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103

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TESTIMONY ON THE
PROPOSED STANDARD FOR
VINYL CHLORIDE

- PRESENTED BY -

THE DOW CHEMICAL COMPANY

- AT THE -

PUBLIC HEARING ON VINYL CHLORIDE
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
DEPARTMENT OF LABOR
WASHINGTON, D.C.

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INTRODUCTION

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R&S 028543

INTRODUCTION

I AM V. K. ROWE, DIRECTOR OF TOXICOLOGICAL AFFAIRS IN HEALTH AND ENVIRONMENTAL RESEARCH FOR DOW CHEMICAL U.S.A. I RECEIVED A BACHELORS DEGREE WITH MAJORS IN CHEMISTRY AND BIOLOGY IN 1936, A MASTERS OF SCIENCE DEGREE WITH A MAJOR IN BIOCHEMISTRY FROM THE STATE UNIVERSITY OF IOWA IN 1937 AND AN HONORARY DOCTOR OF SCIENCE DEGREE FROM CORNELL COLLEGE IN 1971.

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I JOINED THE BIOCHEMICAL RESEARCH LABORATORY OF THE DOW
CHEMICAL COMPANY IN THE FALL OF 1937 AND HAVE REMAINED
WITH THE COMPANY THROUGHOUT MY CAREER.

IN THE FALL OF 1973, I WAS NAMED A RESEARCH SCIENTIST
AND GIVEN MY PRESENT JOB TITLE.

I AM A CHARTER MEMBER OF THE SOCIETY OF TOXICOLOGY, AND
SERVED AS ITS PRESIDENT DURING THE YEAR 1966-67. I AM
CERTIFIED BY THE AMERICAN BOARD OF INDUSTRIAL HYGIENE IN
THE TOXICOLOGICAL ASPECTS OF INDUSTRIAL HYGIENE AND SERVED
AS PRESIDENT OF THE AMERICAN ACADEMY OF INDUSTRIAL HYGIENE
THIS PAST YEAR. I HAVE AUTHORED OR COAUTHORED OVER 70
SCIENTIFIC PUBLICATIONS AND FIVE CHAPTERS OF A TEXT BOOK
ON INDUSTRIAL TOXICOLOGY.

-3-

I HAVE BEEN ACTIVE THROUGHOUT MY ENTIRE CAREER THE
AREA OF INDUSTRIAL TOXICOLOGY, INDUSTRIAL HYGIENE
AND SAFETY EVALUATION.

THROUGHOUT THESE YEARS I HAVE SEEN DRAMATIC CHANGES IN
THE DEGREE OF COMPREHENSIVENESS WITH WHICH TOXICOLOGICAL
INDUSTRIAL HYGIENE AND MEDICAL SURVEILLANCE STUDIES HAVE
BEEN AND ARE BEING CONDUCTED. THE TECHNOLOGIES USED
IN THE 1930'S AND 1940'S WERE CRUDE WITH RESPECT TO THOSE
USED IN THE 1950'S AND EARLY 1960'S BUT IT MUST BE
REMEMBERED THAT THEY WERE THE BEST AVAILABLE AT THE TIME.
LIKEWISE, THOSE USED IN THE LATE 1960'S AND NOW, ARE MORE
COMPREHENSIVE THAN THOSE OF TEN YEARS AGO.

I WILL BE AMAZED IF IN 1980 THE SAME CANNOT BE SAID
OF THE TECHNOLOGY IN USE TODAY. THE SAME COMPARISONS
APPLY TO ENGINEERING CAPABILITIES AND PRACTICES; PRODUCTION
PLANTS AND PROCESSING PROCEDURES ENGINEERED TODAY BEAR

ONLY A RESEMBLANCE TO THOSE ENGINEERED AND BUILT AS
LITTLE AS A DECADE AGO. WHY AM I TAKING THE TIME TO
MAKE THIS POINT? I WANT TO EMPHASIZE THAT THESE CHANGES
REPRESENT PROGRESS MADE THROUGH RESEARCH AND I BELIEVE
THAT THE VINYL CHLORIDE PROBLEM WE HAVE TODAY WILL BE
SOLVED BY RESEARCH, NEW DISCOVERY AND THE APPLICATION OF
THE RULE OF REASON.

UP UNTIL VERY RECENTLY WHEN THE TOXICOLOGISTS AND ONCOLOGISTS
BEGAN TO ATTACH MUCH GREATER SIGNIFICANCE TO THE OVERALL
CANCER PROBLEM, TYPICAL INHALATION TOXICOLOGY STUDIES,
WHETHER DONE BY GOVERNMENT, INDUSTRY, OR ACADEMIA,
CONSISTED OF EXPOSING RELATIVELY SMALL GROUPS OF ANIMALS
FOUR TO SEVEN HOURS/DAY, 5 DAYS/WEEK FOR A FEW WEEKS, OR
AT MOST, FOR A FEW MONTHS.

THE PURPOSE WAS TO FIND THE MAXIMUM
CONCENTRATION THAT DID NOT CAUSE A DISCERNIBLE EFFECT AND

TO CHARACTERIZE THE EFFECT AT HIGHER LEVELS. SUCH DATA, WHEN AVAILABLE, WERE USED IN THE GUIDELINES FOR PERMISSIBLE INDUSTRIAL EXPOSURE. IT WAS TO SUCH A TESTING PROGRAM THAT WE SUBJECTED VINYL CHLORIDE IN 1960, THE RESULTS OF WHICH WERE PUBLISHED IN 1961.

EVEN THOUGH THESE STUDIES ON VINYL CHLORIDE WERE OF LONGER DURATION THAN ANY OTHERS, THEY WERE STILL OF TOO SHORT A DURATION TO PERMIT DETECTION OF CARCINOGENICITY. THEY DID, HOWEVER, GIVE US A USEFUL INDICATION OF SIMPLE TOXICITY WHICH HELPED TO CAUSE US TO EXERT A POSITIVE EFFORT TOWARD REDUCING THE INTENSITY OF EXPOSURE WITHIN OUR OPERATING UNITS.

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I MAKE THIS POINT BECAUSE I HEAR COMMENTS TO THE EFFECT THAT THE DEFINITIVE STUDIES SUCH AS PROF. MALTONI AND THE MCA ARE CONDUCTING NOW SHOULD HAVE BEEN CONDUCTED YEARS AGO. IT IS TRUE THAT IT WOULD HAVE BEEN GREAT IF SOMEONE HAD CONDUCTED SUCH STUDIES YEARS AGO, BUT NO ONE, TO MY KNOWLEDGE, EVEN SUSPECTED VINYL CHLORIDE OF BEING A CARCINOGEN. HENCE, IT WOULD HAVE BEEN DIFFICULT TO JUSTIFY THE USE OF THE LIMITED RESOURCES AVAILABLE FOR SUCH STUDIES FOR VINYL CHLORIDE.

FURTHERMORE, I DOUBT THAT PROF. MALTONI'S STUDIES WOULD HAVE BEEN INITIATED WHEN THEY WERE IF IT HAD NOT BEEN FOR THE SERENDIPITOUS DISCOVERY BY PROF. VIOLA OF TUMORS IN THE RATS IN WHICH HE WAS ATTEMPTING TO INDUCE THE LIKENESS OF HUMAN ACROOSTEOLYSIS.

-7-

I DO FEEL, HOWEVER, THAT THE VINYL CHLORIDE PROBLEM HAS TAUGHT US ALL A LESSON THAT WILL, IN THE LONG RUN, DO MUCH TO DEVELOP AN AWARENESS THAT WILL LEAD TO BETTER OCCUPATIONAL AND ENVIRONMENTAL HEALTH.

I FEEL THAT IT IS EASY TO OVERREACT TO SITUATIONS SUCH AS THE VINYL CHLORIDE PROBLEM AND MUCH MORE DIFFICULT TO STEP BACK, OBJECTIVELY ASSESS THE SITUATION AND DEVELOP A COURSE OF ACTION THAT TAKES INTO CONSIDERATION THE REASONABLY EXPECTED CONSEQUENCES OF THAT ACTION. I BELIEVE THAT THE EMERGENCY TEMPORARY STANDARD WAS A GOOD EXAMPLE OF THE LATTER TYPE OF ACTION FOR IT FOLLOWED THE RULE OF REASON.

I FEEL THAT THE DEPT. OF LABOR SHOULD BE COMPLIMENTED ON THE SPEED AND FORCEFULNESS OF THE ACTION IT TOOK. TODAY, WITH ADDITIONAL DATA IN HAND, THE DEPT. OF LABOR MUST REEVALUATE ITS POSITION. IT IS OUR PURPOSE HERE TODAY TO SUPPLY THE INFORMATION AND THOUGHTS WE HAVE THAT MAY HELP THE DEPT. OF LABOR IN ITS DELIBERATIONS WITH RESPECT TO THE DEVELOPMENT OF A PERMANENT STANDARD FOR OCCUPATIONAL EXPOSURE TO VINYL CHLORIDE.

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THE DOW CHEMICAL COMPANY, FROM TOP MANAGEMENT DOWN, IS DEEPLY CONCERNED ABOUT THE HAZARDS TO HEALTH PRESENTED BY EXPOSURE TO VINYL CHLORIDE, AS WELL AS OTHER SUBSTANCES. DOW HAS BEEN IN THE FOREFRONT IN ITS CONCERNS ABOUT THE TOXICOLOGICAL HAZARDS PRESENTED BY THE MATERIALS IT USES, MANUFACTURES AND SELLS.

THIS IS ATTESTED TO BY THE FACT THAT DOW SUPPORTS
TOXICOLOGICAL RESEARCH LABORATORIES IN MIDLAND, MICHIGAN,
FREEPORT, TEXAS AND ZIONSVILLE, INDIANA EMPLOYING A TOTAL
OF 126 PERSONS, 25 OF WHOM HAVE DOCTORATE DEGREES. ITS
INDUSTRIAL HYGIENE LABORATORIES ARE STAFFED WITH OVER
TWENTY INDUSTRIAL HYGIENISTS SUPPORTED BY A NUMBER OF
ANALYTICAL SPECIALISTS. ITS MEDICAL FACILITIES AT
MIDLAND, MICHIGAN AND FREEPORT, TEXAS ARE EXTENSIVE;
THE STAFFS CONSIST OF BETWEEN 70 AND 85 PERSONS, 11
OF WHOM ARE FULLTIME PHYSICIANS. THE SMALLER PLANTS ARE
ALL SERVED BY PART-TIME PHYSICIANS AND FULLTIME STAFFS
UNDER THE SUPERVISION OF THE PHYSICIANS OF OUR CORPORATE
MEDICAL DEPARTMENT.

R&S 028552

IT IS FROM THIS CADRE OF EXPERTISE THAT OUR SUBSEQUENT TESTIMONY WILL BE DRAWN. WE HOPE IT WILL BE HELPFUL TO THOSE CHARGED WITH THE RESPONSIBILITY OF WEIGHING RISK VERSUS BENEFIT WITHIN THE CONCEPT OF THE RULE OF REASON.

WE WILL PRESENT TESTIMONY DEALING WITH ENGINEERING PRACTICES, INDUSTRIAL HYGIENE MEASUREMENTS, PERSONAL PROTECTIVE DEVICES, MEDICAL SURVEILLANCE, MEDICAL OBSERVATION BASED ON A STUDY OF MORTALITY AND A PROGRESS REPORT ON RESEARCH INTO THE POSSIBLE MECHANISM OF ACTION OF VINYL CHLORIDE. IT IS OUR PLAN TO HAVE THOSE MOST FAMILIAR WITH THE VARIOUS ASPECTS TO MAKE THESE PRESENTATIONS.

Now, I should like to introduce Mr. Karl Oelfke, Production Manager of Vinyl Chloride who will discuss our experiences relative to the relationship between engineering, work practice and monitoring in the reduction of the release of vinyl chloride and concomitantly the reduction in the opportunity for exposure of persons to the vapor.

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ENGINEERING AND CONTROL PRACTICES

K. H. OELFKE
THE DOW CHEMICAL COMPANY
FREEPORT, TEXAS