)

SEC pressure on the securities industry to create a single national

World-Wide

A CAMPAIGN-FINANCE BILL, advanced; the Watergate cover-up trial opened.

House and Senate conferees cleared the way for passage this month of a bill to finance presidential elections with public funds. Agreement was reached on all key issues after Senate delegates gave up their fight for partial public funding of congressional races. Besides full funding of presidential primaries and general elections, the compromise bill would limit spending in congressional races and put ceilings on contributions. A commission with subpoena power would be set up to enforce the law.

Ford opposes public funding of congressional elections, but chances that he might sign the bill anyway were improved by deletion of such financing of congressional races.

The Watergate cover-up trial of F. Lee Buzbee, John Mitchell, John N. Harbo, Robert Mardian and Kenneth Parkerson opened in Judge Sirica's court in Washington. Sirica told prospective jurors they might have to serve beyond the Christmas season. The case of one other defendant, Gordon Strachan, has been severed. Charges against Charles Colson were dropped when he pleaded guilty to a charge in the Ellsberg case.

Ford's decision to testify in person before a House Judiciary subcommittee about the Nixon pardon was applauded by many members of Congress. But Senate Majority Leader Mike Mansfield said he hoped presidential testimony "wouldn't become a habit."

WEAPONS COST ESTIMATES were raised by the Pentagon due to inflation.

The Defense Department increased its estimate of the cost of 42 major programs \$16.91 billion, or about 15%. Most of the boost resulted from the Pentagon's switching to a "more realistic" inflation factor of 11%; inflation has been figured at only about 4%. Two key programs, the B1 bomber and the Trident missile submarine, were up more than \$3 billion each. The estimates were given in the Pentagon's April-June quarterly report to congressional armed services committees.

The higher estimates will force the Pentagon to cut back some weapons programs. It also will prompt defense planners to raise their budget request for next year, making Ford's administration effort more difficult.

A TURKISH ARMS CUTOFF was retained by the Senate despite a veto threat.

President Ford warned that he won't sign a bill containing an unconditional ban on military aid to Turkey because it would "destroy any hope" that the U.S. could help arrange a Cyprus peace. The Democratic and the Republican leaders in the Senate both urged their colleagues to reconsider the ban, voted Monday, but Senators refused the plea. The provision would end U.S. arms shipments to any country using them offensively. It was attached to a resolution to continue funding at last year's level for programs seeking new appropriations, including foreign aid.

The Senate sought to spur action on a new foreign aid bill by requiring monthly cuts in the amount provided by the continuing resolution.

A cutoff of arms aid to Turkey...

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Deadly Statistics

The link between angiosarcoma and vinyl chloride is further buttressed by other deadly statistics. Seven of Mr. Park's fellow workers at the Goodrich plant also contracted the disease, and five have died. In all, there have been 16 documented angiosarcoma cases in the U.S. in recent years, all of them linked to vinyl chloride. In addition, 10 other cases have been reported in Europe.

While the total number of cases is small, the industry has been shaken to its roots. The disease now is known to work insidiously, slowly, during decades of exposure.

Implications being that the cases thus far are quite likely only the tip of an iceberg. Nine companies, with 11 plants and 940 employees, currently produce vinyl chloride monomer from ethylene, a petrochemical. The monomer, in turn, is used by 21 companies operating 36 major plants and employing 3,000 workers, to make more than five billion pounds of PVC annually. (World-wide production is some 18 billion pounds annually.)

Even the five billion pounds of PVC annually produced in this country isn't enough to meet the domestic demand for the plastic into which PVC is formed. From 3,000 to 4,000 processors, employing an estimated 700,000 workers, fabricate the plastic into a wide variety of products ranging from vinyl floor tiles to shower curtains. According to a study done for the Society of the Plastics Industry by Arthur D. Little Inc., as many as 3.3 million jobs depend on polyvinyl-chloride plastic. If PVC were banned, the study says, the annual loss to industry in sales and production would be some \$65 billion to \$90 billion. (The Manufacturing Chemists Association estimates the wholesale annual value of all PVC products is \$4 billion.)

Emergency Decree

At the moment, no one believes the industry will suddenly come to a screeching halt. However, after the first human cases of vinyl chloride-induced angiosarcoma were disclosed, the Labor Department's Occupational Safety and Health Administration imposed a temporary emergency standard for PVC factories; thenceforth, OSHA decreed, the permissible level of vinyl chloride in the air of such factories would be 50 parts per million. That level was far below the industry standard, in effect for years, of 500 parts per million.

OSHA's emergency decree was made last May. Since then, animal research found that tumors develop at 50 parts per million. Yesterday, OSHA issued a new permanent standard requiring employers after Jan. 1, 1975, to reduce exposure to one part per million in factory air, averaged over eight hours, and five parts per million averaged over any period no longer than 15 minutes. (See story on page 11.) While considerably more stringent than the emergency decree, the new permanent standard—particularly with its five-parts-per-million provision and its allowance of averaging—nevertheless falls short of the "no detectable" limit advocated by unions, many medical experts and

Please Turn to Page 14, Column 1

Auto Workers bargainers tentatively agreed on a two-year contract that seems to meet almost every union demand. Workers, on strike since Sept. 16, could be back on the job Monday.

(Story on Page 1)

North American Phillips officials were charged by the Securities and Exchange Commission with using insider knowledge for their own gain in buying Magnavox shares before North American announced its offer for that stock. The three defendants are corporate staff members.

(Story on Page 1)

SEC pressure on the securities industry to create a single national entity to clear stock transactions appears about to be eased. Many in the industry seem unhappy with the Securities and Exchange Commission's policy change, arguing that a unified system is needed to cut costs.

(Story on Page 12)

Merrill Lynch's net was "up sharply" in the third quarter from the year-earlier \$4.5 million, the securities-firm holding company's top officer said. The surge is in contrast to the industry's current financial pinch.

(Story on Page 12)

Construction spending in August fell 1.3% from July and 2.2% from a year before to a \$134.4 billion seasonally adjusted annual rate. It was the third consecutive monthly drop as the home building slump continued.

(Story on Page 12)

Virginia Electric was awarded a \$97.7 million temporary emergency rate increase; it had sought a \$127.3 million boost.

(Story on Page 21)

A Shell Oil unit was ordered by the Environmental Protection Agency to stop making Aldrin and Dieldrin for most uses because of evidence the two pesticides may cause cancer.

(Story on Page 7)

Vinyl chloride levels in the air workers breathe must be reduced sharply, the Labor Department ordered. The ruling for the gas, which has been linked to liver cancer, brought a suit from the plastics industry and protests from organized labor.

(Story on Page 14)

Markets—

Stocks: Volume 18,890,000 shares. Dow Jones Industrials 601.82, off 3.06; transportation 127.8, off 1; utilities 60.18, off 0.87. Bonds: Dow Jones 40 bonds 81.20, off 0.18. Commodities: Dow Jones futures index 359.51, off 4.34; spot index 341.71, up 1.72.

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The Senate sought to spur action on a new foreign-aid bill by requesting monthly cuts in the amount provided by the continuing resolution.

A cutoff of arms aid to Chile also was adopted. Senators approved an amendment by Sen. Edward Kennedy (D., Mass.) stating that the Chilean military junta was engaging in "gross violations" of human rights. About \$15 million of assistance will be affected.

South Vietnamese President Thieu assailed the cut in U.S. aid as a broken promise. Congress has reduced arms aid to \$700 million this fiscal year from the \$1.2 billion budgeted, and the administration request of \$750 million of economic aid is expected to be halved. Thieu, in a broadcast speech, also denied corruption charges and said he will seek a third term next year.

Deputy Defense Secretary William Clements arrived in Saigon to assure Thieu the Ford administration will continue to push for more aid. Clements flew in from Bangkok, where Thai officials asked for U.S. help in setting up local munitions factories.

Republican Representatives would be permitted to hire more staff members and younger GOP Congressmen would have a say in the hiring, under a proposal approved by the House. It is considering alternative plans to reorganize its committees, and the vote was seen as a victory for backers of a less-draconic revision.

A Democratic Congressman from New York, Bertram Podell, pleaded guilty on the ninth day of his trial on charges of using his position to help a small airline in return for \$41,350. Sentencing was set for Jan. 9.

Nelson Rockefeller's nomination to be Vice President has been opposed by the great majority of letters received by the Senate panel considering him, Chairman Howard Cannon (D., Nev.) said. He added that much of the letter writing appeared to be organized.

A new and potent flu from New Zealand called the Port Chalmers Flu is likely to strike all of the U.S. except the Northeast and Middle Atlantic regions this winter, the National Center for Disease Control said in Atlanta.

American couples plan smaller families than they did a year ago, the Census Bureau reported. It said every 1,000 married women aged 18-39 surveyed expect to have a total of 2,350 children. Such expectations a year ago were 2,638 children, and in 1967 they were 3,118 children.

Federal employees got a 5.5% pay increase, reluctantly ordered by President Ford after the Senate refused to let him delay it three months to fight inflation. Ford was free to set the amount, and he chose the figure proposed by the budget office rather than two other organizations' higher recommendations. The raise is supposed to keep federal pay on a par with that in industry.

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Sharp Drop in Vinyl Chloride Exposure Is Ordered by Labor Agency for Workers

The pulling, which comes after nine months of a "stagnant" standstill, is

There is some dispute as to what form

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The Plastic Coffin of Charlie Arthur

He was not unlike the others who worked the polyvinyl chloride vats. They all learned too late that one man's bread and butter may also be his poison.

By Joe Klein

MR. MCGUIRE: Ben, I want to say one word to you, just one word.
BEN: Yes sir.
MR. MCGUIRE: Are you listening?
BEN: Yes, I am.
MR. MCGUIRE: Plastic.
BEN: Exactly how do you mean that?
MR. MCGUIRE: There is a great future in plastic.
—from *The Graduate*

THE MOST TERRIFYING thing is the cleanliness of the operation; no belching smokestacks, no grime, no sludge dumped in the river, no mess. The factory is located on a peaceful country road less than a mile from Lake Erie in Avon Lake, Ohio. The lawns are freshly mowed. There are even flowers in well-manicured beds. On the front lawn there is a modest sign with the corporate logo: B.F. Goodrich.

From the road, you can see a modern building—the B.F. Goodrich Development Center—which snacks of better living through chemistry. Behind the technical center is the factory itself, a jumble of vats and pipes and tanks, emitting small, beige puffs of white smoke. The very model of corporate good citizenship, it would seem.

Inside the factory, they transform vinyl chloride gas, which is a petroleum byproduct, into a powder which is the second most common form of plastic, polyvinyl chloride. It is a miracle powder, and when they opened the factory just after World War II, the officials of B.F. Goodrich must have been proud. Here was a substance that could (and would) change the world. It was cheap to manufacture and it could be put to a mind-boggling array of uses. In fact, the most distinctive characteristic of the miracle powder was the many things it could become. It could be hard or soft. It was fire resistant. It was durable. It could become upholstery that looked like leather or a clear sheet, like transparent plastic wrap, that looked like glass and crumpled like paper. It became phonograph records, shower curtains, credit cards, nipples for baby bottles, coatings for wires, artificial turf,



cellophane tape . . . the list is endless. It is virtually impossible to go a day without coming into contact with some form of polyvinyl chloride.

But there was another property of polyvinyl chloride that turned out to be even more remarkable than its myriad of uses: the vinyl chloride gas, which is the base for the miracle powder, induces a rare form of liver cancer that is guaranteed to produce a quick and painful death. Recently, it killed one of the workers at the B.F. Goodrich plant in Avon Lake, a man named Charlie Arthur.

Now Charlie Arthur was not the first person to die of liver cancer caused by vinyl chloride, and he certainly won't be the last. His case was not much different than the others on record; his life was not much different than the other workers' at Avon Lake. He was 47 years old, a good employee, a devoted husband and father. He lived in a small ranch house on a quiet street. He was never arrested, never caused much of a stir of any kind. In fact, there is little that distinguishes Charlie Arthur's life from millions of others . . . which makes his death all the more frightening.

Vinyl chloride isn't the only chemical that causes cancer. No one knows how

many chemicals cause cancer. Experts can't even agree on how many chemicals cause cancer. Almost every major corporation has scientists who sit in laboratories, playing with different combinations of atoms, occasionally coming up with a new combination—a new chemical. It happens virtually every day. Estimates range from nine new chemicals a week (468 a year) to several thousand a year. And if 1000 new chemicals are developed each year, scientists say it's a safe bet that at least a half dozen will cause cancer.

In 1835, a Frenchman named Reaumur was playing around in his lab and discovered vinyl chloride. It wasn't until 37 years later that a German named Baumann exposed some vinyl chloride to the sun and found that it formed a white powder. It wasn't until 1926 that Dr. Wladimir Semon, a scientist working for B.F. Goodrich, figured out that the powder could be used commercially . . . and a completely new substance, polyvinyl chloride, was introduced into our environment. There was no reason to suspect, at that point, that when vinyl chloride came in contact with living cells it could cause those cells to go berserk and become cancerous. Since the incubation period for cancer generally runs from 15 to 30 years, it was a long time before the evidence started coming

in. Only now are people beginning to question the fact that chemicals are routinely considered innocuous by government and industry until proven guilty.

Some other relevant facts:
• Cancer is responsible for approximately one out of every four deaths. In 1974, an estimated 358,400 people died of it.

• More people are dying of cancer all the time. Through the early Seventies, the cancer rate increased at about one percent per year. In the first seven months of 1975, though, there was a major leap; the rate increased by five percent. Part of the reason for the annual increase is that people are living longer and, because of its long incubation period, cancer is a disease of old age. But another reason for the increase probably can be traced to the introduction of all these new synthetic chemicals over the last 50 years.

• It is generally agreed among scientists that 80 to 90% of all cancers are probably environmentally caused.

• It stands to reason that the people who run the greatest risk of getting cancer caused by these new chemicals are the people who deal with the chemicals most directly. Factory workers, for example. (Historical footnote: 1975 was the bicentennial of the discovery of work-related cancer. In 1775, Percival Pott found cancer of the scrotum among chimney sweeps in London. He deduced that this was caused by their proximity to coal dust and recommended, among other things, that they take baths once a week.) While it's difficult to say how many workers die each year of job-related cancer, the official government estimate for all job-related deaths is 100,000 annually, staggering but widely underestimated.

The problem is this: it is virtually impossible to say for sure what causes a given cancer. Vinyl chloride was shown to pinpoint this most because it caused a very rare type of cancer. But an asbestos worker's die of lung cancer: was it the asbestos or cigarette smoke? or eating moldy peanuts? or just breathing city air? You can show that men faced with a certain chemical get cancer and die. You can show that a certain chemical causes mutations in bacteria. You can do detective work and put two and two together and make an educated guess, but when it comes to cancer in humans, there's rarely a smoking

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Still, given the circumstantial evidence, it is fair to say that we are seeing the beginnings of a cancer epidemic among chemical workers, an epidemic that may spill over and affect the general population, an epidemic that the government and big business are only reluctantly beginning to admit.

"Essentially what we have here is a welfare system," says Tom Monaghan, an official of the Oil, Chemical and Atomic Workers Union. "The companies are subsidized by the lives of their workers."

Or, more specifically, in the words of one of Charlie Arthur's friends: "Charlie was always at the top of the list alphabetically. You know, his last name was Arthur. And then he becomes the first one of us to die of this thing. You've gotta wonder if it's gonna work like that, if it's gonna run right through the list alphabetically."

CHARLIE ARTHUR WAS born in West Virginia on July 22nd, 1928. His mother died when he was very young and he was raised by his father, a lumberjack. His father was a very religious man and taught Charlie the Bible.

As a teenager, pretty much left to his own devices, Charlie decided to join the Navy and see the world. He was stationed for a while in New York, at the Brooklyn Navy Yard, and he rapidly developed the reputation among the young ladies of the community as a Casanova of sorts. He was quite handsome—a relatively large man, just over six feet tall and 200 pounds—and seemed to know it. He swaggered when he walked. He was charming. If not clever... a bit of a tease.

He was transferred to Norfolk, but still returned to Brooklyn from time to time. On one of these trips he met a little blond named Helen Pawlick. It wasn't exactly love at first sight—Helen thought Charlie was conceited and was wary of his advances. But Charlie persisted and within a year they were married in a modest civil ceremony at Norfolk.

The Navy had been fine for a single guy, but now Charlie had a wife and soon there was a baby on the way. He left the service and for a while he worked at a tire store in Norfolk. Then he and Helen moved to New York to be near her family. But there was no work to be had in New York and they moved to Painesville, Ohio, where Charlie had a sister. She told them there were jobs in the area and he immediately found work in a local factory. But business was bad and it seemed likely the company would close so Helen and Charlie began taking long drives to the area west of Cleveland along Lake Erie, putting in applications at the various factories there and waiting. Eventually he received a call from the E.F. Goodrich plant at Avon Lake.

Goodrich was considered a great place to work in those days. The pay was better, as were the fringe benefits. And the work itself was much preferable to, say, the noise and heat and obvious dangers at the U.S. Steel plant in nearby Lorain. There was job security—the plastics industry was growing like crazy in the early Fifties.

Charlie hired on as a poly cleaner in 1954. It was his job to climb into the vat where the vinyl chloride gas was heated and mixed and transformed into the miracle powder, and clean them. After a break was cooked, Charlie would climb down into the vat with a bucket and scraper and literally scrape the residue off the walls so the vat would be clean for the next batch.

Strange things happened around those vats. The vinyl chloride gas was colorless and odorless in small concentrations. In high concentrations, though, it had a very distinct smell, a sweet smell, "like something in a bakery," according to one of Charlie's friends. "Like ether," according to another.

When the workers breathed the gas in high concentrations, as they often did, they got high. Sometimes they passed out completely. The gas was very cold and the standing rule was if you went down into one of the vats and your legs started feeling cold, and then your testicles, to start climbing out fast or you might not make it out at all. The workers would breathe it again and again until they passed out. But even for those who didn't like the gas, who were afraid of it, there wasn't all that much choice. Accidents were common. There were gas leaks and people would be overcome. "We washed our hands in it," says the worker. "We swam in it."

It was certainly curious stuff, this vinyl chloride, but perfectly harmless, the men were led to believe. The foreman would tell them, "There's nothing in this factory that can hurt you. If there was, we wouldn't allow it." In fact, when a new worker was hired, he was given a plant tour and introduced to the vat. "Lean over and smell that," he would be told. "That's vinyl chloride."

If Charlie Arthur had any reservations about working with the magic gas and the miracle powder, he kept them to himself. He and Helen rented an apartment, then bought a house on a quiet street of identical ranch houses in nearby Elyria. They raised four children. He went bowling, went fishing, played a little golf and sometimes would stop off for a beer with the guys on the way home from work (he would occasionally tell them stories of his days in the Navy, like the time he got drunk and wound up sleeping in a chicken coop). But most of his free time was spent around his house and family. He was devoted to his children and would take them to the doctor when there was an emergency, to the dentist, everywhere. He doted on Helen—taking her shopping, taking out the garbage, occasionally feeding her little things he could do around the house to make it nicer. Sometimes he would earn a little extra money by picking apples in the local orchard.

Each morning he would kiss Helen goodbye and go to work. Sometimes she would be snuggly with him and say, "Ma, I won't kiss you this morning." And he'd say, "Well, I might have a car accident and then you'd really be sorry, wouldn't you?" And Helen would always wind up kissing him.



New vinyl-chloride vat in Avon Lake

The year before Goodrich announced that three of its workers had died of angiosarcoma, American chemical manufacturers covered up the knowledge that vinyl chloride caused cancer.

For 20 years, they lived like that. Crime, the war in Vietnam, Watergate had virtually no effect on their lives. For 13 years, Charlie worked in and around the vat. Then he was transferred to other parts of the factory away from the gas—but it really made no difference in his life. His wife, his children, his friends would later remember that Charlie Arthur rarely complained about anything.

THEN, ON JANUARY 22nd, 1974, the E.F. Goodrich Company dropped a bomb. It announced that three workers at its Louisville, Kentucky, polyvinyl chloride plant had died since 1970 of a new cancer called angiosarcoma—an extremely rare form of cancer. The company said it was investigating the "relationship" between angiosarcoma and vinyl chloride.

On January 29th, 1974, Goodrich reported that a fourth employee had died of angiosarcoma.

On February 15th, Goodrich reported the death of a fifth employee.

On February 21st, the Union Carbide Corporation reported the death of a vinyl chloride worker due to angiosarcoma.

On March 1st, the Goodyear Tire and Rubber Company announced the death of a vinyl chloride worker due to angiosarcoma.

On March 6th, Goodrich announced cases of liver angiosarcoma in two living employees.

On March 22nd, Goodyear announced two more fatalities.

On April 16th, the Firestone Plastics Company announced its first case. The chemical companies said they were shocked. They said they would do everything they could to improve conditions in their vinyl chloride operations to prevent worker exposure. If they had only known, they said, they would have moved a long time before, if they had only known...

But a case can be made that the companies did have, or at least had strong suspicions, that vinyl chloride was something more than a benign industrial byproduct gas. As early as 1949, or five years before Charlie began climbing down into vats at Avon Lake, Russian scientists reported liver damage in 15 of 48 exposed vinyl chloride workers. But those were Russian workers, commo-

nia. The study was ignored. In 1961, another study found "repeated exposure to vinyl chloride at concentrations considerably below that level that has been considered safe for human exposure (500 parts of vinyl chloride per million parts of air—500 ppm) has been shown to have no effect on the liver and kidneys of laboratory animals." The next year, Dr. V. K. Rowe, doing research for the Dow Chemical Company, found liver damage at exposure levels as low as 100 ppm in laboratory animals, and Dow decided to set a level of 50 ppm in its plants.

The studies continued. In 1970, an Italian scientist linked vinyl chloride with cancer in animals. In January 1971, a group of American chemical manufacturers met with another Italian scientist, Dr. Cesare Maltoni, who showed them definitive proof that vinyl chloride caused liver cancer in rats. Maltoni was working for a group of European chemical manufacturers who wanted his findings kept secret. The American manufacturers had all too happily agreed—so for the year before the Goodrich announcement, the companies covered up Maltoni's findings that vinyl chloride caused cancer.

And there is evidence that, at least in Goodrich's case, the cover-up had begun nine years earlier. In 1961, a worker named Earl Parks at Goodrich's Louisville plant filed a workman's compensation claim for liver disability caused by working with vinyl chloride. The company contested the claim but acknowledged that it had removed Parks from contact with vinyl chloride because of his liver ailment. During the hearing before the state workman's compensation board, Parks attempted to introduce evidence of liver ailments among his fellow employees but the company blocked him. Still, the Kentucky jurisdiction was sufficiently convinced to order the company to pay a partial claim. As the years progressed, Parks's condition worsened and the amount the company was forced to pay increased. In March 1973, Parks died of angiosarcoma. He was one of the three deaths Goodrich reported on January 22nd, 1974.

BACK IN AVON LAKE, the Goodrich workers took the news of the new occupational disease in stride. They would say to each other: sure there were polyvinyl chloride workers dying of liver cancer in Louisville, but that's not here. Maybe conditions are different in Louisville. Maybe they're worse. If this thing is as serious, how come nobody's getting sick here?

Charlie Arthur talked to Helen about liver cancer, but only once. He said there had been some problems at the factory in Louisville but the company was going to spend \$42 million to improve conditions, so it would probably be all right. The company would take care of everything. It always had.

Throughout 1974, the vinyl chloride bomb continued to explode. Almost immediately, it became apparent that not only factory workers were in trouble but the general public as well. Vinyl chloride gas, it was found, was

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So the family prayed even harder, and they got all their friends to pray, and they wrote to Oral Roberts and other famous ministers and asked them to pray too. At the same time, they lived ever more deeply into the life of the church. Charlie joined the Full Gospel Businessmen's Fellowship and the Christian Businessmen's Fellowship. He and Helen joined a prayer group that met one night each week. They went to church twice on Sunday and afterward they would go to the local old age home to cheer up the people there with baskets of fruit and conversation.

In April Charlie began a series of chemotherapy treatments designed to arrest the growth of the tumor that was devouring his liver. Chemotherapy involves drugs that slow down the growth of rapidly dividing cells, like the cells in a cancerous tumor. The advantage is that it can prolong a cancer patient's life. The disadvantage is that there are other rapidly growing cells in a person's body, aside from tumor cells—hair cells, cells that line the intestinal walls. Soon Charlie's hair fell out. He was nauseous all the time and began losing weight rapidly. Sometimes, he told friends, he was so dizzy he didn't even know his name.

After three months of this, Helen called the doctor to find out what was happening. The doctor told her that Charlie was still dying of cancer, only more slowly. She had her married daughter Denise call the doctor again and find out how much time Charlie had left. Maybe six months with chemotherapy. Maybe three months without. Helen decided to call a family meeting to decide what to do about it. The family gathered and prayed and talked it over. "The kids said, 'Mom, he's nothing but a vegetable, he's so sick,'" Helen later recalled. "If we believe that God is going to work a miracle in his life, then let's just put it in God's hands because Dad is in such agony."

"We decided to tell Chuck and, of course, he already knew his chances. But we told him and he decided to stop chemotherapy because it was really making him sick."

A funny thing happened after that: Charlie began to feel much better. He even began to eat a little. Pretty soon, he decided to go back to work at Goodrich.

THE CHEMICAL INDUSTRY had been badly stung by all the vinyl chloride disclosures. In the months after the nationwide deaths were announced, the U.S. Department of Labor moved to set a lower standard of exposure for vinyl chloride workers. Immediately, 50 ppm was set as an emergency standard and hearings were announced on a proposed new permanent standard: 1 ppm.

The hearings turned out to be quite acrimonious. The chemical manufacturers said they could never meet the new standard. They threatened that the whole industry would be forced to close down, which would have a ripple effect on other industries using polyvinyl chloride. At most, as 2 million jobs could be lost. The government held fast, though, and the only thing the chemical manufacturers accomplished was to

further tarnish their already soiled public image.

And, it seemed, the industry's problems with the government were just beginning. The Food and Drug Administration was considering tough new standards for polyvinyl chloride packaging—a total ban, seemed a distinct possibility. (A partial ban was proposed in August 1975 but no final action has been taken.) The Environmental Protection Agency was considering standards for the amounts of vinyl chloride emitted into the air from their factories (and is still considering them).

The manufacturers decided that something had to be done to improve their image. What was needed was a new public-appraisal approach. They would bend a little. They would be reasonable. And they found exactly the man who could eloquently explain their new approach to the government and the public: William D. Ruckelshaus.

Mr. Ruckelshaus, you may recall, was a national hero. As deputy attorney general, he had been a victim of Nixon's Saturday Night Massacre. Along with his boss, Elliot Richardson, Ruckelshaus refused to fire Special Prosecutor Archibald Cox. Before becoming a public martyr, Ruckelshaus had served President Nixon as the temporary chief of the FBI. Before that, he had headed the Environmental Protection Agency. He had been Mr. Environment, setting down tough standards for industrial polluters.

Now, though, he was in private law practice. His services were available. And so the Society of the Plastics Industry purchased Mr. Environment. There were several small newspaper stories that recorded the transaction but not many people in Washington were surprised. In fact, it was business as usual: former government officials routinely sell their services to the highest bidder. It is the way things work.

By the summer of 1975, there was good news and bad news at the Goodrich factory in Avon Lake. The good news was that the company seemed to have made an effort to insure the dangers to workers. It had developed new systems so the poly cleaners didn't have to go into the vats as often. It had developed complex monitoring systems, complete with computerized gauges that took constant readings of the vinyl chloride levels in the plant, and flashing

When asked to contribute to a collection for Charlie, the company said: "We don't want to start another Watergate."

A polycysticoma-affected liver



lights and alarms that warned the workers when the levels went too high.

The bad news was that there was some evidence that the company didn't pay much attention to its monitoring systems. One worker named Harry kept a notebook during the summer. "It was more or less on my personal things," he said. "Like, 'today my back is hurting' or 'my left leg is hurting.' Then I'd say things like, 'today the vinyl chloride count on the third floor was 87 ppm.'"

"One day I wrote down that the count was over 100 and the red light wasn't on. In other words, the supervisor had pulled the plug because they wanted everybody in that building to work."

"The supervisor had pulled the plug?"

"Yeah. They'll turn it up. They'll pull the plug. They have one or two specialists in instrumentation, the other guys can't handle the machines that register the count. The reason why they get those one or two guys is they get them by the neck and they'll even set the machines down where it won't register. You know damn well—even though I can't prove it—because you're right there and you can smell the stuff."

Harry said he had complained about conditions. "One supervisor told me: 'Sometimes it isn't safe but that's our record and better and we have to do it.' And I said, 'Yeah, but you're getting more and more better than I am.'"

Other workers said that when government inspectors had come around, the company shut down most of the vinyl chloride lines, claiming there was maintenance work being done on them.

In a November interview, a company spokesman denied all the charges.

In early summer, the guys in the factory began taking up a collection for Charlie Arthur. Everybody contributed five dollars or more, or whatever else he wanted with the money. This may not have seemed much but it was the first time in the history of the factory that the workers had organized and done something together. For ten years various unions had tried to penetrate the place—there had been four union elections and all of them failed. Workers in other polyvinyl chloride plants had been organized by a variety of unions but the people at Goodrich in Avon Lake seemed satisfied with the way the company was taking care of them.

Not that a union would have made all that much difference environmentally: several unions (most notably the United Rubber Workers and the Oil, Chemical and Atomic Workers) had been fighting for safer conditions but ultimately occupational health took a back seat to job security. When Unifroy threatened to close its vinyl chloride plant in Plainville, the workers turned against their union—the United Rubber Workers—because it had pushed so hard for tougher safety standards.

As innocuous as the collection for Charlie Arthur was, it caused some concern among the management at Avon Lake. When a delegation of workers went in and asked if they could begin a collection, they said Industrial Relations officer Ron Cron said them he wasn't sure. It would start a precedent. They would have to collect money every time someone died.

The workers went ahead anyway and eventually most of the management contributed too. But that wasn't enough for some of the workers. One of them went into the plant manager's office and asked if the company would be willing to contribute. And Bob Rylands, the plant manager, told him, "The company can't give money because we don't want to start another Watergate."

For his part, Charlie didn't want to take the money. He was feeling pretty good at that point. "I'm gonna be around for a long time," he told his friend Bud, who had organized the collection.

"The guys want you to have it," Bud told him, and eventually he took it.

Charlie's return to the factory was having a rather sobering effect on his fellow workers. He looked awful. He still didn't have any hair. He had been a big, chunky man but now he was skinny as a rail. He had exaggerated before but now his shoulders were hunched over and he walked uncertainly.

He would try to joke about his condition. He would joke about the fact that he didn't have to shave because of the chemotherapy. He told one guy, "I was supposed to be dead last week but I'm still living." And he said that Helen had kicked him out of the house and forced him back to work, saying, "You ain't gonna lay around here and die."

But it was forced gaiety and often his friends would find Charlie staring off into space, or just sitting in front of his locker alone and crying. And they saw he was wasting away. And they began to wonder who would be next.

They talked about finding work elsewhere but jobs were scarce. Bud talked about landscaping gardening. Harry joked about becoming a thief. The more they talked, the more they realized they were trapped. Again, one of the guys who had pushed hard for the union, said, "A lot of guys want to get ten years in and go someplace else. I used to talk about going to Oregon. But I didn't go and neither does anyone else because there are all sorts of strings you have attached to you—mortgages and kids going to school, a hundred things. You kind of get trapped here."

WILLIAM D. Ruckelshaus sat in his push law office, just a few blocks from the White House, and pondered his decision to represent the plastics people. He was a large man, rather ostentatiously burly, who spoke with a down-home Indiana twang. He was very smooth.

He said his first reaction was to say no when the plastics people had approached him. But then he thought about it and realized he was only saying no because "certain kinds of people" would be angry if he did it, and so he changed his mind. It was a challenge, really. To make the industry as responsible as possible and come up with a reasonable set of standards. The industry would have to hand over all its technical data to the government. The industry would have to volunteer to become part of a research effort with labor unions and independent scientists.

But there were problems. People just

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didn't trust the industry—it was part of the general atmosphere in the society, a general crisis of trust. He worried about this. He said if people didn't start trusting each other again, there would be a serious new wave toward "anarchy or authoritarianism, most likely authoritarianism." He seemed to distrust authoritarianism as too many government inspectors at vinyl chloride plants.

Part of the new atmosphere of trust would involve the government stepping back from the regulatory process and leaving it up to management and labor to decide what sort of standards should be set in a given factory.

But wouldn't labor tend to buckle under to management, to worry more about jobs than the long-range problem of health?

He said that if you talked to most workers and told them that they had two alternatives—either lose their jobs or run the risk of getting cancer in 15 years—most would say that working on the job would be a socially acceptable risk. Now the government had the responsibility of minimizing the risk as much as possible, but still, the ultimate decision had to rest with the individual worker. "I mean," he said, "why not try stopping Earl Kneivel from jumping across the canyon on his rocket? His risk was much greater than most vinyl chloride workers'."

He said he was disappointed in the level of debate on this subject. Many politicians will play it up and say there is no such thing as a socially acceptable risk when it comes to health. "But of course there is socially acceptable risk," said Ruckelshaus. "Every time you get into your car, you are taking a socially acceptable risk."

As to the question of whether it was morally right for William Ruckelshaus to represent the plastic people before the agency he used to head, the Environmental Protection Agency, he said, "There are those who would prohibit a former official from representing a client before his former agency. I would hope that former experience would not preclude the practice of law in an area where one has expertise. As a personal matter, I have no problem with the question of undue influence. My only contact with my former colleagues is through regular, official channels."

CHARLES ANDERSEN took the money the guys had raised and in August went to Disney World in Florida with their youngest daughter, Valerie. "We had a real nice time," Helen remembers, "although Chuck felt kind of lousy. He was as thin as a stick. We bought him a bathing suit but he only wore it down to the motel pool one day—I guess he felt lousy in it. After that, he would come down to the pool wearing his pants."

In September Charlie convinced to try to go to work, but it was getting harder. He was growing weaker, he had pain in his back. Helen thought the pain might have been the result of Charlie walking around hunched over; later she realized that it was probably caused by his liver tumor swelling and pressing against his other organs. Still, he didn't complain much. Helen could never really be sure how much pain he was in.

In early October, he quit work. He just couldn't stand it anymore. The back pain was worse and he decided to go to the Cleveland Clinic to see if they could give him some medication for it.

On Monday, October 13th, Charlie drove himself into Cleveland and entered the clinic. Helen had offered to drive him but he said no because she would have to drive home alone through some bad neighborhoods in the city.

On October 14th, Charlie called Helen and sounded completely out of it, very woozy. She was worried. She told him to call back when his head cleared. He didn't call back.

On October 17th, Helen and her daughter Denise went into Cleveland to see what was going on. Charlie looked horrible—it seemed like he had lost ten pounds in five days. He was heavily drugged. The guy in the next bed said, "If I was you, I'd get him out of here."

Helen and Denise put him in the car and took him home.

On October 18th, all Charlie wanted was a pain pill. "He kept asking for a pain pill, a pain pill, a pain pill," Helen remembers. "He was going through withdrawal. So I'd yell at him, 'Chuck, really, you don't need it.' For about one and a half days he was like that, and then he didn't need the pills no more."

Helen nursed him through the weekend, feeding him milkshakes.

On October 20th, she noticed that Charlie had stopped urinating and had stopped eating. She called the doctor and was told to get him to the hospital right away.

On October 21st, he entered Elyria Memorial Hospital.

On October 22nd, Bud went to visit his old friend. "I was shocked," Bud recalled. "He didn't even recognize me at first. He couldn't have weighed more than 70 pounds and Charlie used to be a pretty big guy—and he had turned yellow."

On October 24th in Los Angeles, Dr. Joseph Wagoner of the National Institute of Occupational Safety and Health, testified before a state senate committee about the dangers of vinyl chloride. He repeated the litany of horrors that had become known in the past year (Wagoner was aware of one additional horror that had yet to be announced: a second study by Dr. Jaftanc, this one showing that wives of vinyl chloride workers in a Pennsylvania factory had twice the average rate of fetal deaths—miscarriages and stillbirths).

According to newspaper reports, Wagoner supported a ban on the use of vinyl chloride (and other cancer-causing chemicals) by manufacturers, except by license, which would be granted only if there was no substitute material and if safety precautions were taken.

On October 27th, Charlie was feeling a bit better. He received some old friends, joked about their gaining weight and his losing it, then prayed with them. Outside the hospital room, Helen received reporters from the local newspaper. "He has no bitterness at all," she told them. "He never had bitterness in his heart. In fact, if he comes through this, he says he'll go back to work at Goodrich."

"God gave him to us and if He feels He wants to take Chuck home, He can,"

she said. "God loves him more than we ever could and we love him so much."

On October 28th, another announcement appeared on the bulletin board at Goodrich in Avon Lake. This one named Dr. Wagoner for his statements in Los Angeles. The company believed it "unfortunate" that Wagoner would make statements about birth defects "that are questionable and slanted." The notice was signed: R. M. Rylands, Plant Manager.

On October 29th, the *Wall Street Journal* reported that nine cases of neoplasms had been discovered at a Goodrich polyvinyl chloride plant in Quebec. All 100 workers were long dead but the company had chosen not to make an official announcement.

On October 30th, Charlie's condition worsened. The doctor said he could receive no more visitors. But was his last visitor from outside the family and he said, "It seemed like Charlie was fighting for every breath he took."

On November 1st, Charlie lapsed into a coma.

On November 2nd, in the evening, he died.

THE MEN STOOD in the rear of the room, nervously. They almost seemed frightened to sit down. They stared at the walls, shot nervous glances at each other, looked up toward the front of the room where Charlie lay in the coffin, a mere whisper of a corpse. To the left of Charlie's head there was an opened Bible. To the right, a folded flag. All around there were flowers. They seemed artificial, waxes, like Charlie's face. In the background, an organ played somber chords.

Helen sat in front with the children, shaken but composed. The night before she had performed the Herculean task of receiving condolences—from friends, from fellow workers, from company officials. She sat to the right of the coffin then, as the line of well-wishers filtered past. Her eyes were red but there was an ethereal dignity about her.

Two ministers spoke at the funeral, an old one and a young one. Both said the same thing: Charlie was happier now. They did not talk of vinyl chloride or of Goodrich. They said that while it might be difficult to understand why God had chosen to take Charlie so young, it was His will and He knew what was best. They said that Charlie had been prepared, that he hadn't been afraid, that at one point in his last days he had reached out his arms to the heavens, as if to say, "Take me. I'm ready."

After that, a long funeral procession formed and moved through the streets of Elyria. It was a beautiful autumn afternoon with golden leaves falling from the trees and children going home from school. The procession moved across town to a quiet cemetery where the pallbearers carried the coffin, now flag draped, to the grave site. There was an open tent and a row of folding chairs for the family. The young minister said a few more words here.

He said that what had happened to Charlie was similar to something that had happened to all of us when we were children. Remember, he said, when you were young and you spent a long day



Sign on railroad car from Avon Lake

Ruckelshaus: "Why not try stopping Earl Kneivel? His risk was much greater than most vinyl chloride workers'."

visiting friends with your parents. Sometimes you would fall asleep in the car and wake up the next morning safe and comfortable in your own bed, but not of wondering how you got there. That is what happened to Charlie. He was safe at home now.

Two of the pallbearers took the flag from the coffin and folded it solemnly. They handed it to Helen, who looked at it and then smiled a long, low smile that grew in strength and intensity until it seemed to engulf the entire cemetery.

She had not thought about it when she was still alive, but she had figured that if God chose to take her husband, she would devote the rest of her life to helping others. She would do volunteer work in hospitals. She expected that the company would take care of her financial needs, that it would probably give her Charlie's paycheck as if he were still working.

But the morning after the funeral a delegation from Goodrich came over to the house to explain to Helen what she would be getting. In effect, they explained, she would be getting the same as any other widow of an occupational death. She would get \$119 each week from the state workman's compensation board. She would get some money from Social Security, but only for two years until her youngest daughter turned 18. She would receive hospitalization benefits for the rest of her life. There would be some insurance money coming but they were unsure exactly how much—certainly some life insurance and perhaps some for accidental death, depending on whether the insurance company considered Charlie's death job related. (Although Goodrich said it considered the death job related, it still wouldn't admit that vinyl chloride caused neoplasms, but only that there was a "relationship" between the two.)

There was one other benefit. A gift from the company for 25 years of faithful service. A death gratuity, they called it. Four weeks' pay.

Helen was stunned and disappointed. The money wouldn't be nearly enough to live on. She would have to go to work. Friends suggested the possibility of taking legal action against the company, and for several days she considered it. Finally, she decided not to.

"A Christian," she said, "does not sue."

CORRESPONDENCE LOVE LETTERS & ADVICE

the Seven Step Rehabilitation Program?

He never cheated the public if he had about his past, he only used it as a vehicle to bring some good music to the public. Maybe the years he was in prison seemed like 20 years to him!

DOUGLAS K. JONES
Melbourne, Florida

We're really surprised to see another article on David A. Cox. And this time a little more of the truth—or "bulletin" as Shelby Singleton puts it.

After my husband and I read the first article on him, we had the biggest laugh we'd had in days. Cox and Betty spiced off of us for about two months back in 1968.

We lived in Ashland, Ohio, then. And by the way, he was never the president of an out-law motorcycle gang either. My old man was. And the bike he was riding was a baby Yamaha, also my old man's. And yes, he sure is a very convincing storyteller, sure seems like everyone bought everything he said until now. But no.

KAREN S. LIGHTFOOT
Galien, Ohio

out their legal right to fly the Panamanian flag in the Canal Zone. The Zonians attempted to thwart their efforts, and in the ensuing struggle the U.S. Army shot and killed 23 Panamanians. In the days that followed over 600 were wounded. Panama cut off diplomatic relations with the U.S., and the imperial negotiators came running to the bargaining table.

This year, the 9th of January was commemorated in events organized by the Committee for Panamanian Sovereignty.

The communists grew out of a trip last October of 40 North Americans who visited Panama as its guests for ten days. We were overwhelmed by the amount of support for the Torrijos regime's strong stand against the U.S. colonial presence. We saw how the U.S. involvement has distorted Panama's development by encouraging dependency and by keeping the country from developing other resources for its own use.

MARILYN McDONALD
Cambridge, Massachusetts

IMPRESSIONS OF SPAIN

I was in Spain last summer and vividly remember the chilling sight of the Guardia Civil patrolling the streets of Barcelona, revving those menacing machine guns under their arms, welcoming the latest batch of tourists who had crossed the border at Port-Bon.

I remember sitting in the Plaza Mayor in Madrid, drinking early into the morning with a young Spaniard and a couple from Berlin. The Spaniard cautioned us not to sing too loudly since such noise might draw the police. One of the Germans cursed "fascist Franco" while the Spaniard hung his head.

And I remember Panphos and the running of the bulls, a great spectacle staged in the heart of the Basque country. "Franco would never come here," a Pamplona youth proudly boasted to me. "If he did, there would be bombs."

The people of Spain are friendly and brave these intricacies. It is indeed a country to watch, hopefully for readers of ROLLING STONE, through future dispatches by writers like Donald Katz ("Dispatch from the Valley of the Fallos," RS 203).

FREDERICK BURGESS
Marietta, Georgia

A BLUE NOTE

Howard Dog Taylor and Arthur Chubbuck could have used some Rolling Stone publicity while they were still around.

I'd speculate that over half your readers never heard of either man until their obituaries appeared. How about some positive publicity for the black bluesman for a change? Don't wait until he's dead to sing his song. I expect more from RS.

LEE PHARR
Tucson, Arizona

We made a New Year's Resolution to do more than play the hits. Sorry it didn't do Howard Wolf any good.—Ed.

ERRATA

With regard to the story of the yachting, the statement was

made falsely that a stripped hull of a vessel was found off the coast of Bolivia. My maps tell me that this is a nice rich, since Bolivia is a landlocked country. Otherwise, the story was the kind of hard-core reporting I expect to see more frequently in ROLLING STONE.

BILL LAVELLE
Cedar Rapids, Iowa

Okay, okay, so that one was a yachting.—Ed.

In my Pat Boone story I stated that Will Chamberlain was among the several hundred donors whom Pat baptized in his pool. I have since learned that this is not true. Although Will had an infarct have caused as the result of prayer at the Boone's, he never was baptized there. I apologize for the error.

—John B. Anderson

THE PVC CONTROVERSY

THE COMPANY LINE

We have read with considerable interest "The Plastic Collar of Charlie Arthur," in your January 15th issue (RS 204). The article contains errors of fact and omission but, more importantly, it accuses R.F. Goodrich officials of trying to cover up a critical problem. The following corrections of some of the more important inaccuracies indicate the flaws in your article.

ITEM: "Maltoni was working for a group of European chemical manufacturers who wanted his findings kept secret. The American companies were all too happy to agree—so for the year before the Goodrich announcement the companies covered up Maltoni's findings that vinyl chloride caused cancer" (page 64, Col. 4).

FACT: In late 1973 companies in the Manufacturing Chemists Association were planning studies to evaluate findings that ran subjected to 30,000 pure vinyl chloride per million had developed tumors. Representatives of American companies visited Dr. Cesar Maltoni in Bologna in January 1973. Maltoni told them that preliminary results had found cancer in some test rats, but he was unable to reach firm conclusions at that time.

U.S. government scientists knew of Maltoni's preliminary results early in 1973 but con-

sidered them to be as preliminary as did U.S. industry. Umberto Saffroni, associate director of carcinogenesis at the U.S. National Cancer Institute, attended a symposium at Bologna, Italy, April 9th to 12th, at which Dr. Maltoni showed a table giving preliminary results linking vinyl chloride with cancer in rats.

On July 17th, one European and four U.S. industry representatives presented NCI information that malignant tumors had been found in animals exposed to vinyl chloride. At that time no human cancer cases had been reported. Maltoni's results had not been completed and he had not issued a full report.

ITEM: The story reports that Dr. Peter Infante, then of the Ohio Department of Health, had found that three northern Ohio communities with polyvinyl chloride plants had higher than average birth defects (page 45, col. 2).

FACT: Dr. Infante, in his report to the New York Academy of Science, stated that there is not sufficient evidence to link vinyl chloride in birth defects.

The Center for Disease Control of the U.S. Public Health Service reported on July 19th, 1973, that the study "could not establish any relationship between cases [birth defects] and vinyl chloride exposure."

ITEM: The [Cont. on 8]

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LETTERS

[Cont. from p. 1] story quote a worker, "Harry," who charged that a supervisor had "pulled the plug" on a Goodrich plant monitoring system, so that work could continue during periods of higher exposure. The story correctly states that the company denied these charges (page 46, col. 3).

FACT: Goodrich PVC plants have two monitoring systems—a computerized area monitoring system and personal monitoring systems. OSHA requires that all records must be kept and made available to both federal inspectors and employees. A recent check of these records shows no gap.

ITEM: The story quotes "other workers" as saying that when government inspectors visited our Ohio PVC plant, the company shut down most of the vinyl chloride lines, claiming that maintenance work was being done on them (page 46, col. 3).

FACT: Under the OSHA inspection system, inspectors visit plants without prior notice, and therefore could arrive when maintenance operations are occurring. Since it takes some time to shut down and restart PVC reactions, this rumor is not only untrue, it just doesn't make sense.

ITEM: ROLLING STONE quotes the *Wall Street Journal*, which reported that nine PVC workers at the Shawinigan plant of BFG Canada had died from asbestosis. But the company had chosen not to make an official announcement (page 47, col. 3).

FACT: The *Wall Street Journal* story, which itself resulted from a company announcement, states: "Goodrich Canada announced in a news release last December that four cases of liver asbestosis had been uncovered from death records of former Shawinigan workers... The U.S. parent company said in its annual report last spring that the Shawinigan asbestosis toll had climbed to eight deaths."

Only one of these men ever worked at the Shawinigan plant after it was purchased by Goodrich Canada. None of the rest were Goodrich workers although the article said they were.

The *Wall Street Journal* also reported, correctly, that we had reported all these cases to the U.S. National Institute of Occupational Safety and Health. The cases that were reported to Quebec authorities and to all PVC employees in Canada. The Shawinigan release was carried in the U.S. by the Associated Press.

Since Joe Klein, your reporter, apparently had the *Wall Street Journal* story, we cannot understand his allegation that the company "chose not to make an official announcement."

ITEM: The report states that "...hearings were called on a proposed permanent standard of 1 ppm," and goes on to say that at the public hearings, the chemical manufacturers threatened that the whole industry would be forced to shut down if the standard was implemented (page 46, col. 1).

FACT: The proposed standard called for "no detectable" level of vinyl chloride in the work atmosphere, not 1 ppm. This is important in correctly reporting the industry's objection. The proposed "no detectable" provision was ambiguous. If it had been interpreted as "no detectable" by any test method—in other words, zero—it would indeed have shut down the industry.

The article clearly implies that B.F. Goodrich conspired to suppress information relating to employees' health and then to prevent implementation of safeguards to resolve this most serious situation. This implication is unfounded.

Omitted from Klein's story are such facts as: Goodrich freely and voluntarily publicized its findings of the first angiograms since when they were discovered. The company supplied detailed information to employees, state and federal officials and the industry. Goodrich has conducted the largest research program in its history, and is spending an estimated \$42 million to prevent exposure to vinyl chloride in plants, in the environment and in products. The company has stated that it can operate within all present and expected regulations.

THOMAS B. MARTE
Executive Vice President
The B.F. Goodrich Company

THE AUTHOR'S REPLY

The objections raised by Goodrich are minute or easily refuted. I'll answer them in order.

1. *Malcolm's cancer findings:* Every independent scientist I spoke with agreed that by the time the corporate officials denied Malcolm, he had pretty much proven that vinyl chloride gas causes cancer. The fact that the U.S. government was aware of Malcolm's tests and didn't act makes it as guilty as Goodrich and the

other plastics people. The question remains: why, if there was even a minimum that vinyl chloride causes cancer, did the company move to improve conditions in its factories?

2. *Infant's birth defect findings:* In the story I said that Malcolm's findings were not conclusive ("There was no smoking gun"), only because there wasn't enough data to yet. In talking to Malcolm, I found that he stands behind his study despite Goodrich's attempts to discredit it.

3. *The statements by "Harry" and "other workers":* The mounted Goodrich monitoring systems do indeed exist, as I reported. The question is whether Goodrich is fiddling with the machines, lowering the counts. Goodrich claims that its data is available to government inspectors. But government inspectors in this country are pretty much a force. There are 248 government hygienists who are supposed to monitor air quality in 4.1 million workplaces. If they want to know the truth, they would hit each workplace once every 100 years. So it comes down to a question of trust. Do you trust Goodrich, which has for almost a decade that vinyl chloride causes

beer damage and didn't do anything about it? Or do you trust the workers, who are so docile and loyal to the company that they haven't even learned a name? There wasn't room in the story for all the things the workers told me about conditions at Avon Lake. Suffice to say, Harry was not an isolated case.

4. *The "Wall Street Journal" story:* I concede. Goodrich is to be congratulated for announcing the deaths of nine Canadian workers.

5. *The proposed permanent standard:* Again, I concede. But would the plastics people have acted any differently if the proposed standard had been 1 ppm, instead of 0 ppm? At its New York press conference, Goodrich admitted that it had overreacted to the proposed standard.

Finally, the most striking thing about the letter is that Goodrich does not even mention Charlie Arthur or the shoddy way the company has treated his wife since he died. The letter is no more than another piece of evidence that the company puts its profits and public image ahead of its concern for human life.

A READER'S CONCERN

Joe Klein's chilling article on the polyvinyl chloride danger brought to mind several questions which were not answered.

- (1) Is there any danger from common household plastic articles?
- (2) What are the alternative plastics to PVC—and are they just as dangerous?
- (3) What common items are PVC and what are other plastics?
- (4) Has anyone suggested how the PVC workers' wives might have become infected?
- (5) What other possible causes are there of this rare form of liver cancer, if any?
- (6) Is vinyl chloride any longer in use as a solvent preservative?

DICK ESTEL
Chicago, Illinois

Here's a partial list of places that can answer your questions: Health Research Group (Director), 3000 "T" Street NW, Washington D.C. 20036; Mt. Sinai School of Medicine, Environmental Sciences Lab, 100th St. and Fifth Ave., New York, NY 10029; National Institute for Occupational Safety and Health, Room 533, Post Office and Courthouse Building, Cincinnati, OH 45202; Environmental Protection Agency, Office of Toxic Substances, 601 "M" Street SW, Room 711, East Tower, at Dr. Waller, Washington D.C. 20460.

HOPEFUL SIGNS

After we published Joe Klein's "The Plastic Coffin of Charlie Arthur" *Washington Star* columnist Mary McGrory devoted a column to the story and the issues it raised. Her column is reprinted in some 60 papers. McGrory reported that the Environmental Protection Agency has scheduled public hearings on proposed standards that would lower plant emissions of vinyl chloride by more than 90%. A recent EPA task force report stated that "there is no objective proof of adverse effects

of... vinyl chloride in the ambient air. However, for carcinogenic, there may be no atmospheric concentration which poses absolutely no public health risk."

McGrory stressed the dangers to PVC workers and those who live near the plants and suggested that some whom may ask to read the article stand during the hearings. She described the feeling among PVC workers that they would rather risk cancer in 10 years than be jobless. We checked

back with some workers at the Avon Lake plant and they confirmed that most still feel this way, despite what has happened there. But our story has raised serious questions in their minds, questions about their own health and the welfare of their families, and this may be enough to bring the United Rubber Workers Union into the plant when decisions are made this spring.

Mrs. Arthur did receive benefits on a regular group life insurance policy, but only after a two-month delay compounded for her and her family to apply pressure on Goodrich. She remains pessimistic about her chances of receiving benefits on her claim of accidental death on the "death" policy Charlie held during his 21-year employment at Goodrich.

The *Lorain Journal*, the community paper of Avon Lake, reprinted Klein's article on January 4th, even though they had been following the story on a day-to-day basis since the announcement of Arthur's illness in March 1975. The *Journal* reported a "splendid" response.

Finally, we are intrigued by a report that when the article appeared on the bulletin board at the Avon Lake plant, management felt obliged, a worker tells us, to remove it.—Ed.



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OFFICIAL ASSAILS CANCER INSTITUTE

Scientist Calls Strong Curb on Exposure to Vinyl Chloride 'Irrational'

4/7/75

By DAVID BURNHAM

Special to The New York Times

WASHINGTON, April 6—A key Federal official has denounced the scientists of the National Cancer Institute as "a lot of old fogies" and has described as "an irrational decision" a Government requirement that workers be exposed to virtually no vinyl chloride.

The criticism was voiced by Dr. Herbert E. Stockinger, who occupies prominent positions in both the Federal agency now responsible for establishing industrial exposure levels and the professional association that has recommended these standards for many years.

The position of the cancer institute and other Federal agencies is that exposure to even the smallest amounts of vinyl chloride—the chemical base of a widely used plastic—should be avoided by workers because it has been shown to cause cancer at very low levels of exposure and because its safety has not been demonstrated at any level.

Dr. Stockinger is chief of the toxicology branch of the National Institute for Occupational Safety and Health, the Federal agency established in 1970 to develop industrial exposure levels. He is also chairman of the committee on threshold limits of the American Conference of Governmental Hygienists, an organization whose recommended standards have dominated health practices in the United States and scores of other countries for many years.

Criticized Institute

The official criticized the cancer institute during a telephone interview when asked about a letter in which he said the Government's vinyl chloride requirement was wrong.

The letter, a copy of which has been obtained by The New York Times, was addressed to Dr. Marcus M. Key, the recently retired director of the Institute for Occupational Safety and Health and Dr. Stockinger's superior.

"I was consternated, as were members of my threshold limits committee, when we no longer had your name associated with the essentially zero tolerance for exposure to vinyl chloride," Dr. Stockinger's letter began.

"In making the irrational decision it is clear to us that you have fallen into the fallacious trap of believing that because the substance produces dire consequences at massive concentrations (and in this case probably aided by promoters), such consequences will result from exposure at all concentrations. Wrong!"

In the interview last week, Dr. Stockinger stood by his criticism of the Government's position on vinyl chloride, which he charged had been made for "political and other reasons."

Dr. Stockinger then was asked about the statement of Dr. Frank J. Rauscher, director of the National Cancer program of the cancer institute, that repeated exposures to 250 parts per million of vinyl chloride should be regarded as a carcinogenic risk.

"The safety of vinyl chloride has not been demonstrated at any level: there is no practical scientific method to prove experimentally the safety of any level of exposure to a carcinogen," Dr. Rauscher said.

"Oh, there are a lot of old fogies over there at the National Cancer Institute," Dr. Stockinger replied.

Dr. Key, who received Dr. Stockinger's letter, now is a professor of occupational medicine at the University of Texas's School of Public Health in Houston.

Asked about the letter, Dr. Key said that though he had the "utmost respect for Dr. Stockinger, I think I just let it drop."

The threshold limits committee that Dr. Stockinger heads has recommended exposure levels for more than 500 individual chemicals or families of chemicals since it was formed in the late nineteenth-thirties. These standards were accepted as a package by the Federal Government in 1971 under the law creating the National Institute for Occupational Health and Safety, pending the slow process of a complete review.

U.S.S.R. an Exception

The standards of Dr. Stockinger's committee also form the basis for the exposure levels permitted in almost all other countries of the world except the Soviet Union and the Eastern European socialist countries.

In another Government health development the Institute for occupational health has begun proceedings to discharge one of its scientists after he accused the institute of needlessly exposing American workers to the risk of cancer.

The allegation was made a little more than two months ago by Dr. Stanley C. Mazaleski, in an affidavit filed in Federal court.

On March 19, the institution which has denied the charge, informed Dr. Mazaleski that his services would "be terminated because of marginal or substandard performance by you." The scientist, who is challenging his dismissal, said that the action was "an act of retaliation because of my criticism."

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CBS REPORTS
THE CASE OF THE PLASTIC PERIL
WITH CBS CORRESPONDENT MORTON DEAN

LAKE CHARLES REPORTING SERVICE

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"RAY, I HATE TO TELL YOU THIS, BUT YOU'VE GOT
ANGIOSARCOMA."
NARRATOR:
MANY WORKERS WHO DON'T HAVE CANCER WORRY ABOUT
GETTING IT.
UNIDENTIFIED SPEAKER:
THEY FOUND OUT THAT I HAD A DISEASED LIVER.
MY SPLEEN WAS INFECTED PLUS MY LIVER WAS ENLARGED
ALSO.
UNIDENTIFIED SPEAKER:
MY TEST CAME BACK BAD, AND I'M ONLY 26 YEARS
OLD. A COUPLE OF YOUNG KIDS. IT REALLY SCARES YOU.
NARRATOR:
AT A CONGRESSIONAL HEARING, DEEP CONCERN OVER
WHETHER THE RISK EXTENDS BEYOND THE THOUSANDS WORKING
WITH THE CHEMICAL TO THE HUNDREDS OF THOUSANDS
WORKING ON THE FINISHED PRODUCT.
DR. IRVING J. SELIKOFF,
MOUNT SINAI SCHOOL OF MEDICINE:
THIS IS SOMETHING WE DON'T KNOW, AND YOU
CAN'T EXPECT ME TO ANSWER THAT QUESTION BECAUSE THE
RESEARCH NEEDED TO HAVE GIVEN THE INFORMATION FOR AN
ANSWER TO THAT QUESTION HAS NEVER BEEN DONE. NOR DO
I KNOW, FOR EXAMPLE, WHAT THE HAZARD IS AMONG PEOPLE
LIKE YOURSELF AND ME, WHO IN OUR SPARE TIME MAY DO

LAKE CHARLES REPORTING SERVICE

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NARRATOR:
THIS STORY BEGINS IN A FACTORY. WE DON'T KNOW
WHERE IT ENDS. IT IS THE STORY OF A SUSPECTED
KILLER, A CHEMICAL NAMED VINYL CHLORIDE. VINYL
CHLORIDE, A BASIC BUILDING BLOCK IN POLYVINYL
CHLORIDE -- POLYVINYL CHLORIDE, BY ITS ASSUMED NAME,
PLASTIC. VINYL PLASTIC, FINDS ITS WAY INTO
EVERY AMERICAN HOME AND BUSINESS. WE LISTEN TO
RECORDS PRESSED FROM IT. WE WALK ON IT. RIDE IN
CARS FULL OF IT. WE EAT OFF OF IT, AND FOOD WE EAT
IS WRAPPED IN IT. WE SHOWER BEHIND IT.
WE GUZZLE BEER FROM CANS LINED WITH IT.
BABIES PACIFIED BY NIPPLES MOLDED FROM IT, AND THE
BLOOD OF LIFE FLOWS THROUGH IT. A MULTI-BILLION
DOLLAR INDUSTRY HAS CREATED A PLASTIC PARADISE, THE
MODERN WAY OF LIVING.
IT HAS ALSO CREATED A PLASTIC PERIL. IT HAS
SPAWNED A NEW OCCUPATIONAL DISEASE, STRIKING WORKERS
IN THE VINYL CHLORIDE INDUSTRY, A CANCER CALLED
ANGIOSARCOMA OF THE LIVER. THE FIRST VICTIMS
DISCOVERED ONLY RECENTLY. WE KNOW OF 14 DEATHS SO
FAR IN THE UNITED STATES, 26 DEATHS SO FAR
WORLDWIDE.
RAY GETTELFINGER:
DR. CREICH (SP) FINALLY SHOOK ME AND SAYS,

LAKE CHARLES REPORTING SERVICE

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SOME DO-IT-YOURSELF HOME PAINTING WITH VINYL PAINTS,
IN WHICH THE RESIN HAS BEEN PLACED AND WHICH WE'RE
ALL WORRIED ABOUT NOW THAT THEY MAY CONTAIN VINYL
CHLORIDE AND THEREFORE CONSTITUTE A CANCER HAZARD IN
MANY HOMES.
NARRATOR:
VINYL CHLORIDE, HOW MUCH A HAZARD IN OUR
HOMES? HOW MUCH A HAZARD IN OUR FACTORIES? HOW MUCH
IS BEING DONE ABOUT IT?
CARL E. STRAHL DIED IN 1968; DEAD AT THE AGE
OF 43. JOSEPH H. DARST DIED IN 1971; DEAD AT THE AGE
OF 38. EZRA R. DINWIDDIE DIED IN 1973; DEAD AT THE
AGE OF 58. EARL E. PARKS DIED IN 1973; DEAD AT THE
AGE OF 48.
FOUR MEN WITH SEVERAL THINGS IN COMMON: HOW
AND WHERE THEY EARNED THEIR LIVING; HOW AND WHY THEY
MET THEIR DEATH. THEY WERE KILLED BY AN EXTREMELY
RARE CANCER, A RARE CANCER OF THE LIVER CALLED
ANGIOSARCOMA. THEY ALL WORKED AT THE SAME PLACE,
B. F. GOODRICH, LOUISVILLE, KENTUCKY.
AND THEY ALL WORKED AT THE SAME JOB,
CONVERTING VC, VINYL CHLORIDE, FROM A LIQUEFIED GAS
INTO PVC, POLYVINYL CHLORIDE, A RESIN, WITH
PLASTICIZERS ADDED. IT BECOMES ONE OF THE MOST WIDELY
USED PLASTICS, VINYL PLASTIC.

LAKE CHARLES REPORTING SERVICE

4

1 THIS GOODRICH PLANT IS ONE OF THE OLDEST
2 POLYVINYL CHLORIDE FACILITIES IN THE COUNTRY. DATING
3 BACK TO 1942 WHEN THE PLASTICS INDUSTRY WAS IN ITS
4 INFANCY. RECENTLY, WORKING CONDITIONS AND FEDERAL
5 REGULATIONS AFFECTING THE INDUSTRY HAVE CHANGED
6 DRAMATICALLY.
7 IN APRIL THE DEPARTMENT OF LABOR, FACED WITH
8 MOUNTING EVIDENCE THE DEADLY DISEASE ANGIOSARCOMA WAS
9 AN OCCUPATIONAL HAZARD, SET A TEMPORARY EMERGENCY
10 NATIONAL STANDARD. THE STANDARD, LIMITING THE AMOUNT
11 OF VINYL CHLORIDE IN THE AIR WORKERS BREATHE TO 50
12 PARTS OF VINYL CHLORIDE PER ONE MILLION PARTS OF
13 AIR.
14 A DRASTIC DROP FROM THE PREVIOUS LEVEL OF 500
15 PARTS PER MILLION, BUT NOT LOW ENOUGH TO SATISFY
16 LABOR OR THE NATIONAL INSTITUTE FOR OCCUPATIONAL
17 SAFETY AND HEALTH. THEY HAD ARGUED THAT THE ONLY
18 SAFE LEVEL WAS NO LEVEL.
19 IN PLANTS SUCH AS GOODRICH THERE IS MORE
20 FREQUENT MONITORING OF THE EXPOSURE LEVEL NOW
21 PROTECTIVE CLOTHING AND MASKS MORE FREQUENTLY USED.
22 CHANGES RESULTING FROM OR ACCELERATED BY THE
23 DISCOVERY THAT AN UNUSUALLY LARGE NUMBER OF EMPLOYEES
24 AT THIS PLANT -- SIX NOW KNOWN DEAD, TWO VICTIMS
25 STILL LIVING -- WERE STRUCK BY THIS RARE CANCER. THE

LAKE CHARLES REPORTING SERVICE

5

1 UNIDENTIFIED SPEAKER:
2 I HAVEN'T SEEN ANYTHING THEY'VE DONE FOR THE
3 VENTILATION IN THE MILL ROOM.
4 UNIDENTIFIED SPEAKER:
5 I SAY VENTILATION IS PITIFUL. AND I SAY THAT
6 I GET FILTHY CONSTANTLY. AND MY TESTS CAME BACK BAD
7 AND I'M ONLY 26 YEARS OLD. A COUPLE OF YOUNG KIDS,
8 IT REALLY SCARES YOU.
9 I'M UP THERE EVERYDAY FOR EIGHT HOURS. AND I
10 BREATHE IT. AND I PROBABLY BREATHE IT MORE THAN
11 ANYBODY BECAUSE I'M FILTHY WHEN I GET OUT. AND I
12 KNOW IT'S IN MY LUNGS BECAUSE I COUGH IT UP.
13 MORTON DEAN:
14 WHAT CONCERNS YOU MOST WHEN YOU WALK IN THAT
15 SHOP IN THE MORNING?
16 UNIDENTIFIED SPEAKER:
17 WELL, THE FACT THAT IT'S AN UNCURABLE DISEASE
18 SO FAR AND THAT THERE IS NO 100 PERCENT TEST THAT
19 TELLS YOU WHETHER YOU DO OR DO NOT HAVE IT UNTIL IT
20 GETS TO THE ADVANCED STAGE. AND ONCE IT GETS TO THAT
21 STAGE, SO FAR, THEY SAY IT'S UNCURABLE.
22 MORTON DEAN:
23 YOU'RE TALKING ABOUT CANCER OF THE LIVER?
24 UNIDENTIFIED SPEAKER:
25 YEAH.

LAKE CHARLES REPORTING SERVICE

7

1 IMPROVEMENT IN WORKING CONDITIONS HERE AT GOODRICH,
2 AND IN OTHER PVC PLANTS ACROSS THE COUNTRY, HAVE NOT
3 ELIMINATED THE CONTROVERSY OVER HOW RISKY IT IS TO
4 HOLD SUCH A JOB. ANTOINE VATONY (SP), PRESIDENT OF
5 THE CHEMICAL DIVISION OF B. F. GOODRICH,
6 ANTOINE VATONY.
7 PRESIDENT, CHEMICAL DIVISION OF B. F. GOODRICH:
8 THE PLANT, IN OUR OPINION, IS AS SAFE TODAY
9 FROM THIS RISK AS IT IS FROM OTHER RISKS -- THE RISKS
10 OF EXPLOSION, WHICH WE'VE ALWAYS WORRIED ABOUT. THE
11 RISK OF MECHANICAL FAILURES AND SO FORTH, WHICH WE
12 HAVE, OF COURSE, CONCENTRATED ON.
13 NARRATOR:
14 THE OPTIMISM AND THE CONFIDENCE OF THE
15 PRESIDENT OF THE CHEMICAL DIVISION OF B. F. GOODRICH,
16 NOT SHARED BY MANY OF THE WORKERS AT THE LOUISVILLE
17 PLANT.
18 MORTON DEAN:
19 DO YOU WORK IN WHAT THE COMPANY NOW CONSIDERS
20 TO BE A SAFE AREA?
21 UNIDENTIFIED SPEAKER:
22 THE MILL ROOM IS SUPPOSED TO BE A SAFE AREA.
23 THERE IS A DUST PROBLEM, BUT YOU'RE BREATHING FUMES
24 AND DUST. AND HOW DO THEY KNOW THAT THERE WON'T BE A
25 CHEMICAL LUNG PROBLEM ON TOP OF A LIVER PROBLEM?

LAKE CHARLES REPORTING SERVICE

6

1 MORTON DEAN:
2 DOES THAT PREY ON YOUR MIND? I MEAN, IS IT
3 SOMETHING THAT IS CONSTANTLY WITH YOU OR NOT?
4 UNIDENTIFIED SPEAKER:
5 WELL, I HAD A HIGH READING MY FIRST TEST AND
6 IT SCARED ME.
7 JIM SANFORD:
8 I'VE GOT A LITTLE DAMAGE TO MINE, AND THE
9 DR. CREICH TOLD ME IT WAS FROM VINYL CHLORIDE.
10 MORTON DEAN:
11 TO YOUR LIVER?
12 JIM SANFORD:
13 YES. BUT IF I'VE ALREADY GOT DAMAGE, THEN HOW
14 MUCH MORE IS IT GOING TO TAKE? IT JUST KIND OF
15 UPSETS ME AND MY WIFE NATURALLY AND MY MOTHER. AND
16 IT'S -- I KNOW IT'S A PROBLEM. IT'S JUST, WHAT DO
17 YOU DO?
18 MORTON DEAN:
19 QUIT?
20 JIM SANFORD:
21 WELL, I'VE BEEN THERE 22 YEARS AND PRACTICALLY
22 MY WHOLE LIFE, MY WHOLE WORKING LIFE, SO IT'S NOT
23 THAT EASY. I MEAN, 22 YEARS OLD YOU CAN RETIRE, AND
24 I'VE ONLY GOT EIGHT YEARS, IF I CAN MAKE IT.
25 NARRATOR.

LAKE CHARLES REPORTING SERVICE

8

1 TWO MONTHS AFTER THIS INTERVIEW, JIM SANFORD
2 WAS ONE OF EIGHT EMPLOYEES WITH LIVER DAMAGE
3 FURLONGED FROM WORK WITH PAY. THE COMPANY FELT IT
4 WAS TOO RISKY FOR THEM TO CONTINUE ON THE JOB. THE
5 COMPANY HAD BEGUN EXTENSIVE MEDICAL EXAMINATIONS OF
6 ITS EMPLOYEES, INCLUDING LIVER FUNCTION TESTS IN
7 SEPTEMBER 1973.
8 ACCORDING TO B. F. GOODRICH, THE PLANT'S
9 MEDICAL DIRECTOR WAS DISCOVERING MORE LIVER PROBLEMS
10 AMONG PLANT WORKERS THAN HE WAS FINDING IN HIS OWN
11 PRIVATE PRACTICE.
12 IN THE INITIAL TESTS OF OVER 270 PVC
13 EMPLOYEES, 55 WERE FOUND TO HAVE LIVER ABNORMALITIES
14 AND WERE GIVEN FURTHER EXAMINATIONS. 15 OF THOSE
15 CONSIDERED TO HAVE POSSIBLY SIGNIFICANT LIVER
16 DISEASE.
17 HORTON DEAN:
18 HOW MANY TESTS HAVE YOU HAD?
19 UNIDENTIFIED SPEAKER:
20 THIS IS MY FOURTH BLOOD TEST.
21 HORTON DEAN:
22 WHAT HAPPENED TO THE OTHER THREE?
23 UNIDENTIFIED SPEAKER:
24 I HAVEN'T PASSED THEM SATISFACTORILY YET. I
25 REALLY DON'T KNOW ALL OF THE DETAILS OF IT, JUST THAT

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9

1 HORTON DEAN:
2 HOW LONG HAVE YOU WORKED AT THE PLANT?
3 MR. ASHLEY:
4 I'VE BEEN THERE FOR NINE MONTHS.
5 HORTON DEAN:
6 HOW OLD ARE YOU?
7 MR. ASHLEY:
8 NINETEEN.
9 NARRATOR:
10 IN THE COURSE OF TESTING, TWO CASES OF
11 ANGIOSARCOMA OF THE LIVER WERE DISCOVERED. BOTH MEN
12 NOW UNDERGOING EXPERIMENTAL TREATMENT. ONE, RAY
13 GETTELFINGER, 42 YEARS OLD, FATHER OF SIX CHILDREN.
14 GETTELFINGER SAYS HE AND SOME OF HIS COLLEAGUES WERE
15 UNEASY, HAD A FEELING YEARS AGO THAT SOMETHING WAS
16 WRONG.
17 RAY GETTELFINGER:
18 WE HAD FEARS; WE DON'T KNOW WHY. BUT ALONG
19 THERE ABOUT TEN YEARS AGO -- I'D SAY, SOMETHING NEAR
20 1965 -- WE'D LOST TWO OR THREE OF OUR BUDDIES, WHICH
21 EVERYONE DOES WHERE HE IS EMPLOYED.
22 AND WE GOT TO LOOKING AROUND, AND WE GOT TO
23 THINKING NOW, "POSSIBLY THERE IS TOO MANY OF US GUYS
24 GOING OUT OF HERE THE WRONG WAY." WE GOT TO
25 WONDERING, "NOW, WE BETTER NOT WORRY TOO MUCH ABOUT

LAKE CHARLES REPORTING SERVICE

11

1 I AM STILL ON RETESTING PROCESS. I HAVE (INAUDIBLE
2 WORD) DOWN IN TWO AREAS, WHICH I DON'T KNOW WHAT TWO
3 AREAS THEY REALLY ARE, OR WHAT THEY MEAN TO ME. I
4 REALLY DON'T, SO I'M JUST WAITING FOR THE DOCTORS TO
5 FIND OUT. I DON'T BELIEVE THEY KNOW FOR SURE.
6 HORTON DEAN:
7 APPREHENSIVE?
8 UNIDENTIFIED SPEAKER:
9 YES, VERY. I HAVE FOUR CHILDREN. I'M KIND OF
10 WORRIED, BUT JUST HAVE TO WAIT AND SEE WHAT HAPPENS.
11 HORTON DEAN:
12 MR. ASHLEY, HOW MANY TESTS HAVE YOU HAD?
13 MR. ASHLEY:
14 THIS IS MY EIGHTH TEST.
15 HORTON DEAN:
16 EIGHTH?
17 MR. ASHLEY:
18 YES, SIR.
19 HORTON DEAN:
20 WHAT WERE THE RESULTS OF THE OTHER SEVEN?
21 MR. ASHLEY:
22 THEY WERE ALL BAD. HE SAID THAT -- WELL, THEY
23 WAS IMPROVING, BUT THEY WERE STILL -- YOU KNOW, THEY
24 WASN'T GOOD ENOUGH FOR ME TO GO BACK TO THE AREA, TO
25 PVC.

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10

1 RETIRING. WE BETTER WORRY ABOUT LIVING UNTIL WE'RE
2 OLD ENOUGH TO RETIRE."
3 HORTON DEAN:
4 DID YOU DO ANYTHING ABOUT IT?
5 RAY GETTELFINGER:
6 WE DIDN'T DO NOTHING. I'LL TELL YOU, THE
7 COMPANY SAT ON THE OTHER SIDE AND DID THE SAME THING.
8 THEY DIDN'T DO ANYTHING.
9 HORTON DEAN:
10 DO YOU WISH SOMETIMES THAT YOU HAD NEVER SEEN
11 OR HEARD OF POLYVINYL CHLORIDE RESIN?
12 RAY GETTELFINGER:
13 NO, I DON'T WISH THAT. I'VE LEARNED LOTS. I
14 RAISED A FAMILY WITH IT. IT'S PUT A BUNCH OF
15 GROCERIES ON THIS TABLE. AND NOT ONE OF US COULD GO
16 IN ANY ROOM OF OUR HOME WITHOUT SEEING A PRODUCT THAT
17 WE HAVEN'T MADE.
18 HORTON DEAN:
19 YOU'RE PROUD OF THAT. YOU FEEL AS IF YOU'VE
20 REALLY MADE A CONTRIBUTION TO THE LIFE-STYLE --
21 RAY GETTELFINGER:
22 I THINK EVERYONE SHOULD FEEL THAT WAY ABOUT
23 HIS PROFESSION.
24 HORTON DEAN:
25 DESPITE YOUR ILLNESS?

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12

1 RAY GETTELFINGER:
 2 DESPITE MY ILLNESS. DESPITE MY ILLNESS AND
 3 DESPITE THE CHANCES OF MY FUTURE. I HAVE FEARS,
 4 THERE IS NO DOUBT, WHICH YOU UNDERSTAND, AND I THINK
 5 ANYONE WOULD.
 6 BUT I FIGURE THAT -- I'VE ALWAYS SAID, AND MY
 7 WIFE CAN VERIFY THIS, FROM THE TIME WE GOT MARRIED 23
 8 OR 24 YEARS AGO -- THAT WE WOULD MUCH RATHER LIVE,
 9 AND LIVE HARD FOR 40 YEARS, THAN EXIST FOR 80
 10 NARRATOR:
 11 RAY GETTELFINGER WORKED AT THE LOUISVILLE
 12 PLANT FOR 28 YEARS. 28 YEARS IN THE RANGE OF TIME IT
 13 TAKES FOR MOST CANCERS TO DEVELOP. IT WAS 28 YEARS
 14 AGO THAT THE PLASTICS INDUSTRY ENTERED INTO A PERIOD
 15 OF MASSIVE EXPANSION.
 16 TODAY, THERE ARE SOME 50 VC AND PVC PROCESSING
 17 PLANTS IN THE UNITED STATES, EMPLOYING 6500 WORKERS
 18 AND THOUSANDS OF FACTORIES EMPLOYING HUNDREDS OF
 19 THOUSANDS OF WORKERS, WHO MAKE THE MYRIAD VINYL
 20 PLASTIC PRODUCTS THAT ARE FOUND IN EVERY AMERICAN
 21 HOME AND BUSINESS.
 22 THE FEAR NOW, THE TIME-BOMB THEORY, HAS AN
 23 EPIDEMIC BEGUN? IS THIS DISEASE, UNTIL NOW, AT
 24 LEAST, SO RARE THAT IT HAS BEEN BLAMED FOR KILLING
 25 LESS THAN 25 PERSONS OUT OF MORE THAN A MILLION

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13

1 THEN UP! MOVE THEN UP! KEEP GOING! KEEP GOING!
 2 NARRATOR:
 3 THE CONCERN OF THE MEDICAL TEAM EXTENDED
 4 BEYOND THE WELL-BEING OF THE WORKERS THEMSELVES.
 5 UNIDENTIFIED SPEAKER:
 6 TAKE THEM HOME?
 7 UNIDENTIFIED SPEAKER:
 8 TAKE THEM HOME, YEAH.
 9 UNIDENTIFIED SPEAKER:
 10 YOUR WIFE WASHES THEM?
 11 UNIDENTIFIED SPEAKER:
 12 RIGHT.
 13 UNIDENTIFIED SPEAKER:
 14 LAUNDERED WITH THE FAMILY LAUNDRY BY YOUR
 15 WIFE?
 16 DR. IRVING SELIKOFF:
 17 TELL ME WHO WASHES YOUR CLOTHES
 18 UNIDENTIFIED SPEAKER:
 19 THE WIFE.
 20 DR. IRVING SELIKOFF:
 21 YOUR WIFE DOES?
 22 UNIDENTIFIED SPEAKER:
 23 YES.
 24 DR. IRVING SELIKOFF:
 25 YOU BRING THEM HOME THEN?

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15

1 AND-A-HALF AMERICANS WHO DIE EACH YEAR FROM DISEASE
 2 AND NATURAL CAUSES -- IS THIS RARE DISEASE,
 3 ANGIOSARCOMA OF THE LIVER, ABOUT TO BECOME A COMMON
 4 KILLER?
 5 WITHIN WEEKS AFTER THE DISCOVERY OF THE
 6 ORIGINAL ANGIOSARCOMA DEATHS OF GOODRICH WORKERS AT
 7 LOUISVILLE, A CHECK OF DEATH RECORDS REVEALED SOME
 8 VINYL CHLORIDE WORKERS IN OTHER PLANTS IN OTHER
 9 CITIES HAD DIED FROM THE RARE DISEASE.
 10 AT UNION CARBIDE, SOUTH CHARLESTON, WEST
 11 VIRGINIA, ONE WORKER DEAD. GOODYEAR, NIAGARA FALLS,
 12 NEW YORK, THREE WORKERS DEAD. FIRESTONE, HOUTZDALE,
 13 PENNSYLVANIA, ANOTHER VICTIM.
 14 THE ALARMING NEWS HEIGHTENED ANXIETY WITHIN
 15 THE INDUSTRY AND TRIGGERED THE WHOLESALE EXAMINATION
 16 OF VINYL CHLORIDE WORKERS, INCLUDING THESE AT THE
 17 UNION CARBIDE COMPANY CLINIC IN SOUTH CHARLESTON.
 18 ONE OF THE PLANTS VISITED BY DR. IRVING
 19 SELIKOFF AND HIS TEAM OF OCCUPATIONAL AND
 20 ENVIRONMENTAL HEALTH EXPERTS. THE SELIKOFF TEAM FROM
 21 NEW YORK'S MOUNT SINAI SCHOOL MEDICINE IS FUNDED
 22 MAINLY BY FEDERAL GRANTS.
 23 UNIDENTIFIED SPEAKER:
 24 PUSH HARD! PUSH HARD! KEEP PUSHING! KEEP
 25 PUSHING! KEEP PUSHING! WATCH THOSE NUMBERS! MOVE

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14

1 UNIDENTIFIED SPEAKER:
 2 RIGHT
 3 DR. IRVING SELIKOFF:
 4 YOU MAY HAVE WONDERED WHY OUR PEOPLE ASKED YOU
 5 DURING YOUR EXAMINATIONS WHETHER YOU WASH YOUR
 6 CLOTHES AT HOME. THE REASON IS THAT WITH OTHER
 7 MATERIALS THAT PRODUCE CANCER, WE HAVE SOMETIMES SEEN
 8 THEM BROUGHT HOME ON THE CLOTHES.
 9 THIS HAS BEEN FOUND WITH BERYLLIUM, IT'S BEEN
 10 FOUND WITH ASBESTOS, IT'S BEEN FOUND WITH
 11 POLYCHLORINATED BIPHENYLS, IT'S BEEN FOUND WITH A
 12 NUMBER OF THINGS.
 13 NOW, WE DON'T KNOW THAT THIS IS THE CASE WITH
 14 VINYL CHLORIDE, BUT THERE IS A POSSIBILITY BECAUSE
 15 THE POLYMER, THE DRIED RESIN, HAS VERY SMALL AMOUNTS
 16 OF THE MONOMER, THE VINYL CHLORIDE, STILL ATTACHED TO
 17 IT, AND I WOULD URGE YOU NOT TO HAVE YOUR FAMILY
 18 EXPOSED TO YOUR WORK CLOTHES AT HOME.
 19 UNIDENTIFIED SPEAKER:
 20 HAVE THEY FOUND ANYTHING BESIDES CANCER THAT
 21 VINYL CHLORIDE MIGHT CAUSE OR HAVE Y'ALL LOOKED FOR
 22 ANYTHING BESIDES CANCER IN VINYL CHLORIDE?
 23 DR. IRVING SELIKOFF:
 24 VINYL CHLORIDE CAN CAUSE A LOT OF OTHER
 25 THINGS. IT CAN CAUSE THE BONES OF THE FINGERS TO

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1 CHANGE AND SOMETIMES ACTUALLY TO COLLAPSE. IT CAN
2 CAUSE CHANGES IN THE NERVES IN THE BLOOD VESSELS OF
3 THE HANDS. THE LIVER CAN BE AFFECTED. EVEN BESIDES
4 CANCER. SCARRING CAN OCCUR IN THE LIVER. FIBROSIS.
5 THIS IS IMPORTANT BECAUSE WHEN THE LIVER
6 BECOMES SCARRED, THE BLOOD FLOWING THROUGH THE LIVER
7 IS INTERFERED WITH. AND AS A RESULT, IT BACKS UP.
8 AND SOMETIMES AS IT BACKS UP, THE BLOOD VESSELS CAN
9 BREAK. THE VEINS CAN BREAK, AND YOU CAN GET A FATAL
10 HEMORRHAGE EVEN.
11 UNIDENTIFIED SPEAKER:
12 ONCE YOU HAVE FOUND THAT A MAN HAS THIS
13 CANCER CAUSED FROM THE VINYL CHLORIDE, WILL YOU BE
14 ABLE TO CURE IT?
15 DR. IRVING SELIKOFF:
16 THE ANSWER IS NO. AT THIS MOMENT WE DO NOT
17 KNOW HOW TO CURE ANGIOSARCOMA. BUT I WOULD
18 IMMEDIATELY ADD THAT WE'VE ONLY HAD SOME 15 WEEKS OR
19 SO TO THINK ABOUT THIS.
20 NARRATOR:
21 A CERTAIN IRONY CONCERNING THE DISCOVERY OF
22 THIS NEW OCCUPATIONAL DISEASE: THE GIANT PLASTICS
23 INDUSTRY DEVELOPED AND GREW AS THE RESULT OF
24 PAINSTAKING SCIENTIFIC RESEARCH AND DISCOVERY.
25 HOWEVER, ACCORDING TO THE DIRECTOR OF ENVIRONMENTAL

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17

1 OR MARCUS KEY.
2 FORMER DIRECTOR OF NIOSH:
3 IN A WAY, WE WERE FORTUNATE IN DETECTING THE
4 VINYL CHLORIDE OUTBREAK BECAUSE OF THE RARITY OF THE
5 KIND OF CANCER THAT WAS PRODUCED. IF IT HAD BEEN
6 MERELY AN EXCESS OF A COMMON CANCER, IT MIGHT HAVE
7 GONE UNNOTICED FOR SEVERAL MORE YEARS.
8 WE MOVED VERY FAST, PROBABLY FASTER THAN WE'D
9 EVER DONE BEFORE. I THINK WE ALL RECOGNIZED THE
10 POTENTIAL SERIOUSNESS OF THE PROBLEM. AND TWO DAYS
11 LATER WE FIELDED A TEAM AT THE LOUISVILLE PLANT TO
12 BEGIN INDUSTRIAL HYGIENE SURVEYS.
13 NARRATOR:
14 THREE MONTHS LATER, APRIL 1974, THE
15 SERIOUSNESS OF THE PROBLEM UNDERSCORED BY THE
16 AFL-CIO'S INDUSTRIAL UNION DEPARTMENT AT A MEETING IN
17 NEW YORK. TOPIC, VINYL CHLORIDE. WITH HIGH-RANKING
18 OFFICIALS OF NIOSH PRESENT, UNION REPRESENTATIVES
19 QUESTIONED THE GOVERNMENT'S COMMITMENT TO AN ALL-OUT
20 ATTACK ON THIS OCCUPATIONAL DISEASE
21 ANGELO J. DEPALO,
22 INTERNATIONAL ASSOCIATION OF MACHINISTS:
23 HOW MANY PEOPLE DO YOU THINK IT WOULD TAKE TO
24 REALLY DO THE KIND OF A JOB WE'RE TALKING ABOUT, THE
25 JOB THAT'S NEEDED?

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19

1 HEALTH OF THE B. F. GOODRICH COMPANY, THE DISCOVERY
2 OF THE CONNECTION BETWEEN VINYL CHLORIDE AND THE
3 DEATHS OF VINYL CHLORIDE WORKERS CAME ABOUT ALMOST BY
4 ACCIDENT.
5 DR. MAURICE JOHNSON:
6 ON DECEMBER 18TH, 1973 I WAS AT THE
7 LOUISVILLE PLANT TALKING WITH OUR PLANT PHYSICIAN
8 THERE DR. JOHN CREICH ABOUT THE RESULTS OF SOME
9 ROUTINE TESTING THAT WE HAD STARTED EARLIER LAST
10 FALL.
11 AND HE MENTIONED, ALMOST IN PASSING, THAT IN
12 REVIEWING THE RECORDS HE HAD LEARNED THAT WE HAD HAD
13 A DEATH IN 1973 FROM AN ANGIOSARCOMA. AND HE THOUGHT
14 HE REMEMBERED THAT, TWO YEARS EARLIER IN 1971, HE, IN
15 HIS OWN PRIVATE PRACTICE, HAD HAD A DEATH FROM
16 ANGIOSARCOMA IN AN EMPLOYEE WHO WORKED FOR GOODRICH.
17 AND HE THOUGHT THIS WAS RATHER STRANGE BECAUSE TO HIM
18 IT WAS A QUITE RARE DISEASE.
19 NARRATOR:
20 ONE MONTH LATER IN JANUARY THE GOODRICH
21 COMPANY PRESENTED THE DISTURBING NEWS, INCLUDING
22 DISCOVERY OF A THIRD VICTIM, TO THE NATIONAL
23 INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, NIOSH,
24 HEADQUARTERED IN ROCKVILLE, MARYLAND AND THEN HEADED
25 BY DR. MARCUS KEY.

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18

1 VERNON ROBE,
2 ASSISTANT DIRECTOR OF NIOSH:
3 WELL, I THINK MOST OF THAT ANSWER SHOULD COME
4 FROM DR. WAGNER BECAUSE RIGHT NOW WE NEED TO GET
5 PEOPLE OUT INTO THE FIELD AND INTO THE PLANTS AND
6 FIND OUT THE EXTENT OF THIS PROBLEM.
7 DOES IT -- YOU KNOW, IS IT INTO THE PLASTICS
8 INDUSTRY? IS IT INTO THE FINAL CONSUMER PRODUCTS?
9 AND WE CAN'T DO THAT IN THE LABORATORY. AND I THINK
10 THAT'S WHERE DR. WAGNER SHOULD, YOU KNOW --
11 GEORGE PERKEL,
12 TEXTILE WORKERS UNION:
13 WHAT IS THE PRESENT MANPOWER ASSIGNMENT TO
14 THIS PROJECT?
15 DR. JOSEPH WAGNER,
16 DIRECTOR OF FIELD STUDIES, NIOSH:
17 IT VARIES AT ANY POINT AND TIME BETWEEN SIX
18 AND TEN PEOPLE.
19 GEORGE PERKEL:
20 PROFESSIONALS THAT IS?
21 DR. JOSEPH WAGNER:
22 NO, NOT PROFESSIONALS, TOTAL MAN -- TOTAL
23 STAFF.
24 UNIDENTIFIED SPEAKER:
25 INCLUDING SECRETARIES, IS THIS WHAT YOU --

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20

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1 DR. JOSEPH WAGONER:
2 INCLUDING OTHER THAN SECRETARIES, BUT CLERICAL
3 SUPPORT STAFF. YES. ESSENTIALLY, I THINK AT ANY ONE
4 POINT IN TIME, IF WE TAKE TODAY AS AN EXAMPLE, WE
5 WOULD HAVE FOUR PROFESSIONALS ON IT, ONE PHYSICIAN
6 UNIDENTIFIED SPEAKER:
7 THERE'S NO ADDITIONAL RESOURCES CONTEMPLATED
8 FOR THE IMMEDIATE FUTURE?
9 VERNON ROSE:
10 NOT THAT I'M AWARE OF.
11 UNIDENTIFIED SPEAKER:
12 WHAT'S GOING TO HAPPEN TO THE OTHER PRODUCTS
13 THAT'S HAD TO BE TABLED?
14 VERNON ROSE:
15 THEY WILL GET DONE LATER.
16 NARRATOR:
17 LATER THAT SAME MONTH, APRIL 1974, THE
18 GOVERNMENT EFFORT WAS CRITICIZED AT A CONGRESSIONAL
19 MEETING BY DR. SELIKOFF.
20 DR. IRVING SELIKOFF:
21 WHEN NIOSH -- THE DIVISION OF CLINICAL FIELD
22 STUDIES, WHICH DOES THE FIELD WORK FOR NIOSH -- WAS
23 ALERTED ON JANUARY 23 TO THE VINYL CHLORIDE PROBLEM,
24 AND THEY ASSIGNED THEIR FEW PEOPLE TO IT, THEY HAVE
25 DROPPED EVERY OTHER PIECE OF RESEARCH THEY WERE

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21

1 NARRATOR:
2 JUNE 11TH, 1974, THE NIOSH FIELD TEAM VISITS
3 UNION CARBIDE IN SOUTH CHARLESTON, WEST VIRGINIA
4 WHERE ONE WORKER HAD SUCCEEDED TO THE LIVER CANCER
5 AND WHERE ANOTHER WORKER HAS SINCE DIED FROM THE
6 DISEASE.
7 UNIDENTIFIED SPEAKER:
8 AFTER YOU LEAVE HERE, ARE YOU GOING TO THE
9 PACKING (SP) ROOM?
10 UNIDENTIFIED SPEAKER:
11 YES.
12 UNIDENTIFIED SPEAKER:
13 OKAY. IS THAT GOING TO BE IN YOUR WAY?
14 UNIDENTIFIED SPEAKER:
15 NO.
16 UNIDENTIFIED SPEAKER:
17 IS THAT GOING TO INTERFERE WITH YOUR
18 OPERATIONS?
19 UNIDENTIFIED SPEAKER:
20 NO.
21 NARRATOR:
22 THE VISIT TO THE PLANT EXHIBITED A PRIME
23 EXAMPLE OF THE GOVERNMENT IN CONFLICT WITH ITSELF.
24 THE NIOSH FIELD TEAM WORE RESPIRATORS, UNDERSCORING
25 THE FEDERAL AGENCY'S BELIEF THAT THE FEDERAL

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23

1 DOING.
2 NOW, YOU TELL THE FIBROUS GLASS WORKERS THAT
3 WE SHOULDN'T WORRY ABOUT THEM. AND YOU TELL THE
4 PEOPLE EXPOSED TO BENZIDINE THAT NOBODY HAS TO BE
5 CONCERNED ANYMORE. AND THE HOST OF OTHER THINGS THAT
6 THEY WERE ATTEMPTING TO DO.
7 THEY FOUND THAT THEY COULDN'T DO BOTH. AND IN
8 THIS GREAT COUNTRY OF OURS, IN THE UNITED STATES OF
9 AMERICA, THE GOVERNMENTAL AGENCY, THE NATIONAL
10 INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, THAT
11 HAVE RESPONSIBILITY TO OUR WORKERS, WAS FOUND THAT
12 THEY WERE ONLY ABLE TO DO ONLY ONE THING AT A TIME.
13 NARRATOR:
14 DR. SELIKOFF'S STATEMENT OF LAST APRIL AND
15 TODAY, THAT SAME BASIC PROBLEM REMAINS. WITH WORKERS
16 DEAD, OTHERS ILL, AND A NEW OCCUPATIONAL DISEASE
17 DIAGNOSED. THE NATIONAL INSTITUTE FOR OCCUPATIONAL
18 SAFETY AND HEALTH, THE PRIMARY FEDERAL AGENCY
19 INVOLVED, BEGAN ITS FIRST IN-DEPTH HYGIENE SURVEY OF
20 A VINYL CHLORIDE PLANT. THE SURVEY COMING FIVE
21 MONTHS AFTER THE DISCOVERY OF THE NEW HEALTH HAZARD.
22 UNIDENTIFIED SPEAKER:
23 THE REASON WE USE THESE SMALL ONES LIKE THIS
24 AND PUT IT UP RIGHT NEAR YOUR MOUTH AND NOSE IS SO
25 THAT --

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1 GOVERNMENT'S OWN EMERGENCY AIR QUALITY STANDARD WAS
2 NOT SAFE ENOUGH.
3 HOWEVER, THE PLANT MANAGEMENT, COMPLYING WITH
4 THE FEDERAL GOVERNMENT'S STANDARD AND BELIEVING IT
5 WAS SAFE, SAW NO REASON TO REQUIRE ITS WORKERS TO
6 ALWAYS WEAR MASKS.
7 IN ADDITION TO THE FIELD SURVEYS, THE NATIONAL
8 INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH HAD
9 BEGUN THE LONG AND TEDIOUS JOB OF MICROFILMING
10 RECORDS OF SOME 9,000 PRESENT AND FORMER EMPLOYEES AT
11 FOUR PLANTS, WITH THE FIRST ORDER OF BUSINESS,
12 TRACKING DOWN FORMER EMPLOYEES: THOSE LIVING, TO SEE
13 HOW THEIR HEALTH WAS HOLDING UP; THOSE NOT, TO FIND
14 OUT WHAT CAUSED THEIR DEATH.
15 MID JUNE, THE STORY MOVES TO CONNECTICUT AT
16 THE STATE DEPARTMENT OF HEALTH, A POSSIBLE ADDED AND
17 ONINOUS DIMENSION. IN RESPONSE TO A REQUEST FROM THE
18 NATIONAL CENTER FOR DISEASE CONTROL TO THE NATION'S
19 TUMOR REGISTRIES, THE CONNECTICUT TUMOR REGISTRY
20 REPORTED TWO DEATHS, ONE DEFINITELY DIAGNOSED AS
21 ANGIOCARCINOMA, THE OTHER HIGHLY SUSPICIOUS.
22 MEN WHO WORKED NOT WHERE THE VINYL CHLORIDE
23 GAS WAS MADE INTO THE VINYL PLASTIC BUT IN PLANTS
24 WHERE THE VINYL PLASTIC WAS MADE INTO FINISHED
25 PRODUCTS.

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1 DR. WILLIAM LLOYD.
2 ASSISTANT DIRECTOR NIOSH:
3 WE WERE VERY CONCERNED AT THESE REPORTS
4 BECAUSE WHAT THEY SUGGESTED WAS THAT PERSONS WITH
5 VERY LITTLE OF EXPOSURE OF VINYL CHLORIDE, MAY
6 DEVELOP ANGIOSARCOMA OF THE LIVER.
7 IN ADDITION TO THE TWO CASES OUT OF
8 CONNECTICUT, WE HAVE ALSO HAD A REPORT OF A
9 FABRICATION WORKER IN SCOTLAND WHO DIED FROM
10 ANGIOSARCOMA OF THE LIVER.
11 WE'VE HAD REPORTS FROM SWEDEN AND FROM WEST
12 GERMANY OF PERSONS WORKING IN OTHER ENVIRONMENTS WITH
13 VINYL CHLORIDE EXPOSURES, WHO HAVE DIED FROM THIS
14 DISEASE. WE HAVEN'T A SUFFICIENT NUMBER OF CASES YET
15 TO SAY WITHOUT QUESTION THAT THESE DEATHS ARE VINYL
16 CHLORIDE INDUCED. CONSIDERING THE RARITY OF THIS
17 DISEASE, WE ARE VERY CONCERNED THAT THAT COULD BE
18 SO
19 MORTON DEAN:
20 WHAT WOULD YOU SAY TO A PLASTIC WORKER WHO
21 MIGHT SAY, 'COME ON NOW DR. LLOYD, YOU'RE FRIGHTENING
22 THE HECK OUT OF ALL OF US ON THE BASIS OF ONLY
23 RELATIVELY FEW DEATHS AROUND THE WORLD?'
24 DR. WILLIAM LLOYD:
25 WELL, SOME PEOPLE WOULD SAY THAT WE'RE

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25

1 PLAN TO MEASURE THE QUALITY OF AIR WHERE THE DEATHS
2 OCCURRED.
3 BUT THE AGENCY HAS SAMPLED AIR IN SEVEN OTHER
4 COMMUNITIES AROUND THE COUNTRY WHERE VINYL CHLORIDE
5 IS PROCESSED. THE AGENCY MEASURED VARIOUS LEVELS OF
6 VINYL CHLORIDE UP TO DISTANCES OF THREE MILES AWAY
7 FROM THE PLANTS -- A READING AS HIGH AS 30 PARTS PER
8 MILLION, BUT LEVELS GENERALLY BELOW ONE PART PER
9 MILLION.
10 GLENN E. SCHWEITZER,
11 DIRECTOR, OFFICE OF TOXIC SUBSTANCES, EPA:
12 WE DO NOT BELIEVE THERE IS ANY SCIENTIFIC
13 BASIS TO BELIEVE THAT THERE IS AN IMMINENT HAZARD TO
14 THE PEOPLE WHO LIVE IN THE VICINITY OF THE PLANTS.
15 HOWEVER, PRUDENCE DICTATES THAT THE LEVELS BE DRIVEN
16 DOWN AS FAST AS POSSIBLE.
17 AND TO THE END, EPA HAS TAKEN SEVERAL STEPS IN
18 THE LAST FEW MONTHS. WE HAVE MET WITH THE LEADERSHIP
19 OF THE MAJOR MANUFACTURERS OF POLYVINYL CHLORIDE AND
20 VINYL CHLORIDE AND URGED IMMEDIATE STEPS ON THEIR
21 PART TO REDUCE LEVELS.
22 ALSO, WE ARE PROCEEDING VERY RAPIDLY TO
23 DEVELOP A AIR STANDARD UNDER THE CLEAN AIR ACT TO
24 INSURE THAT THE LEVELS WILL BE DRIVEN DOWN
25 CONSIDERABLY IN THE VERY NEAR FUTURE.

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1 ALARMISTS, BUT I THINK WHEN A MAN DIES FROM AN
2 OCCUPATIONAL EXPOSURE, THAT IS UNNECESSARY AND CAN BE
3 CONTROLLED, SHOULD BE ALARMED.
4 INITIALLY, WE HAD THREE DEATHS REPORTED, THEN
5 WE HAD FIVE AND SEVEN, AND IT KEPT GROWING. AT THIS
6 POINT WE'VE IDENTIFIED 25, WHERE HE HAVE JUST GOTTEN
7 OUR INVESTIGATIONS UNDERWAY. I DON'T KNOW AT WHAT
8 NUMBER POINT WE SHOULD BECOME TERRIBLY CONCERNED. I
9 LOOK UPON IT AS A VERY SERIOUS PROBLEM.
10 NARRATOR:
11 AT ABOUT THE SAME TIME, THERE WAS MORE
12 DISQUIETING NEWS FROM CONNECTICUT: FOUR OTHER
13 ANGIOSARCOMA DEATHS. NONE OF THE VICTIMS IS KNOWN TO
14 HAVE WORKED WITH VINYL CHLORIDE, BUT TWO OF THE
15 VICTIMS, BOTH ELDERLY, HAD LIVED WITHIN TWO MILES OF
16 A VINYL PRODUCTS PLANT. AND SO FOR THE FIRST TIME
17 THE SUSPICION: THE PROBLEM MAY HAVE JUMPED THE
18 FACTORY FENCE.
19 IT IS ESTIMATED THAT NATIONALLY MORE THAN 200
20 MILLION POUNDS OF VINYL CHLORIDE GAS ESCAPES INTO THE
21 ATMOSPHERE EACH YEAR. WHERE IT GOES AND WHAT DANGER
22 IT MIGHT SPREAD, IS THE PROVINCE OF THE FEDERAL
23 ENVIRONMENTAL PROTECTION AGENCY, THE EPA.
24 THE AGENCY, WHILE EXPRESSING GREAT CONCERN
25 OVER THE DEATHS IN CONNECTICUT, HAS NOT AND DOES NOT

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1 MORTON DEAN:
2 MR. SCHWEITZER, KNOWING WHAT YOU NOW KNOW,
3 WOULD GLENN SCHWEITZER LIVE IN THE VICINITY OF A
4 VINYL CHLORIDE OR POLYVINYL CHLORIDE OR PROCESSING
5 PLANT?
6 GLENN E. SCHWEITZER:
7 I THINK IF I WERE FACED WITH THAT DECISION I
8 WOULD BE -- I WOULD CERTAINLY FACTOR INTO MY
9 CONSIDERATIONS THE UNCERTAINTIES. ON THE OTHER HAND,
10 I THINK THERE MAY WELL BE CIRCUMSTANCES WHICH WOULD
11 -- MAY REQUIRE MY CONTACT WITH THE CHEMICAL.
12 I HAVE GONE WALKED THROUGH A NUMBER OF THESE
13 PLANTS AND DON'T FEEL I WAS EXPOSED TO ANY
14 UNNECESSARY RISKS, BUT CERTAINLY THAT IS A
15 CONSIDERATION
16 MORTON DEAN:
17 WELL, WHAT ARE YOU SAYING, YOU WOULD PREFER
18 NOT TO LIVE IN THE VICINITY OF THE PLANT IF YOU
19 DIDN'T HAVE TO?
20 GLENN E. SCHWEITZER:
21 I THINK FORTUNATELY I'M NOT FACED WITH HAVING
22 TO MAKE THAT JUDGMENT. I THINK THAT IT MAY WELL BE
23 THAT OTHER CONSIDERATIONS WOULD COMPEL ME TO LIVE IN
24 THE -- YES, I WOULDN'T NECESSARILY RULE IT OUT.
25 NARRATOR:

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1 NOT EVERYBODY LIVES WITHIN THE SHADOW OF A
2 SMOKESTACK, BUT EVERYBODY LIVES OR WORKS WITHIN THE
3 REACH OF AN AEROSOL SPRAY CAN. THE FIRST BIG HINT OF
4 POSSIBLE DANGER TO CONSUMERS FROM VINYL CHLORIDE CAME
5 FROM THE AEROSOL SPRAYS, MANY OF WHICH FOR YEARS HAD
6 USED THE VINYL GAS AS A PROPELLANT.

7 SOME HAIR SPRAYS HAVE BEEN AMONG THOSE VINYL
8 PROPELLED AEROSOLS BANNED FROM THE MARKETPLACE SO
9 WAITRESSERS HAVE SWITCHED TO OTHER SPRAYS.

10 SUCH IS THE NATURE OF THE FEDERAL BUREAUCRACY,
11 THAT VARIOUS SPRAYS COME UNDER THE JURISDICTION OF
12 VARIOUS FEDERAL AGENCIES: THE ENVIRONMENTAL
13 PROTECTION AGENCY, THE FOOD AND DRUG ADMINISTRATION,
14 THE U. S. CONSUMER PRODUCT SAFETY COMMISSION.

15 SO IT WAS POSSIBLE FOR SOME VINYL PROPELLED
16 AEROSOLS TO BE BANNED BY TWO AGENCIES, EPA AND FDA,
17 ON DIFFERENT DAYS IN APRIL, WHILE A THIRD AGENCY, THE
18 CONSUMER PRODUCT SAFETY COMMISSION, DID NOT ISSUE ITS
19 BAN UNTIL THIS MONTH.

20 THIS BAN GIVES CONSUMERS THE RIGHT TO GET
21 THEIR MONEY BACK, IF THEY CAN DETERMINE WHICH OF
22 THEIR AEROSOLS COME UNDER THE JURISDICTION OF THIS
23 PARTICULAR AGENCY.

24 WHILE THE BANNED AEROSOLS ARE SUPPOSED TO BE
25 OFF THE SHELVES OF STORES, MILLIONS MAY STILL BE ON

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1 HAVE EVENTUALLY NOW RELEASED ALL OF THE NAMES.
2 NORTON DEAN:

3 THE NADER GROUP, THE HEALTH RESEARCH GROUP,
4 SAYS THAT IT FORCED THE EPA TO RELEASE THE NAMES OF
5 THE BRANDS OF AEROSOLS CONTAINING VINYL CHLORIDE AS
6 A PROPELLANT. IS THAT TRUE?

7 GLENN E. SCHWEITZER:

8 THE HEALTH RESEARCH GROUP WAS A VERY
9 SIGNIFICANT FACTOR IN MOVING THE GOVERNMENT
10 BUREAUCRACY, EPA, FDA, AND THE CONSUMER PRODUCT
11 SAFETY COMMISSION TO TAKE PROMPT AND DECISIVE
12 ACTION WITH REGARD TO AEROSOL PROPELLANTS USING VC.
13 NORTON DEAN:

14 SHOULDN'T THE GOVERNMENT BE CRITICIZED? I
15 MEAN, IT WAS NO BIG PROBLEM. THE QUESTION WAS:

16 WHAT AEROSOLS CONTAINED VINYL CHLORIDE?

17 GLENN E. SCHWEITZER:

18 THE PROBLEM REALLY WAS TO RAISE THAT QUESTION
19 TO A SUFFICIENTLY HIGH LEVEL OF ATTENTION WITHIN
20 THE GOVERNMENT SO YOU'D GET ACTION.
21 NORTON DEAN:

22 IS IT POSSIBLE THAT HAD NOT THE HEALTH
23 RESEARCH GROUP PUSHED AND SHOVED, THAT EVEN TODAY,
24 THAT WE WOULDN'T KNOW WHAT AEROSOLS IN OUR HOMES
25 CONTAIN VINYL CHLORIDE?

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1 THE SHELVES AT HOME -- PRODUCTS BOUGHT BEFORE THE
2 BAN. BY LOOKING AT THE CANS, IT IS JUST ABOUT
3 IMPOSSIBLE TO KNOW WHICH AEROSOLS CONTAIN VINYL
4 CHLORIDE. FEW CANS LIST ALL OF THEIR INGREDIENTS.

5 AND THE PEOPLE WHO MAKE THEM, AS WELL AS THE
6 PEOPLE WHO REGULATE THEM, APPARENTLY WERE RELUCTANT
7 TO PUBLICIZE THE PRODUCTS IN QUESTION -- A SITUATION
8 THAT BEGAN TO CHANGE WHEN A RALPH NADER CONSUMER
9 ORGANIZATION, THE HEALTH RESEARCH GROUP, TWISTED THE
10 FEDERAL ARM.

11 NORTON DEAN:

12 YOU HAD DIFFICULTY, DIDN'T YOU, IN URGING THE
13 FEDERAL GOVERNMENT TO PUBLICIZE THE BRAND NAMES OF
14 THE PRODUCTS CONTAINING VINYL CHLORIDE?

15 DR. SIDNEY WOLFE:

16 YEAH, THIS IS THE CASE FOR THE ENVIRONMENTAL
17 PROTECTION AGENCY, WHICH WAS AWARE OF DOZENS OF
18 HOUSEHOLD PESTICIDE SPRAYS, AEROSOL AND PESTICIDE
19 SPRAYS, THAT CONTAINED VINYL CHLORIDE. THEY KNEW
20 THE NAMES AND WOULDN'T RELEASE THEM.

21 NORTON DEAN:

22 WHY?

23 DR. SIDNEY WOLFE:

24 WELL, THEY CLAIM THAT IT WAS A TRADE SECRET.
25 WE FINALLY SUED THEM IN A FEDERAL COURT, AND THEY

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1 GLENN E. SCHWEITZER:

2 I'D LIKE TO SAY, WE WOULD HAVE MOVED EVEN IN
3 THE ABSENCE OF THAT PUSH, BUT I JUST DON'T KNOW.
4 NARRATOR:

5 DR. WOLFE'S HEALTH RESEARCH GROUP WAS ALSO
6 RANKLED AT THE FOOD AND DRUG ADMINISTRATION WHICH
7 REGULATES AEROSOLS, INCLUDING HAIR SPRAYS AND
8 COSMETICS?

9 DR. SIDNEY WOLFE:

10 THE FIRST RESPONSE THAT WE GOT FROM THE FDA
11 WAS: "WELL, WE'VE ASKED THE INDUSTRY AND THEY'VE
12 ASSURED US THAT THERE AREN'T ANY OF THESE PRODUCTS
13 AROUND -- FEBRUARY 1974.

14 WELL, NOW, MORE THAN HALF A YEAR LATER, IT
15 TURNS OUT THAT THE FDA HAS FOUND THAT RATHER THAN
16 THERE BEING NO PRODUCTS AROUND, THAT THERE ARE 50
17 OR 100 PRODUCTS AROUND.

18 THE POINT IS, THAT YOU DON'T TRUST THE
19 INDUSTRY TO TELL YOU THAT THERE ARE NO PRODUCTS
20 CONTAINING VINYL CHLORIDE. WHAT THEY MAY HAVE
21 MEANT WAS THAT THERE WERE NONE BEING MANUFACTURED,
22 BUT THERE WERE MILLIONS OF CANS SITTING ON THE
23 SHELVES IN STORES, IN WAREHOUSES, AND UNFORTUNATELY
24 IN PEOPLE'S HOMES.

25 NORTON DEAN:

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1 RICHARD SIMPSON:
2 YEAH, OR, HARE (SP)?
3 MORTON DEAN:
4 YEAH.
5 UNIDENTIFIED SPEAKER:
6 HE IS THE CORRECT ONE. HE IS OUR DIRECTOR OF
7 BIOLOGICAL MEDICAL RESEARCH. AND WHAT I WAS TOLD
8 IS THAT IT WAS ON. SO PERHAPS I HAVE WRONG
9 INFORMATION.
10 NARRATOR:
11 THE CHAIRMAN OF THE U. S. CONSUMER PRODUCT
12 SAFETY COMMISSION. INTERVIEWED ON JULY 26TH, WAS
13 INDEED WRONG. TEN DAYS LATER, A FOLLOW-UP CALL TO
14 THE COMMISSION'S BUREAU OF BIOLOGICAL SCIENCE.
15 A SOURCE THERE TELLING CBS NEWS, THE
16 POSSIBILITY OF CONDUCTING LABORATORY TESTS WAS
17 STILL AN IFfy QUESTION. EVERYTHING WAS STILL IN
18 THE TALK STAGE. A FOLLOW-UP CALL THIS MONTH. NO
19 RESEARCH HAS BEGUN.
20 MORTON DEAN:
21 MR. HARDING, YOU'RE PRESIDENT OF THE SOCIETY
22 OF THE PLASTICS INDUSTRY INCORPORATED. WHAT WOULD
23 YOU SAY TO THE PERSON WHO KNOWS HE HAS PLASTIC
24 CONTAINERS AROUND THE HOUSE WITH FOOD STUFFS IN IT,
25 HAS MEAT WRAPPED IN VINYL PROTECTIVE COVERINGS,

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1 MORTON DEAN:
2 WELL, LET ME GET BACK TO THE QUESTION THEN.
3 SOMEONE HAS ASKED ME AS WE HAVE DISCUSSED THIS
4 BROADCAST, AS WE WERE PUTTING IT TOGETHER, "YOU'RE
5 NOT ANSWERING MY QUESTION, MORT. YOU'RE NOT
6 TELLING ME WHETHER THERE IS IN FACT A HAZARD."
7 RALPH L. HARDING, JR.:
8 I'M NOT GOING TO MAKE ANY FLAT-OUT STATEMENTS
9 ON AN AREA. WE'RE STILL DISCOVERING THINGS EVERY
10 DAY. I THINK IT'S IMPORTANT TO POINT OUT THAT
11 TREMENDOUS PROGRESS HAD BEEN MADE IN THE EIGHT
12 MONTHS SINCE THE FIRST CASES OF ANGIOSARCOMA WERE
13 REPORTED.
14 THE INDUSTRY HAS DONE A GREAT DEAL, AND I'M
15 REALLY PROUD OF THE RECORD. BUT WE'RE THE FIRST TO
16 SAY THAT THE VINYL PRODUCERS HAVE A LONG WAY TO
17 GO. WE'RE A LONG WAY FROM ALL OF THE ANSWERS.
18 AND WHEN I'M TALKING CASUALLY TO MY FRIENDS I
19 SAY, "DON'T WORRY," WHEN I'M ON CAMERA, IN FRONT
20 OF A LOT OF PEOPLE, I SAY, "I KNOW OF NO CAUSE TO
21 WORRY," AND SO BE IT. THAT'S THE LIFE WE LEAD
22 TODAY, MORT.
23 NARRATOR:
24 THERE WAS DEATH IN THE WORKING PLACE. VINYL
25 CHLORIDE WORKERS DEAD FROM A RARE LIVER CANCER.

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1 USES VINYL PLASTIC TABLE COVER AND THAT SORT OF
2 THING?
3 RALPH L. HARDING, JR.:
4 PRESIDENT, SOCIETY OF PLASTICS INDUSTRY:
5 I WOULD ADVISE THEM TO DO WHAT I'M DOING,
6 WHICH IS TO GO RIGHT ON USING THEM IN THEIR HOME.
7 I THINK WE NEED TO MAKE FURTHER STUDIES TO BE
8 ABSOLUTELY SURE. NOTHING IN THESE DAYS IS TOTALLY
9 CERTAIN WITHOUT A GREAT DEAL OF DETAILED STUDY, AND
10 THERE HASN'T BEEN TIME FOR THAT. BUT I KNOW, IN
11 OUR CASE, WE'RE GOING RIGHT AHEAD AND USING ALL
12 THESE PRODUCTS WITH NO CONCERN, NO FEAR -- IN THE
13 CASE OF OUR OWN FAMILY.
14 MORTON DEAN:
15 AND A YEAR AGO OR SO WOULD NOT HAVE BEEN TRUE.
16 EVEN OF THE AEROSOL SPRAYS?
17 RALPH L. HARDING, JR.:
18 I THINK SO.
19 MORTON DEAN:
20 BUT NOW THERE'S A SUGGESTION THAT IT MIGHT
21 BE?
22 RALPH L. HARDING, JR.:
23 AND YOU AND I CAN CITE MANY OTHER EXAMPLES OF
24 THE SAME KIND OF PROBLEM. THE OLDER WE GET, I HOPE
25 THE SHORTER WE GET.

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1 THERE WAS DOUBT IN THE MARKETPLACE. MAJOR CONSUMER
2 ITEMS, AEROSOL SPRAYS, PROPELLED BY VINYL CHLORIDE
3 GAS WERE BANNED.
4 THE DEATHS AND THE DOUBTS OF 1974 MIGHT HAVE
5 BEEN EXPLORED A YEAR EARLIER THAN THEY WERE.
6 RESEARCH SPONSORED BY EUROPEAN INDUSTRY HAD ALREADY
7 LINKED THE CHEMICAL TO THE CANCER. RESEARCH IN
8 BOLOGNA, ITALY, IN THE LABORATORIES OF DR. CHEZARAY
9 MALTONEY (SP) HAD PRODUCED ANGIOSARCOMA OF THE
10 LIVER IN RATS EXPOSED TO VINYL CHLORIDE.
11 IN JANUARY OF 1973, MALTONEY'S FINDINGS WERE
12 STUDIED BY REPRESENTATIVES FROM THE U. S. PLASTICS
13 INDUSTRY, WHO WERE DISPATCHED TO ITALY BY THE
14 MANUFACTURING CHEMISTS ASSOCIATION.
15 YET THE ITALIAN SCIENTISTS FINDINGS WERE KEPT
16 RELATIVELY QUIET IN THIS COUNTRY, NOT EVEN REVEALED
17 TO U. S. HEALTH AGENCIES.
18 SIX MONTHS AFTER THE AMERICANS VISITED
19 MALTONEY, MALTONEY'S NAME AND HIS MOST SIGNIFICANT
20 FINDINGS WERE NOT MENTIONED DURING A WASHINGTON
21 MEETING BETWEEN INDUSTRY REPRESENTATIVES AND
22 OFFICIALS OF THE NATIONAL INSTITUTE FOR
23 OCCUPATIONAL SAFETY AND HEALTH, A MEETING HELD TO
24 DISCUSS VINYL CHLORIDE.
25 INDUSTRY DID NOT FIND THE OMISSION UNUSUAL.

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1 DR. T. R. TORKELSON, A MEMBER OF THE INDUSTRIAL
2 TEAM THAT WENT TO ITALY.
3 DR. T. R. TORKELSON:
4 DOW CHEMICAL:
5 I THINK WE'RE DWELLING TOO MUCH ON A
6 TECHNICALITY HERE. THE CRITICAL THING WAS: WERE
7 TUMORS FORMED? WERE THEY REAL TUMORS? CANCER?
8 AND WERE THEY AT WHAT CONCENTRATIONS? HIOSH WAS
9 GIVEN THIS INFORMATION. IT DOESN'T REALLY MAKE ANY
10 DIFFERENCE WHETHER THE TUMOR IS IN THE LIVER OR THE
11 LUNG. IT'S STILL A SERIOUS SITUATION AND REQUIRES
12 FURTHER STUDY.
13 MORTON DEAN:
14 IN ANY EVENT, THE HALTONEY STUDY DID HAVE AN
15 IMPACT. RESEARCH PROPOSED IN THE UNITED STATES TWO
16 YEARS EARLIER, AT LAST, GOT OFF THE GROUND.
17 INDUSTRIAL SIOTEST LABORATORIES, HIRED BY THE
18 CHEMIST ASSOCIATION TO CONDUCT ANIMAL TESTS.
19 PRELIMINARY RESULTS EVEN MORE SIGNIFICANT THAN
20 DR. HALTONEY'S INITIAL FINDINGS. ANDIOSARCOMA
21 INDUCED IN MICE AT 50 PARTS PER MILLION. 50 PARTS
22 PER MILLION, THE SAME LEVEL ADOPTED BY THE U. S.
23 GOVERNMENT AS SAFE FOR VINYL CHLORIDE WORKERS ONLY
24 DAYS BEFORE.
25 THE RESULTS OF ANOTHER INDUSTRY STUDY, A STUDY

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1 PLANTS THAT ARE CLEANED OUT. THE PLANTS THAT ARE
2 PROPERLY CONTROLLED. I WOULD GIVE SERIOUS
3 CONSIDERATION TO WORKING IN THEM.
4 MORTON DEAN:
5 ARE THERE ANY SUCH PLANTS?
6 DR. IRVING R. TABERSHAW:
7 I DON'T REALLY KNOW, BUT I ASSUME AND I
8 PRESUME THAT PLANT CONDITIONS CAN BE AND I THINK
9 ARE BEING CONTROLLED TO THE EXTENT OF MAKING IT
10 SAFE TO WORK IN THEM.
11 MORTON DEAN:
12 WHAT IS THAT SAFE LEVEL?
13 DR. IRVING R. TABERSHAW:
14 I WISH I KNEW, MR. DEAN.
15 NARRATOR:
16 THE RESULTS OF A RECENT STUDY FOR THE
17 GOVERNMENT WAS AT VARIANTS WITH TABERSHAW'S STUDY
18 FOR INDUSTRY. DR. JOSEPH WAGONER, DIRECTOR OF
19 FIELD STUDIES FOR THE NATIONAL INSTITUTE FOR
20 OCCUPATIONAL SAFETY AND HEALTH:
21 DR. JOSEPH WAGONER:
22 WE ONLY HAVE DEFINITIVE DATA ON TWO PLANTS
23 RIGHT TODAY, AND I MIGHT PREFACE BY SAYING THAT WE
24 HAVE 32 PERCENT OF THE POPULATION STILL LOST TO
25 FOLLOW-UP. HOWEVER, WE'RE SEEING FIVE TIMES AS

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1 OF WORKERS, WERE ANNOUNCED AT A PACT EMERGENCY
2 INTERNATIONAL SYMPOSIUM ON VINYL CHLORIDE IN
3 MANHATTAN.
4 THE SYMPOSIUM SPONSORED BY THE NEW YORK
5 ACADEMY OF SCIENCE AND THE AMERICAN CANCER
6 SOCIETY. THE INDUSTRY AND THE RESEARCHERS IT
7 HIRED, TABERSHAW COOPER ASSOCIATES, PAINTED AS ROBY
8 A PICTURE AS THEIR FINDINGS WOULD ALLOW. DR.
9 IRVING TABERSHAW:
10 DR. IRVING R. TABERSHAW:
11 WELL, WE'VE DEMONSTRATED THAT THERE IS AS
12 FAVORABLE A MORTALITY RATIO WORKING IN THE INDUSTRY
13 AS YOU WOULD EXPECT IN ANY POPULATION AT WORK.
14 SECONDLY, WE FOUND THAT THERE WAS AN INCREASE
15 IN CANCER. AND I CAN'T CHARACTERIZE HOW MUCH OF AN
16 INCREASE BECAUSE NUMBERS ARE SO SMALL. THAT WE
17 CANNOT REALLY DESCRIBE THEM AS SIGNIFICANT OR NOT.
18 BUT THERE IS A TREND FOR THE WORKERS IN THIS STUDY
19 TO HAVE A LITTLE MORE CANCER THAN WE WOULD HAVE
20 EXPECTED.
21 MORTON DEAN:
22 DR. TABERSHAW, WOULD YOU WORK IN A PLANT
23 WORKING WITH VINYL CHLORIDE TODAY?
24 DR. IRVING R. TABERSHAW:
25 YOU SAID "TODAY," MR. DEAN. I THINK IN THE

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1 MUCH BRAIN CANCER AS YOU WOULD EXPECT.
2 MORTON DEAN:
3 FIVE TIMES?
4 DR. JOSEPH WAGONER:
5 FIVE TIMES. WE'RE SEEING TEN TIMES TO ELEVEN
6 TIMES AS MUCH LIVER CANCER AS YOU WOULD EXPECT.
7 WE'RE SEEING DOUBLING OF THE LUNG CANCER AND
8 DOUBLING OF THE LYMPHATIC TUMORS.
9 MORTON DEAN:
10 WOULD YOU WORK IN A VINYL CHLORIDE OR
11 POLYVINYL CHLORIDE PLANT?
12 DR. JOSEPH WAGONER:
13 KNOWING WHAT I DO AND BELIEVING WHAT I DO
14 ABOUT A NO DETECTABLE LEVEL, I WOULD NEVER WORK IN
15 A VINYL CHLORIDE PLANT.
16 NARRATOR:
17 THE NO DETECTABLE LEVEL FOR VINYL CHLORIDE
18 WORKERS WAS THE GOAL OF DR. WAGONER, HIS AGENCY,
19 AND ORGANIZED LABOR -- A GOAL INDUSTRY CLAIMED IT
20 WOULD FIND IMPOSSIBLE TO MEET -- WOULD FORCE THE
21 INDUSTRY TO SHUT DOWN, COSTING SOME TWO MILLION
22 JOBS.
23 ON OCTOBER 1ST, A NEW MAXIMUM EXPOSURE LEVEL
24 WAS ANNOUNCED BY THE OCCUPATIONAL SAFETY AND HEALTH
25 ADMINISTRATION. A ONE PART PER MILLION AVERAGE

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1 DURING A NORMAL WORKING DAY.
 2 RESPIRATORS MUST BE AVAILABLE FOR WORKERS IN
 3 THOSE PLANTS UNABLE TO COMPLY WITH THE REGULATION
 4 THE NEW REGULATION WILL TAKE EFFECT IN JANUARY.
 5 GOVERNMENT RECOGNITION OF HOW DANGEROUS THE GAS
 6 MIGHT HAVE BEEN DURING THE PAST 38 YEARS OF
 7 PRODUCTION.
 8 THE INDUSTRY HAS FILED SUIT IN FEDERAL COURT
 9 APPEALING THE DECISION, CLAIMING IT IS TECHNICALLY
 10 INFEASIBLE TO MEET THAT STANDARD. SOME INDUSTRY
 11 SPOKESMEN HAVE WARNED THE NEW STANDARD COULD RESULT
 12 IN AN INDUSTRY SHUTDOWN.
 13 LABOR ISN'T TOTALLY HAPPY EITHER. COMPLAINING
 14 THAT THE USE OF RESPIRATORS WILL NOT BECOME
 15 MANDATORY FOR ANOTHER YEAR. THE NEW MAXIMUM LEVEL
 16 AFFECTING VINYL CHLORIDE, DOES NOTHING TO ALLEVIATE
 17 A MUCH LARGER PROBLEM, DOES NOTHING TO ELIMINATE
 18 THE THREAT OF OTHER VINYL CHLORIDES. DR. MARCUS
 19 KEY:
 20 DR. MARCUS KEY:
 21 IN OUR LIST OF TOXIC SUBSTANCES, THERE ARE
 22 SOME 12,000 SEPARATE LISTING OF MATERIALS THAT HAVE
 23 SOME DEGREE OF TOXICITY. AND OF THESE THERE ARE,
 24 OH, SOMETHING OVER 1200 THAT HAVE TUMOR-PRODUCING
 25 PROPERTIES IDENTIFIED IN ONE OR MORE LABORATORY

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1 OF CHEMICALS TO DETERMINE STANDARDS OF SAFETY.
 2 THE SENATE HAS PASSED ONE VERSION OF THE
 3 LEGISLATION; THE HOUSE ANOTHER. THEY HAVE YET TO
 4 RESOLVE THEIR DIFFERENCES.
 5 DURING THE COURSE OF PREPARING OUR BROADCAST,
 6 WE FREQUENTLY HEARD THAT ALL LIFE IS A RISK. BUT
 7 DOES ALL LIFE HAVE TO BE? MUST A WORKER IN THE
 8 FACTORY RISK HIS LIFE TO EARN HIS LIVING?
 9 MUST A CONSUMER IN THE HOME RISK CATASTROPHE
 10 BECAUSE THERE IS NO ALL-ENCOMPASSING POLICY OR LAW
 11 THAT PREVENTS THE MARKETING OF CONVENIENCES THAT
 12 MAY BE CAPABLE OF KILLING US? MOST VINYL CONSUMER
 13 PRODUCTS ARE NOW CONSIDERED SAFE. NO EVIDENCE
 14 AVAILABLE TO THE CONTRARY.
 15 HOWEVER, ALMOST EVERYONE WE QUESTIONED AGREED
 16 THAT THE RESEARCH THAT MAY BE ABLE TO RESOLVE THAT
 17 POINT CONCLUSIVELY HAS YET TO BE DONE. PERHAPS
 18 CONSUMER AND WORKER ALIKE, ALL OF US, HAVE HAD A
 19 FALSE SENSE OF SECURITY -- ALL OF THOSE AGENCIES
 20 AND ORGANIZATIONS THAT WE PRESUME ARE WATCHING OUT
 21 FOR US ALL OF THE TIME.
 22 THE TRAGIC TRUTH IS WE USUALLY PAY A PRICE FOR
 23 OUR PROTECTION. TOO OFTEN THE BODIES ARE COUNTED
 24 BEFORE THE BUREAUCRATS AND BUSINESSMEN REACT.
 25 TOO OFTEN IN THE PURSUIT OF PROGRESS AND

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1 ANIMALS. SO WE HAVE QUITE A BACKLOG OF CHEMICAL
 2 SUBSTANCES ALREADY IN USE TO BE CONCERNED ABOUT.
 3 MORTON DEAN:
 4 WHAT YOU'RE SAYING IN THIS NATION OF
 5 TECHNOLOGY, THE GREATEST IN THE WORLD. IN 1974
 6 WE'RE STILL NOT IN A POSITION OF PROTECTING WORKERS
 7 OR THE GENERAL PUBLIC FROM THE PRODUCTS AND
 8 SUBSTANCES OF CHEMICALS WE PRODUCE?
 9 DR. MARCUS KEY:
 10 WE HAVE A LONG WAY TO GO IN THIS REGARD; THAT
 11 IS CORRECT.
 12 NARRATOR:
 13 HOW MANY MORE RAY GETTEFINGERS? HOW MANY
 14 MORE TOMBSTONES? HOW MANY MORE VINYL CHLORIDES
 15 WILL THERE BE? VINYL CHLORIDE IS BUT ONE VILLAIN
 16 ON THAT LONG LIST OF POTENTIALLY DEADLY CHEMICALS
 17 THAT ARE A PART OF OUR EVERYDAY LIVES. AND THAT
 18 LIST WILL GROW.
 19 DOZENS, PERHAPS HUNDREDS OF NEW CHEMICALS ARE
 20 INTRODUCED EVERY YEAR. AND THERE ARE NO LAWS
 21 REQUIRING ALL CHEMICALS BE ADEQUATELY TESTED BEFORE
 22 THEY ARE MARKETED.
 23 FOR THREE AND-A-HALF YEARS NOW, CONGRESS HAS
 24 HAD BEFORE IT LEGISLATION CREATING A TOXIC
 25 SUBSTANCES CONTROL ACT, WHICH WOULD MANDATE TESTING

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1 PROFIT, OUR HEALTH AND THE HEALTH OF OUR
 2 ENVIRONMENT WHERE WE WORK AND WHERE WE LIVE ARE
 3 SECONDARY MATTERS. TOO OFTEN OUR ENVIRONMENT IS
 4 THE LABORATORY AND WE ARE THE GUINEA PIGS. THIS IS
 5 MORTON DEAN FOR CBS REPORTS.
 6 (REPORT CONCLUDED)
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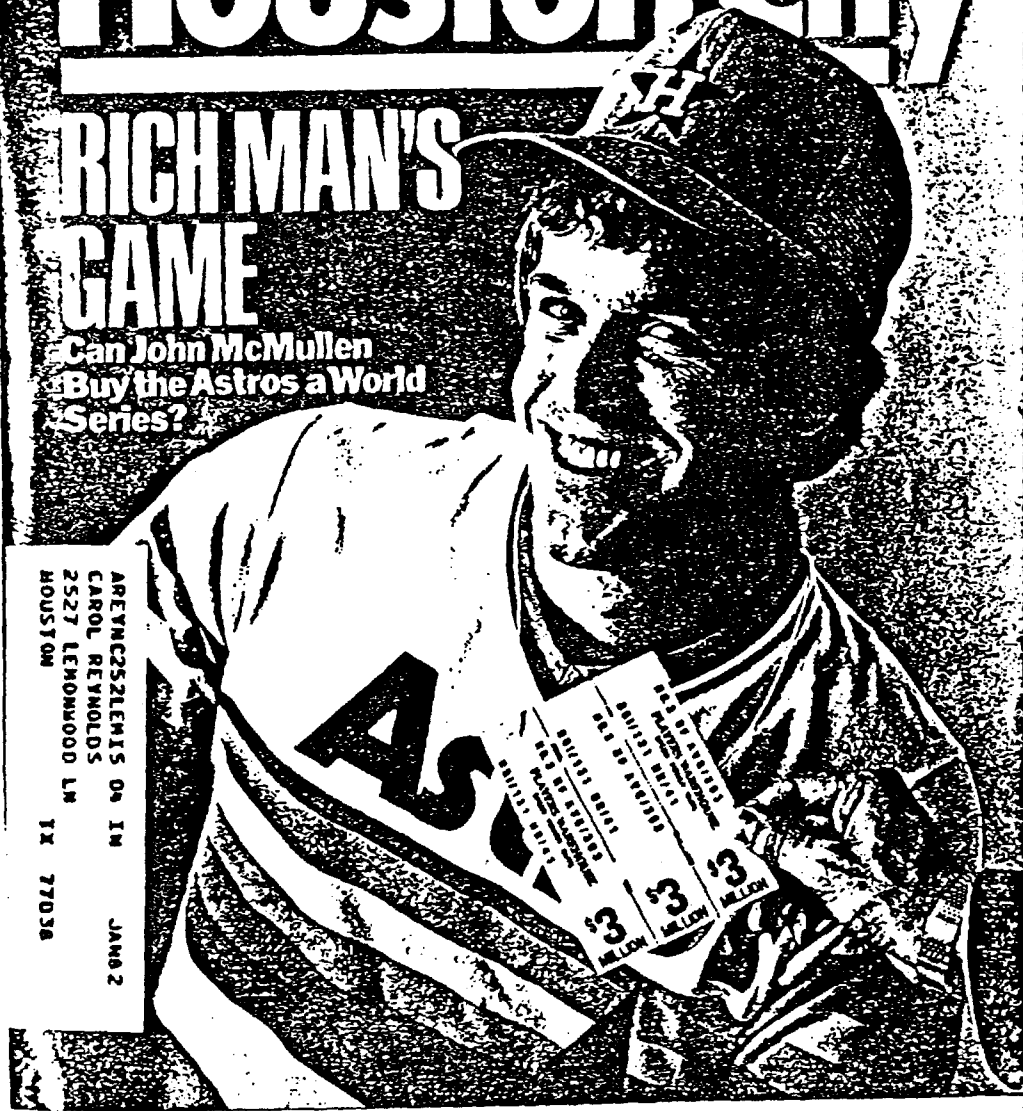
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