

I N D E X

WEDNESDAY, APRIL 3, 2001..... 2: 1404: 3
1: 35 P. M 2: 1404: 7

WITNESSES

RICHARD DOLL

DIRECT EXAMINATION (RESUMED) BY MR. PIUZE..... 2: 1405: 7
CROSS-EXAMINATION BY MR. CARLTON..... 2: 1415: 9
REDIRECT EXAMINATION BY MR. PIUZE..... 2: 1457: 24

WILLIAM FARONE

DIRECT EXAMINATION BY MR. PIUZE..... 2: 1463: 8

1 CASE NUMBER: BC 226593
2 CASE NAME: BOEKEN V. PHILIP MORRIS
3 LOS ANGELES, CALIFORNIA WEDNESDAY, APRIL 3, 2001
4 DEPARTMENT 308 HON. CHARLES W MC COY, JUDGE
5 APPEARANCES: (AS NOTED ON TITLE PAGE.)
6 REPORTER: LINDA STALEY, CSR NO. 3359, RMR, CRR
7 TIME: 1:35 P.M.

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RICHARD DOLL,

12

WITNESS, RESUMED THE STAND AND TESTIFIED FURTHER AS FOLLOWS:

13

14

THE COURT: GOOD AFTERNOON, LADIES AND

15

GENTLEMEN.

16

COUNSEL.

17

SIR, HOW DO YOU DO?

18

YOU MAY BE SEATED.

19

OKAY. THIS IS EVERY DAY, AFTER WE HAVE LUNCH,

20

THERE'S A SIMPLE FACT ABOUT HUMAN ANATOMY. AFTER YOU PUT

21

SOMETHING DOWN THERE, YOU KNOW WHAT IT DOES TO YOU SOMETIMES.

22

OH, THAT FEELS SO GOOD, AND YOU KIND OF WANT TO LEAN BACK.

23

THIS IS THE TIME OF DAY WHEN IT'S REAL

24

IMPORTANT FOR JURORS AND JUDGES, ESPECIALLY, FOR ABOUT THE

25

NEXT 15 TO 20 MINUTES, TO BE PARTICULARLY AWARE OF OURSELVES

26

AND OUR OWN PAYING ATTENTION EACH DAY. THEN ONCE WE GET

27

PAST THIS ABOUT THIS 15 OR 20 MINUTES, THE REST OF THE DAY

28

MOVES SMOOTHLY, WE GET TO 4 O'CLOCK, AND WE GO HOME.

1 OKAY. THANK YOU, LADIES AND GENTLEMEN.

2 MR. PIUZE.

3 MR. PIUZE: SO SHOULD I TALK LOUDER OR FASTER OR JUMP
4 UP AND DOWN MORE?

5 THE COURT: NO.

6

7 DIRECT EXAMINATION (RESUMED)

8 BY MR. PIUZE:

9 Q. DR. DOLL, I HAD TOLD YOU EARLIER WHEN YOU
10 STARTED THIS MORNING THAT I WAS GOING TO GO BACK AND TALK
11 ABOUT SOME OF YOUR OTHER QUALIFICATIONS, AND SO THAT'S HOW I
12 CHOOSE TO START THE AFTERNOON.

13 OKAY?

14 A. YES.

15 Q. THANK YOU. TELL US WHEN AND WHERE YOU
16 GRADUATED FROM MEDICAL SCHOOL, PLEASE.

17 A. I GRADUATED FROM THE UNIVERSITY OF LONDON IN
18 1937.

19 Q. AND THEN TELL US -- I KNOW WE'RE GOING TO HOOK
20 UP AFTER YOU GOT OUT OF THE SERVICE -- BUT TELL US ABOUT YOUR
21 OCCUPATIONAL HISTORY STARTING IN '37 AND THEN GOING THROUGH
22 THE WAR YEARS, PLEASE.

23 A. 1937, I DID SOME RESIDENTIAL, WHAT WE CALL
24 HOUSE JOBS IN ENGLAND, INTERNSHIPS AT THE ST. THOMAS'
25 HOSPITAL, I TRAINED AT THE HOSPITAL MEDICAL SCHOOL, AND THEN
26 I WENT TO THE POSTGRADUATE MEDICAL SCHOOL, AND THEN THE WAR
27 CAME, AND I HAD JOINED THE VOLUNTEER RESERVE BEFORE THEN, AND
28 I WAS CALLED UP AND BECAME BATTALION MEDICAL OFFICER, WENT

1 OUT WITH THE TROOPS OF FRANCE IN 1939. AND THEN I CAME BACK
2 WITH THE BRITISH DEFEAT IN 1940 AND THEN WENT OUT TO EGYPT IN
3 1941 AND STAYED THERE UNTIL I GOT ILL IN 1944 AND CAME HOME.

4 Q. THANK YOU. JUST A COUPLE OF SENTENCES ON YOUR
5 POSTGRADUATE MEDICAL STUDIES BEFORE THE WAR, PLEASE.

6 TELL US A LITTLE BIT ABOUT THAT.

7 A. YES. I STUDIED TO TAKE THE HIGHER DEGREES IN
8 ENGLAND, WHAT I THINK YOU CALL THE BOARDS IN THE UNITED
9 STATES. SO THAT WHEN THE WAR CAME, I WAS AN ACCREDITED
10 PHYSICIAN, AND FROM 1941 TO '44 IN EGYPT, I WAS A PHYSICIAN
11 AT A HOSPITAL OR IN A HOSPITALSHIP.

12 Q. THANK YOU. TAKING YOU INTO THE LATE '50'S AND
13 BEYOND, HAVE YOU HAD FACULTY APPOINTMENTS AT OXFORD
14 UNIVERSITY?

15 A. YES. WELL, I DIDN'T GO TO OXFORD UNTIL 1969.
16 BEFORE THEN, I HAD BEEN ATTACHED CONSULTANT PHYSICIAN AT
17 LONDON HOSPITAL AND AT UNIVERSITY COLLEGE HOSPITAL, TEACHING
18 HOSPITAL, IN THE 1960'S.

19 AND THEN WHEN I WENT TO UNIVERSITY OF OXFORD.
20 I WENT AS PROFESSOR OF MEDICINE.

21 Q. CAN YOU TELL US ABOUT SOME OF THE FACULTY
22 APPOINTMENTS YOU'VE HAD SINCE, PLEASE.

23 A. WELL, I RETIRED IN 1979 -- 1979, I WAS
24 PROFESSOR OF MEDICINE AT THE UNIVERSITY OF OXFORD FROM 1969
25 TO '79. AND THEN I WAS HEAD OF ONE OF THE OXFORD COLLEGES
26 FOR FOUR YEARS, '79 TO '83, AND SINCE THEN, I'VE BEEN WORKING
27 AS AN UNPAID -- AS A RESEARCH WORKER IN THE RESEARCH UNIT OF
28 PROFESSOR PETO.

1 Q. OKAY. THANK YOU. SEE, I TRIED DOING THIS
2 WITHOUT MY NOTES, BUT AFTER LUNCH, TOO.

3 DID YOU JOIN THE MEDICAL RESEARCH COUNCIL
4 STATISTICAL RESEARCH UNIT?

5 A. YES, I DID.

6 Q. IS THAT WHERE ALL OF THE SMOKING RESEARCH
7 STARTED?

8 A. YES.

9 Q. DID YOU DIRECT THE CANCER EPIDEMIOLOGY -- I DID
10 THAT WRONG -- CANCER EPIDEMIOLOGY RESEARCH UNIT SPONSORED BY
11 THE DEPARTMENT OF HEALTH?

12 A. YES, I DID. THAT WAS ATTACHED TO MY DEPARTMENT
13 WHEN I WAS PROFESSOR OF MEDICINE.

14 Q. AND WERE YOU ALSO THE DIRECTOR OF THE IMPERIAL
15 CANCER RESEARCH FUND?

16 A. NOT OF THE FUND ITSELF; OF ONE OF THEIR
17 RESEARCH UNITS.

18 Q. ALL RIGHT.

19 A. THEY TOOK OVER FROM THE DEPARTMENT OF HEALTH,
20 THE CANCER EPIDEMIOLOGY UNIT.

21 Q. WERE YOU A CO-AUTHOR OF A REPORT ON THE CAUSES
22 OF CANCER TO THE U. S. CONGRESSIONAL OFFICE OF TECHNOLOGY
23 ASSESSMENT?

24 A. YES, I WAS.

25 Q. 1981?

26 A. YES.

27 Q. AND YOU CAN JUST STEP OUT OF YOUR MODESTY SHOES
28 JUST ONE MORE TIME, AND I'LL LEAVE YOU ALONE.

1 DID THE QUEEN KNIGHT YOU IN 1971 AND MAKE YOU
2 SIR RICHARD DOLL?

3 A. YES, SHE DID.

4 Q. THANK YOU. NOW, LET'S GO BACK TO TOBACCO. I'M
5 ALMOST -- I'M CLOSE TO THE END OF MY DIRECT EXAMINATION.

6 WHEN YOU WERE DOING YOUR DOCTOR STUDIES,
7 TALKING TO ALL OF THE BRITISH DOCTORS ABOUT THEIR SMOKING
8 HABITS AND WHAT WAS HAPPENING TO THEM, AT SOME POINT, DID YOU
9 ASK THEM WHY THEY SMOKED?

10 A. YES. IN THE MIDDLE 1960'S, MY COLLEGE
11 PROFESSOR FLETCHER, WHO WAS PROFESSOR OF RESPIRATORY
12 MEDICINE, AND I CARRIED OUT A SMALL SURVEY OF A RANDOM SAMPLE
13 OF THE BRITISH DOCTORS TO FIND OUT WHY THE -- IF ONCE THEY
14 WERE CONTINUING TO SMOKE, HAD TRIED TO GIVE UP SMOKING, AND
15 IF THEY HAD, WHY THEY HAD TRIED TO GIVE UP SMOKING, AND IF
16 THEY HADN'T SUCCEEDED, WHY THEY HADN'T SUCCEEDED.

17 Q. WHAT DID YOU HEAR, PLEASE.

18 A. WELL, WE DID THAT STUDY BECAUSE WE WANTED TO
19 FIND OUT IF SMOKING GAVE THEM MUCH PLEASURE, WHICH WE HAD
20 BEEN TOLD AT THE MEETING OF THE COLLEGE OF PHYSICIANS WAS THE
21 REASON WHY THE TOBACCO INDUSTRY IN ENGLAND WAS GOING TO
22 CONTINUE SELLING TOBACCO PRODUCTS, BECAUSE IT GAVE PLEASURE,
23 AND WE WANTED TO FIND OUT FROM THE DOCTORS WHY THEY WERE
24 SMOKING.

25 AND WHAT WE FOUND OUT, OF COURSE, WAS THAT MOST
26 OF THEM HAD GIVEN UP, AND MOST OF THOSE WHO HAD CONTINUING
27 HAD TRIED TO GIVE UP, BUT THEY CONTINUED SMOKING, AS THEY
28 SAID, BECAUSE THEY FELT SO UNCOMFORTABLE WHEN THEY STOPPED.

1 IT MADE THEM ANXIOUS AND WORRIED, AND THEY HAD SYMPTOMS FROM
2 STOPPING SMOKING, AND THEY JUST HAD TO TAKE IT UP AGAIN.

3 Q. DID ANY OF THE DOCTORS TELL YOU THAT THEY
4 SMOKED FOR PLEASURE?

5 A. NO, NONE OF THEM

6 Q. NOW, YOU TOLD THE JURY THAT IN 1940 -- IF I WAS
7 LISTENING CORRECTLY -- '49, A YEAR INTO YOUR RESEARCH, EVEN
8 THOUGH YOU HAD AN 18-YEAR HISTORY OF SMOKING CIGARETTES,
9 AFTER SEEING SOME OF YOUR RESEARCH, YOU JUST STOPPED, RIGHT?

10 A. YES.

11 Q. DID YOU PERSONALLY HAVE DIFFICULTY STOPPING?

12 A. NO, I DIDN'T.

13 Q. DOES THE FACT THAT YOU PERSONALLY DID NOT HAVE
14 DIFFICULTY SMOKING LEAD YOU TO DOUBT SOME OF THOSE OTHER
15 DOCTORS' CLAIMS THAT THEY HAD A REALLY TOUGH TIME STOPPING
16 SMOKING?

17 A. NOT AT ALL. BECAUSE I SAW THE PROBLEM CLOSE AT
18 HAND. MY WIFE WAS A SERIOUSLY ADDICTED SMOKER, 40 CIGARETTES
19 A DAY. SHE USED TO SAY SHE BOUGHT 40 CIGARETTES A DAY; SHE
20 GAVE SOME OF THEM AWAY. BUT SHE HAD THE GREATEST DIFFICULTY
21 IN STOPPING. AND I EVENTUALLY HAD TO BRIBE HER BY SAYING IF
22 SHE STOPPED FOR A MONTH, I'D GIVE HER SO MUCH MONEY SO SHE
23 COULD GO OUT TO BUY SOME LUXURY GOODS THAT SHE WOULDN'T HAVE
24 BOUGHT OTHERWISE. AND SHE DID THAT, AND SHE'S SUCCEEDED IN
25 STOPPING SMOKING, BUT I HAD GREAT DIFFICULTY, THEN, STOPPING
26 HER SPENDING MONEY ON LUXURY ITEMS.

27 Q. WELL, I THOUGHT YOU WERE GOING TO PROMISE HER A
28 TRIP TO DISNEYLAND, ACTUALLY.

1 OKAY. WHAT YEAR WAS THAT SHE STOPPED SMOKING?

2 A. OH, IN THE EARLY '50'S. ONE -- I WAS
3 STIMULATED TO REALLY PRESS HER BECAUSE WE'D HAD SOME FRIENDS
4 THAT SMOKED SEVEN CIGARETTES CONTINUALLY AFTER DINNER, AND
5 THIS REALLY UPSET ME, AND I PUT PRESSURE ON HER, AS I
6 EXPLAINED, AND SHE DID STOP SMOKING AND HASN'T SMOKED A
7 CIGARETTE SINCE.

8 Q. OKAY. HERE'S A NEW SUBJECT.

9 CAN YOU TELL, BASED UPON YOUR FUND OF KNOWLEDGE
10 AND ALL THE YEARS AND ALL THE RESEARCH, WHAT ARE THE ODDS OF
11 SOMEONE WHO SMOKES GETTING LUNG CANCER COMPARED TO SOMEONE
12 WHO DOESN'T SMOKE?

13 A. WELL, TAKING AN AVERAGE AMOUNT OF SMOKING,
14 ABOUT TWENTY TIMES -- TWENTY TIMES THE RISK.

15 Q. AND IF A PERSON AS A PERSON IS A HEAVIER AND
16 HEAVIER SMOKER, DOES THAT RISK GO UP OR WHAT --

17 A. IT GOES UP PROGRESSIVELY WITH THE AMOUNT OF
18 SMOKE, YES.

19 Q. AMONG -- I WANT TO GET THIS RIGHT NOW, SO I
20 WANT TO LOOK AT IT.

21 DO YOU HAVE AN ESTIMATE OF HOW MANY
22 SMOKING-RELATED DEATHS OCCUR EACH YEAR IN THE INDUSTRIAL
23 WORLD?

24 A. IN THE DEVELOPED WORLD, IT'S ABOUT 2 MILLION
25 DEATHS A YEAR.

26 Q. DO YOU HAVE AN OPINION --

27 A. I BEG YOUR PARDON. I THINK -- I'M SORRY.

28 1 MILLION. AND 1 MILLION IN THE UNDEVELOPED

1 WORLD AT THE PRESENT -- IN THE MIDDLE '90'S. IT'S GONE UP A
2 LOT IN THE UNDEVELOPED WORLD SINCE THEN, AND IT WILL BE
3 2 MILLION, I THINK, IN A FEW YEARS TIME. IT WAS 1 MILLION
4 WHEN WE DID THE CALCULATION.

5 Q. OKAY. 1 MILLION IN THE DEVELOPED WORLD,
6 1 MILLION IN THE UNDEVELOPED WORLD?

7 A. YES.

8 Q. IN THE DEVELOPED COUNTRIES -- AND LET'S -- I
9 GUESS WE SHOULD GET OUR DEFINITIONS STRAIGHT.

10 WHAT'S A DEVELOPED -- OBVIOUSLY, THIS IS A
11 DEVELOPED COUNTRY; OBVIOUSLY, ENGLAND IS.

12 WHAT DO YOU HAVE IN MIND FOR DEVELOPED
13 COUNTRIES?

14 A. WELL, THESE ARE TECHNICALLY SO DESCRIBED BY THE
15 ORGANIZATION FOR ECONOMIC DEVELOPMENT, OR ECD, WE CALL IT.

16 Q. LET'S HAVE AN EXAMPLE OF SOMETHING THAT WOULD
17 NOT BE A DEVELOPED COUNTRY. CAN YOU GIVE ME AN EXAMPLE OF
18 THAT?

19 A. CHINA.

20 Q. CHINA. OKAY.

21 IN THE DEVELOPED COUNTRIES AMONG CIGARETTE
22 SMOKERS, WHAT'S THE NUMBER ONE CAUSE OF DEATH?

23 A. CORONARY DISEASE, HEART DISEASE.

24 Q. LET ME ASK A BETTER QUESTION. ARE CIGARETTES
25 AN IMPORTANT CAUSE OF DEATH AMONG CIGARETTE SMOKERS IN
26 DEVELOPED COUNTRIES?

27 A. YES. FOR THE REGULAR CIGARETTE SMOKER, IT
28 DOUBLES THE RISK OF DEATH THROUGHOUT LIFE -- THROUGHOUT THEIR

1 SMOKING LIFE ON AVERAGE. SO THAT THEY HAVE TWICE THE RISK OF
2 DYING ANY GIVEN YEAR AS A LIFELONG KNOWN SMOKER OF
3 SMOKING-RELATED DISEASE -- WELL, HALF OF THEM SMOKING-RELATED
4 DEATHS, THE OTHER HALF OF DEATHS WILL BE DEATHS THAT WILL
5 OCCUR ANYWAY.

6 Q. ALL RIGHT. THANK YOU.

7 IS CIGARETTE SMOKING THE SINGLE MOST IMPORTANT
8 CAUSE OF DEATH IN CIGARETTE SMOKERS IN DEVELOPED COUNTRIES?

9 A. YES. BY FAR. ON ACCOUNT OF HALF THEIR DEATHS.

10 Q. LET'S TALK ABOUT STOPPING.

11 USING STATISTICS, IF I SAY TO YOU THAT SOMEONE
12 WOULD SMOKE FOR 20 OR 30 OR MORE YEARS AND HAS A LOT OF THAT
13 STUFF IN THEM OR HER, STOPS, CAN YOU TELL THE JURY, IS IT
14 STILL A GOOD THING TO STOP EVEN AFTER ALL THAT TIME?

15 A. OH, YES. AND WE WERE ABLE TO SHOW THIS IN OUR
16 STUDY OF DOCTORS, BECAUSE WE WERE IN TOUCH WITH THEM EVERY
17 FEW YEARS, SO WE COULD RECORD THEIR CHANGES IN HABITS, AND WE
18 WERE ABLE TO LOOK AT THE SURVIVAL OF DOCTORS THAT HAD STOPPED
19 SMOKING AROUND ABOUT 35, 45, 55, AND EVEN THOSE THAT STOPPED
20 AROUND ABOUT AGE 65 HAD A HIGHER CHANCE OF SURVIVING INTO
21 THEIR 80'S THAN THOSE WHO CONTINUED TO SMOKE.

22 Q. THANK YOU. I'LL GIVE YOU JUST A HYPOTHETICAL
23 HERE. SOMEONE WHO'S ABOUT, LET'S SAY, 55 YEARS OLD OR SO AND
24 HAS BEEN A HEAVY SMOKER FOR 40 YEARS, IF A PERSON LIKE THAT
25 STOPPED, WHAT WOULD BE THE ODDS OF REDUCING THE CHANCES OF
26 PREMATURE DEATH?

27 A. OH, I WOULD THINK THEY WOULD -- THEY WOULD HALF
28 THEIR EXCESS RISK IN THE COURSE OF THE NEXT 20 YEARS OR SO,

1 YES. SOME THINGS -- THEY WOULD GREATLY REDUCE THE RISK --
2 THEY WOULD GREATLY REDUCE THE RISK OF HEART DISEASE. THEY
3 WOULD REDUCE THE RISK OF LUNG CANCER BY SOME 20 OR 30
4 PERCENT. BUT IT WOULD VARY FROM ONE DISEASE TO ANOTHER, THE
5 EXTENT TO WHICH STOPPING HAD REDUCED THE FUTURE RISK.

6 Q. OKAY. WELL, LET'S TALK LUNG CANCER JUST FOR
7 THE HECK OF IT.

8 LET'S SAY, LUNG CANCER AND, LET'S SAY, WE'VE
9 GOT A 50 -- ROUGHLY 55-YEAR-OLD PERSON AND, LET'S SAY, BEEN
10 SMOKING FOR OVER 40 YEARS.

11 IF A PERSON LIKE THAT STOPPED, WOULD HE REDUCE
12 HIS RISK OF LUNG CANCER BY, WHAT DID YOU SAY, HOW MUCH?

13 A. WELL, I'D LIKE TO CHECK MY FIGURES. I HAVE A
14 PAPER HERE WHICH WOULD GIVE ME THE ACCURATE FIGURE, BUT
15 PROBABLY ON THE ORDER OF 20 PERCENT.

16 Q. OKAY. IF YOU GOT YOUR PAPER, YOU CAN TAKE A
17 LOOK AT IT. THAT WOULD BE FINE BY ME.

18 A. THANK YOU. THIS IS THE ONE PUBLISHED IN THE
19 YEAR 2000. I HAVEN'T GOT IT ON THE TABLE.

20 Q. THOSE WON'T BE THEM I THINK IT MAY BE
21 ATTACHED --

22 DID YOU GIVE A DEPOSITION ON SATURDAY?

23 A. YES.

24 Q. THIS PAST SATURDAY?

25 I THINK IT MAY BE ATTACHED TO THAT. HANG ON A
26 SECOND.

27 A. IT WAS. I'D RATHER GIVE YOU THE ACTUAL FIGURE.

28 Q. I'LL BE RIGHT THERE.

1 HERE YOU GO. YOU' LL RECOGNIZE IT FASTER THAN
2 ME. IT' S RIGHT AT THE BACK, THOUGH.

3 A. WELL, PEOPLE THAT STOPPED AROUND -- WE GIVE
4 FIGURES -- WOULD BE STOPPING AROUND THE AGE OF 60 OR AROUND
5 THE AGE OF 50, SO 55 WOULD BE IN BETWEEN THE TWO. BUT
6 STOPPING AROUND THE AGE OF 50 REDUCES THE RISK OF DEVELOPING
7 LUNG CANCER BY THE AGE OF 75 BY ABOUT 60 PERCENT OR MORE THAN
8 THAT. TWO THIRDS.

9 Q. AND AT 60?

10 A. AND AT 60, BY ONE THIRD.

11 Q. OKAY. SO AS SOMEONE WHO HAS BEEN INVOLVED IN
12 THE RESEARCH OF TOBACCO AND LUNG CANCER, WOULD YOU SAY THAT
13 IT' S NEVER TOO LATE TO STOP?

14 A. I WOULD.

15 Q. IN THE -- YOU' RE LOOKING AT A --

16 A. OF COURSE, I HAVE TO QUALIFY THAT. IF THE
17 CANCER HAS ALREADY BEGUN AND THE PERSON DOESN' T KNOW IT, THEN
18 IT IS TOO LATE. BUT THE LENGTH OF TIME THAT THE CANCER' S
19 THERE, AND YOU DON' T KNOW, IS VERY SHORT, A YEAR OR
20 SHORTER -- A YEAR OR TWO YEARS AT THE MOST.

21 Q. OKAY. THANK YOU.

22 NOW, AS SOMEONE IS A HEAVIER AND HEAVIER
23 SMOKER, DO THOSE STATISTICS CHANGE AT ALL?

24 A. YES. THE CHANCE OF DEVELOPING THE DISEASE
25 INCREASES WITH THE AMOUNT OF SMOKING ALMOST DIRECTLY
26 PROPORTIONAL TO THE AMOUNT SMOKED, BUT IT DOESN' T AFFECT THE
27 EFFECT OF GIVING UP. IT WILL BE PROPORTIONATELY THE SAME
28 WHETHER THEY SMOKED A LITTLE BIT OR A LOT, AVERAGE OR A LOT.

1 Q. THANK YOU VERY MUCH.
2 I'VE GOT NO FURTHER QUESTIONS AT THIS TIME.

3 THE COURT: THANK YOU, MR. PIUZE.

4 MR. CARLTON, YOUR WITNESS.

5 MR. CARLTON: THANK YOU.

6

7 CROSS-EXAMINATION

8 BY MR. CARLTON:

9 Q. GOOD AFTERNOON, DR. DOLL.

10 A. GOOD AFTERNOON.

11 Q. HOW ARE YOU?

12 I MAY BE STROLLING AROUND BACK HERE, SO I HOPE
13 YOU CAN FOLLOW ME.

14 WHAT I'D LIKE TO DO TO BEGIN WITH IS GO -- AND
15 MAYBE THIS IS THE WRONG TIME OF DAY, SINCE WE'VE JUST HAD
16 LUNCH -- BUT I THINK I HAVE TO DO IT NOW ANYWAY.

17 I'D LIKE TO GO BACK TO WHERE YOU STARTED WITH
18 MR. PIUZE WITH THE TERM "EPIDEMIOLOGY," ALL RIGHT?

19 A. YES.

20 Q. AND TALK A LITTLE BIT MORE ABOUT THAT.

21 NOW, IF I UNDERSTOOD YOU CORRECTLY EARLIER
22 TODAY, YOU SAID IT'S THE SCIENCE OF STUDYING THE DISTRIBUTION
23 OF DISEASE IN A COMMUNITY OF PEOPLE COMPARING DIFFERENCES AND
24 INCIDENCE OF DISEASE TO DETERMINE CAUSATION?

25 A. YES.

26 Q. THAT'S PROBABLY AN OVERSIMPLIFICATION.

27 AND I'D LIKE TO MAYBE BREAK IT DOWN A LITTLE
28 MORE SIMPLY, IF WE COULD.

1 AND CORRECT ME AT ANY POINT WHEN I'M WRONG.
2 EPIDEMIOLOGY INVOLVES, AS YOU SAID BEFORE, THE
3 STUDY OF A GROUP OF PEOPLE, RIGHT?

4 A. AND IT ALSO INVOLVES A STUDY OF INDIVIDUALS
5 WITHIN THE GROUP AS WELL.

6 Q. OKAY. IN WHAT WAY?
7 CAN YOU EXPLAIN THAT?

8 A. YES. I GAVE THE BROAD DEFINITION OF COMPARING
9 AN INSTANCE IN THE WHOLE GROUP WITH THE INCIDENCE OF DISEASE
10 IN ANOTHER WHOLE GROUP. BUT IN ORDER TO FIND OUT WHETHER A
11 CHARACTERISTIC OF THE GROUP IS CAUSING THE DISEASE, YOU NEED,
12 ALSO, TO STUDY THE INDIVIDUALS OF THAT GROUP, SO YOU STUDY
13 GROUPS OF INDIVIDUALS AS WELL AS STUDYING A GROUP.

14 Q. SO BASICALLY, YOU ARE LOOKING AT THE INCIDENCE
15 OF DISEASE, IN GROUPS OF DIFFERENT DEFINITIONS; IS THAT
16 RIGHT, DIFFERENT CHARACTERISTICS DEFINE EACH GROUP?

17 A. AND DEFINE, ALSO, EACH PERSON, BECAUSE AN
18 IMPORTANT PART OF EPIDEMIOLOGY IS TO CARRY TO THE
19 INDIVIDUALS. THE DIFFERENCE FROM CLINICAL MEDICINE IS THAT
20 YOU ARE GOING TO END UP DEALING WITH A LOT OF PEOPLE AND NOT
21 JUST WITH ONE PATIENT.

22 Q. OKAY. WITH AN EPIDEMIOLOGICAL STUDY, ISN'T IT
23 CORRECT THAT WHAT YOU END UP WITH IS SOME SORT OF STATISTICAL
24 ASSOCIATION BETWEEN THE FACTORS YOU'VE LOOKED AT, DEFINING
25 THE GROUPS OF PEOPLE, AND THE DISEASE THAT YOU WERE STUDYING?

26 A. THAT'S PART OF WHAT YOU END UP WITH, YES.

27 Q. OKAY. AND WITH THAT INFORMATION, ARE YOU
28 ESSENTIALLY DETERMINING THAT A PARTICULAR FACTOR WOULD

1 INCREASE OR DECREASE, WHATEVER IT HAPPENS TO BE, THE RISK OF
2 GETTING A PARTICULAR DISEASE BY A PERCENT OF SOME SORT?

3 A. THAT'S WHAT YOU'RE TRYING TO DO, YES.

4 Q. OKAY. SO, IN ESSENCE, YOU'RE LOOKING AT THE
5 STATISTICAL PROBABILITY OF GETTING A DISEASE BASED ON
6 PARTICULAR FACTORS?

7 A. YES.

8 Q. OKAY. IS IT ALSO TRUE, THEN, THAT YOU CAN'T
9 TAKE A BODY OF EPIDEMIOLOGICAL EVIDENCE AND SAY, BASED ON
10 THIS EVIDENCE, PERTAINING TO A GROUP OF PEOPLE, THIS
11 PARTICULAR INDIVIDUAL IS OR IS NOT GOING TO GET THAT DISEASE?

12 A. THAT IS TRUE.

13 Q. ALL RIGHT. YOU ALSO TALKED ABOUT, OH, I GUESS
14 COUPLE OF DIFFERENT KINDS OF STUDIES, AND THEY'RE OVER HERE
15 ON THE CHART.

16 THERE WAS A CASE CONTROL STUDY, RIGHT; THAT WAS
17 YOUR ORIGINAL 1950 STUDY WAS A CASE CONTROL STUDY?

18 A. YES.

19 Q. IS THAT ALSO CALLED A RETROSPECTIVE
20 EPIDEMIOLOGICAL STUDY?

21 A. YES.

22 Q. OKAY. AND THEN AS YOU MOVED ALONG, YOU TALKED
23 ABOUT YOUR 1954 STUDY, OR ACTUALLY, IT'S ONGOING, BUT LET'S
24 CALL IT THE 1954 DOCTORS STUDY.

25 A. YES.

26 Q. THAT WAS A COHORT STUDY, RIGHT?

27 A. YES.

28 Q. IS THAT ALSO CALLED A PROSPECTIVE

1 EPIDEMIOLOGICAL STUDY?

2 A. IT WAS IN '54 WHEN, ACTUALLY, PROFESSOR
3 BRADFIELD AND I INVENTED THE TERM OR APPLIED THE TERM FOR THE
4 FIRST TIME TO THAT TYPE OF STUDY, BUT WE'VE GIVEN IT UP
5 DESCRIBING IT AS SUCH NOW BECAUSE WE HAVE A PROBLEM BECAUSE
6 YOU CAN HAVE BOTH PROSPECTIVE AND RETROSPECTIVE COHORT
7 STUDIES.

8 IF I MAY EXPLAIN THAT.

9 Q. ALL RIGHT.

10 A. PROSPECTIVE COHORT STUDY IS IF YOU OBTAIN THE
11 DETAILS ABOUT A LOT OF PEOPLE TODAY AND THEN FOLLOW THEM IN
12 THE FUTURE; EVERYTHING'S HAPPENING IN THE FUTURE
13 PROSPECTIVELY.

14 BUT A RETROSPECTIVE COHORT STUDY WOULD BE, IF I
15 GOT HOLD OF LOTS OF HOSPITAL RECORDS, LET'S SAY -- AND I'M
16 GIVING AN EXAMPLE OF SOMETHING I'VE DONE -- WHO HAVE BEEN
17 TREATED WITH A LOT OF RADIOTHERAPY, AND HAVE HAD A LOT OF
18 EXPOSURE TO IONIZATION RADIATION 20 YEARS AGO, AND THEN I
19 FOLLOW THEM UP TO TODAY AND SEE WHAT DISEASES THEY'VE
20 DEVELOPED, THAT, WE WOULD NOW CALL A RETROSPECTIVE COHORT
21 STUDY, BECAUSE WE'RE LOOKING BACK INTO THE PAST AS TO WHAT'S
22 HAPPENED, BUT IT'S STILL A COHORT STUDY BECAUSE WE WERE
23 STARTING WITH A GROUP OF PEOPLE THAT HAVE HAD THAT EXPOSURE.

24 Q. EITHER WAY, LOOKING BACK OR LOOKING FORWARD,
25 THESE ARE JUST KIND OF EPIDEMIOLOGICAL STUDIES, RIGHT?

26 A. YES.

27 Q. AND WHAT YOU'RE LOOKING FOR ARE STATISTICAL
28 PROBABILITIES DEPENDING ON WHATEVER THE FACTORS ARE ON THE

1 SUBJECT YOU' RE STUDYING?

2 A. YES.

3 Q. THERE WERE -- AND I THINK YOU' VE TALKED ABOUT
4 SOME OF THEM -- THERE WERE A NUMBER OF EPIDEMIOLOGICAL
5 STUDIES IN THE 1950' S; ISN' T THAT TRUE?

6 A. IN RELATION TO TOBACCO?

7 Q. I' M SORRY. IN RELATION TO TOBACCO, YES.

8 A. YES, INDEED.

9 Q. OKAY. AND THERE WERE OTHER KINDS OF STUDIES.
10 THERE WERE THE MOUSE-PAINTING STUDIES, I THINK
11 YOU TALKED ABOUT?

12 A. YES.

13 Q. THAT WAS WYNDER AND GRAHAN MOUSE-PAINTING
14 STUDIES.

15 AND YOU WERE AWARE OF THESE OTHER STUDIES AT
16 THE TIME?

17 A. YES.

18 Q. BEFORE WE GET INTO THAT POINT, YOU' VE GOT THESE
19 TWO GERMAN STUDIES YOU TALKED ABOUT EARLIER TODAY, AND I
20 THINK YOU SAID, IF I' M RIGHT, THAT YOU DIDN' T KNOW ABOUT THE
21 1939 STUDY UNTIL, WHAT, 1948, SOMETHING LIKE THAT?

22 A. YES.

23 Q. AND YOU DIDN' T KNOW ABOUT THE 1943 STUDY UNTIL
24 1951?

25 A. YES.

26 Q. WOULD IT BE FAIR TO SAY THAT NOT TOO MANY
27 PEOPLE OUTSIDE OF GERMANY KNEW ABOUT THESE STUDIES BECAUSE OF
28 THE WAR?

1 A. I THINK SO.

2 Q. SO THEY WEREN' T VERY WELL KNOWN.

3 AND THE NETHERLANDS STUDY, AS YOU SAID, MAYBE
4 SOME PEOPLE WHO SPOKE DUTCH KNEW ABOUT IT, BUT BEYOND THAT,
5 IT WASN' T WELL KNOWN?

6 A. AND IT ALSO REALLY CAME OUT AFTER WE STARTED
7 OUR WORK, TOO.

8 Q. OKAY. GETTING BACK TO WHERE I WAS.

9 YOU WERE AWARE OF THESE OTHER EPIDEMIOLOGICAL
10 STUDIES, WERE YOU, AT THE TIME THEY WERE GOING ON OR AT THE
11 TIME THEY WERE PUBLISHED?

12 A. AFTER THEY WERE PUBLISHED. THE ONLY ONE -- I
13 WASN' T AWARE OF ANY OF THEM UNTIL THEY WERE PUBLISHED.

14 Q. OKAY. AND DID THESE STUDIES -- THESE STUDIES
15 GOT A FAIR -- LET ME ASK YOU THIS.

16 DID YOU PAY MUCH ATTENTION TO THE AMERICAN
17 PRESS AT THE TIME --

18 A. NO.

19 Q. -- IN RELATION TO THESE KINDS OF STUDIES?

20 A. THERE WAS NO PRESS AS FAR AS I KNOW IN RELATION
21 TO THEM

22 Q. EVEN WHEN THEY WERE ISSUED?

23 A. WELL, THE '43 STUDY, AS I SAY, NEVER GOT IT --
24 NEVER GOT TO ENGLAND OR AMERICA.

25 Q. I' M SORRY. PERHAPS I WAS UNCLEAR. LET' S TALK
26 ABOUT THE EPIDEMIOLOGICAL STUDIES IN THE 1950' S.

27 A. YES.

28 Q. BESIDES YOURS.

1 DID THOSE GET PRESS?

2 A. WYNDER AND GRAHAN, YES, DID.

3 Q. AND THERE WAS THE AMERICAN CANCER SOCIETY STUDY
4 IN 1954, THAT GOT A LOT OF PUBLICITY, TOO, DIDN'T IT?

5 A. IT GOT A LOT OF PUBLICITY.

6 Q. AND "READER'S DIGEST" -- ARE YOU FAMILIAR WITH
7 THE MAGAZINE "READER'S DIGEST"?

8 A. YES.

9 Q. AND IT PUBLISHED QUITE A BIT ON SMOKING AND
10 HEALTH IN THE 1950'S, DIDN'T IT?

11 A. YES.

12 Q. UH-HUH. AND I THINK YOU'VE TESTIFIED IN THE
13 PAST, THEY PUBLISHED, I THINK, SOME SPLENDID ARTICLES WAS
14 YOUR TERM, ON SMOKING AND HEALTH?

15 A. I MAY HAVE, YES. BECAUSE THEY WERE THE PEOPLE
16 WHO POINT OUT THAT THE FILTERS THAT WE USED IN THOSE EARLY
17 DAYS WERE NOT AS EFFECTIVE AS THE TOBACCO ITSELF. THAT WAS
18 ONE OF THE "READER'S DIGEST," CORRECT?

19 Q. BUT THOSE FILTERS BECAME MORE EFFECTIVE WITH
20 TIME, DIDN'T THEY?

21 A. INDEED, YES.

22 Q. AND "LIFE" MAGAZINE, ALSO REPORTED ON SMOKING
23 AND HEALTH ISSUES, DIDN'T IT?

24 A. I DON'T KNOW IT'S NOT A MAGAZINE I KNOW

25 Q. OKAY. ARE YOU AWARE AS TO WHETHER AMERICAN
26 TELEVISION REPORTED ON SMOKING AND HEALTH ISSUES IN THE
27 1950'S?

28 A. YES, I AM

1 Q. SO IT WOULD BE FAIR TO SAY, WOULDN'T IT, THAT
2 THESE STUDIES IN THE 1950'S RECEIVED SOME ATTENTION IN THE
3 MEDIA?

4 A. THEY DID, YES.

5 Q. NOW, IN PREPARING FOR YOUR TESTIMONY TODAY, YOU
6 HAVEN'T DONE A COMPREHENSIVE REVIEW OF THE PRESS COVERAGE IN
7 THE U.S. OF SMOKING AND HEALTH ISSUES, HAVE YOU?

8 A. NO.

9 Q. SO WHEN YOU TOLD THE JURY THAT COVERAGE OF YOUR
10 STUDIES EARLY ON -- THAT COVERAGE OF YOUR STUDIES INCLUDED A
11 RESPONSE BY THE TOBACCO INDUSTRY, THAT WAS BASED ON YOUR
12 RECOLLECTION, WASN'T IT, AND NOT ON SOME REVIEW THAT YOU DID
13 FOR YOUR TESTIMONY?

14 A. BASED ON MY KNOWLEDGE, YES.

15 Q. OKAY. WELL, IS IT YOUR TESTIMONY TODAY THAT
16 THE PRESS COVERAGE OF THESE STUDIES IN THE EARLY '50'S IN THE
17 UNITED STATES USUALLY INVARIABLY CONTAINED A RESPONSE BY THE
18 TOBACCO INDUSTRY?

19 A. THEY COMMONLY DID, YES.

20 Q. HOW ABOUT HERE IN LOS ANGELES?
21 ARE YOU FAMILIAR WITH THE PRESS COVERAGE HERE
22 AT ALL?

23 A. NO, I'M NOT.

24 MR. CARLTON: IF I CAN JUST TAKE A MINUTE. I'M
25 SHOWING MR. PIUZE SOME ARTICLES.

26 Q. DOCTOR, I'D LIKE TO SHOW YOU A COUPLE THINGS.
27 I'D JUST LIKE TO SHOW YOU AN ARTICLE FROM THE
28 "LOS ANGELES TIMES," OCTOBER. YOU CAN SIT DOWN. I'LL JUST

1 PUT IT DOWN RIGHT HERE, IF YOU' D LIKE.

2 OCTOBER 7TH, 1951, "LOS ANGELES TIMES," AND
3 THIS IS AN ARTICLE ABOUT YOUR STUDY, ISN' T IT?

4 A. OH, I HAVEN' T READ IT YET.

5 Q. DO YOU WANT TO LOOK AT IT?

6 A. YES.

7 Q. AND IN THAT ARTICLE, DO YOU SEE ANY STATEMENT
8 OF RESPONSE OR POSITION OF THE TOBACCO INDUSTRY?

9 A. NOT IN THAT COLUMN, NO.

10 Q. ALL RIGHT.

11 A. BUT WHAT I MEAN BY THAT, I HADN' T READ THE
12 WHOLE NEWSPAPER.

13 Q. JUST IN THIS ARTICLE.

14 A. YES. IN THAT ARTICLE, NO.

15 Q. ALL RIGHT.

16 A. BUT I' M NOT SAYING ABOUT THE WHOLE ISSUE OF THE
17 JOURNAL.

18 Q. I UNDERSTAND. YOU CAN PUT THAT DOWN.

19 I' D LIKE TO SHOW YOU -- AND THAT WAS 1951.

20 I' D LIKE TO SHOW YOU AN "L. A. TIMES" ARTICLE
21 FROM DECEMBER OF 1952 AND ASK YOU TO READ IT, AND I THINK
22 THIS ADDRESSES ANOTHER ONE OF YOUR REPORTS.

23 A. YES.

24 Q. AND THAT ARTICLE TALKED ABOUT ANOTHER ONE OF
25 YOUR STUDIES?

26 A. THAT TALKED ABOUT A 1952 -- THE STUDY WHEN WE
27 HAD EXTENDED THE SUBJECTS FROM LONDON TO THE OTHER FOUR
28 CITIES IN THE U. K. , WHICH I REFERRED TO.

1 Q. YES. AND DID YOU SEE IN THAT ARTICLE ANY
2 RESPONSE OR POSITION BY THE TOBACCO INDUSTRY?

3 A. NO, I DID NOT.

4 Q. ALL RIGHT. THANKS VERY MUCH.

5 NOW, YOU TALKED A BIT THIS MORNING ABOUT THE
6 FRANK STATEMENT.

7 DO YOU REMEMBER THAT?

8 A. YES.

9 Q. AND THAT RAN FOR ONLY ONE DAY, DIDN'T IT?

10 A. THAT, I CAN'T ANSWER.

11 Q. DO YOU HAPPEN TO KNOW WHETHER THE PLAINTIFF IN
12 THIS CASE, MR. BOEKEN, EVER READ IT?

13 A. I HAVE NO IDEA. I KNOW IT WAS REPEATED VERY
14 OFTEN, THE FRANK STATEMENT.

15 Q. PARDON ME?

16 A. I SAY I KNOW IT WAS REPEATED ON A NUMBER OF
17 OCCASIONS LATER.

18 Q. I'M HOLDING, I THINK IT'S YOUR ARTICLE,
19 SEPTEMBER 30TH, 1950, BRITISH MEDICAL JOURNAL, "SMOKING AND
20 CARCINOMA OF THE LUNG. "

21 THAT WAS ONE OF THE ARTICLES YOU TALKED ABOUT
22 THIS MORNING, WASN'T IT?

23 A. YES.

24 Q. AND -- HERE, I'LL COME UP HERE WHERE YOU CAN
25 SEE IT.

26 AND THERE'S A SECTION LABELED, "DISCUSSION" IN
27 THIS ARTICLE, ISN'T THERE?

28 A. YES.

1 Q. AND DIDN' T YOU WRITE (READING):

2

3 "IN OTHER WORDS, IT MUST BE
4 CONCLUDED THAT THERE IS A REAL ASSOCIATION
5 BETWEEN CARCINOMA OF THE LUNG AND SMOKING. "

6

7 A. YES.

8 Q. THAT' S RIGHT. AND A LITTLE FARTHER DOWN, YOU
9 SAID (READING):

10

11 "THIS IS NOT NECESSARILY TO
12 SAY THAT SMOKING CAUSES CARCINOMA OF THE
13 LUNG. "

14

15 A. CORRECT.

16 Q. AND THEN YOU FINISH THAT PARAGRAPH BY SAYING
17 (READING):

18

19 "WE, THEREFORE, CONCLUDE THAT
20 SMOKING IS A FACTOR AND AN IMPORTANT FACTOR
21 IN THE PRODUCTION OF CARCINOMA OF THE LUNG. "

22

23 A. YES.

24 Q. ISN' T THAT ACCURATE?

25 A. AFTER HAVING TAKEN INTO ACCOUNT THE EVIDENCE,
26 WE CONCLUDED THAT IT WAS A FACTOR.

27 Q. YES.

28 A. AND AN IMPORTANT FACTOR.

1 Q. NOW, I'D LIKE TO LOOK AT ANOTHER ARTICLE I
2 THINK YOU TALKED ABOUT THIS MORNING, AND THIS IS FROM -- OR
3 THIS IS REPRINTED FROM THE BRITISH MEDICAL JOURNAL,
4 JUNE 26TH, 1954, "THE MORTALITY OF DOCTORS IN RELATION TO
5 THEIR SMOKING HABITS; A PRELIMINARY REPORT."

6 A. YES.

7 Q. AND THAT'S ALSO ONE YOU TALKED ABOUT THIS
8 MORNING, ISN'T IT?

9 A. IT IS.

10 Q. I'M JUST LOOKING HERE AT THE VERY BEGINNING OF
11 THIS ARTICLE, AND IT STARTS OUT (READING):

12

13 "IN THE LAST FIVE YEARS, A
14 NUMBER OF STUDIES HAVE BEEN MADE OF THE
15 SMOKING HABITS OF PATIENTS WITH AND WITHOUT
16 LUNG CANCER," RIGHT?

17

18 A. YES.

19 Q. AND THEN YOU CONTINUE (READING):

20

21 "ALL THESE STUDIES AGREE IN
22 SHOWING THAT THERE ARE MORE HEAVY SMOKERS AND
23 FEWER NON-SMOKERS AMONG PATIENTS WITH LUNG
24 CANCER THAN AMONG PATIENTS WITH OTHER
25 DISEASES," RIGHT?

26

27 A. YES.

28 Q. AND THEN DOWN A LITTLE FARTHER, IT SAYS

1 (READING):

2

3

4

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"WHILE, THEREFORE, THE VARIOUS
AUTHORS HAVE SHOWN THAT THERE IS AN
ASSOCIATION BETWEEN LUNG CANCER AND THE
AMOUNT OF TOBACCO SMOKED, THEY HAVE DIFFERED
IN THEIR INTERPRETATION. SOME HAVE
CONSIDERED THAT THE ONLY REASONABLE
EXPLANATION IS THAT SMOKING IS A FACTOR IN
THE PRODUCTION OF THE DISEASE. OTHERS HAVE
NOT BEEN PREPARED TO DEDUCE CAUSATION AND
HAVE LEFT THE ASSOCIATION UNEXPLAINED. "

A. CORRECT.

Q. AND THAT'S WHAT YOU WROTE?

A. YES.

Q. SO THAT AS OF JUNE OF 1954, THERE WERE OTHERS
WHO HAD DONE STUDIES SIMILAR TO YOURS WHO WERE NOT WILLING TO
CONCLUDE CAUSATION WAS PROVEN, RIGHT?

A. IF YOU REMEMBER, WE POINTED THAT OUT AT THE
BEGINNING IN WYNDER AND GRAHAN FIRST STUDY IN 1950. THEY
SAID IT SEEMS LIKELY THAT IS A CAUSE, BUT THEY DIDN'T
CONCLUDE THAT IT WAS A CAUSE, AND THERE WAS THAT DIFFERENCE
BETWEEN US.

Q. ALL RIGHT. AND THEN LASTLY, WHAT I HAVE HERE
IS A NOVEMBER 10TH, 1956 ISSUE OF THE BRITISH MEDICAL
JOURNAL, ANOTHER ARTICLE BY YOU, "LUNG CANCER AND OTHER
CAUSES OF DEATH IN RELATION TO SMOKING; A SECOND REPORT ON

1 THE MORTALITY OF BRITISH DOCTORS"?

2 A. YES.

3 Q. THIS IS THE FOLLOW-UP THAT YOU DISCUSSED, ISN'T
4 IT?

5 A. THAT'S CORRECT.

6 Q. AND DOESN'T IT SAY HERE, TALKING ABOUT YOUR
7 1954 REPORT (READING):

8

9 "IN 1954, WE PUBLISHED A
10 PRELIMINARY REPORT ON THE RESULTS OF THIS
11 INQUIRY. THE NUMBER OF DEATHS FROM LUNG
12 CANCER WAS THEN SMALL, AND STANDING ALONE,
13 THEY WOULD NOT HAVE JUSTIFIED A FIRM
14 CONCLUSION. "

15

16 A. CORRECT.

17 Q. ALL RIGHT. THANKS VERY MUCH.

18 A. THEY DIDN'T, OF COURSE, STAND ALONE.

19 Q. THAT'S RIGHT.

20 WOULD IT BE FAIR TO SAY THAT IN THE 1950'S, AND
21 I THINK YOU DID SAY THIS EARLIER, THERE WAS SOME RELUCTANCE
22 AMONG SCIENTISTS OR MEDICAL PEOPLE ABOUT RELYING EXCLUSIVELY
23 ON EPIDEMIOLOGICAL STUDIES?

24 A. CORRECT.

25 Q. AND IN 19 -- WELL, IN THE 1950'S, WOULD IT BE
26 TRUE THAT MOST SCIENTISTS HAD BEEN TAUGHT IN MEDICAL SCHOOL
27 TO LOOK FOR CAUSE AND EFFECT IN DISEASE USING SOMETHING
28 CALLED KOCH'S POSTULATES?

1 A. YES AND NO.

2 KOCH, K-O-C-H, APOSTROPHE S, KOCH' S POSTULATES,
3 WERE TAUGHT AS A BASIS ON WHICH YOU COULD DECIDE WHETHER AN
4 INFECTION, A BACTERIUM, WAS THE CAUSE OF DISEASE; THE
5 DIPHTHERIA BACILLUS WAS THE CAUSE OF DIPHTHERIA. THEY HAD NO
6 RELATIONSHIP -- IT HAD NO RELEVANCE IN RELATION TO CHRONIC
7 DISEASES LIKE HEART DISEASE OR CANCERS OF THE LUNG, ALTHOUGH
8 SOME PEOPLE WHO HAD BEEN TAUGHT IN MEDICAL SCHOOL ABOUT
9 KOCH' S POSTULATES TRIED TO APPLY THEM INCORRECTLY TO OTHER
10 TYPES OF DISEASE.

11 Q. AND WAS THAT BECAUSE THE EPIDEMIOLOGICAL STUDY
12 OF CHRONIC DISEASES REALLY WASN' T ALL THAT WELL DEVELOPED IN
13 THE EARLY' 50' S?

14 A. THAT' S CORRECT. FOR EXAMPLE, ONE OF THE
15 REQUIREMENTS IN KOCH' S POSTULATES WAS THAT THE AGENT ALWAYS
16 HAD TO BE PRESENT. YOU ALWAYS HAD TO HAVE -- IN EVERY CASE,
17 YOU ALWAYS HAD TO HAVE DIPHTHERIA BACILLUS PRESENT IF YOU
18 WERE GOING TO SAY THIS IS A CASE OF DIPHTHERIA, AND SOME
19 PEOPLE CARRIED THIS OVER TO THE CHRONIC DISEASE AND SAID,
20 LUNG CANCER CANNOT BE DUE TO SMOKING BECAUSE I HAVE SEEN A
21 CASE, ONE CASE IN A NON-SMOKER. WELL, OF COURSE, THAT WAS A
22 NONSENSICAL ARGUMENT.

23 Q. BUT THAT ARGUMENT WAS MADE BECAUSE PEOPLE WERE
24 APPLYING THE KOCH' S POSTULATES THAT HAD BEEN TAUGHT IN
25 MEDICAL SCHOOL AND USED UP TO THAT POINT IN TIME, RIGHT?

26 A. IN RELATION TO INFECTIOUS DISEASE. IT WAS
27 NEVER MADE BY ANY SERIOUS COMMITTEES, BUT IT WAS MADE BY
28 INDIVIDUALS WHO DIDN' T KNOW ANY BETTER.

1 Q. OKAY. NOW, UNDER KOCH'S POSTULATES, WOULDN'T
2 IT BE CORRECT THAT CIGARETTES, JUST USING KOCH'S POSTULATES,
3 YOU KNOW, CIGARETTES DON'T SATISFY KOCH'S POSTULATES FOR
4 CAUSING LUNG CANCER?

5 A. WELL, IT'S NOT AN INFECTIOUS DISEASE, AND
6 CIGARETTES IS NOT AN INFECTIOUS ORGANISM, SO IT'S IRRELEVANT.

7 Q. ALL RIGHT. BUT PEOPLE AT THE TIME DIDN'T THINK
8 SO; ISN'T THAT TRUE?

9 A. I WOULDN'T GO AS FAR TO SAY THEY DIDN'T THINK
10 SO. THEY HAD REQUIRED IN THEIR MIND THIS CONCEPT THAT
11 SOMETHING ALWAYS HAD TO BE PRESENT, AND I KNOW SOME PEOPLE
12 WHO WERE NOT EXPERIENCED SCIENTISTS HAVE SAID IN RELATION TO
13 A NUMBER OF DISEASES, OH, THAT CAN'T BE THE CAUSE BECAUSE
14 I'VE SEEN A CAUSE WITHOUT THAT AGENT. THEY DIDN'T
15 DISTINGUISH BETWEEN THE CAUSE AND A CAUSE.

16 Q. NOW, ISN'T IT CORRECT THAT DURING THE 1950'S,
17 YOUR COLLEAGUE, DR. HILL, DEVELOPED A SET OF GUIDELINES THAT
18 COULD BE USED IN APPLYING EPIDEMIOLOGICAL DATA TO THE
19 DETERMINATION OF CAUSE OF DISEASE?

20 A. YES.

21 Q. AND GRADUALLY, THROUGH THE '50'S, I GUESS,
22 MAYBE INTO THE '60'S, THAT KIND OF APPROACH BECAME MORE AND
23 MORE ACCEPTED?

24 A. YES. LILIENTFELD IN THIS COUNTRY WAS A LEADING
25 TEACHER OF THAT, ABOUT THAT SORT OF THING, AT JOHNS HOPKINS
26 UNIVERSITY.

27 Q. AND THESE GUIDELINES ARE DIFFERENT THAN KOCH'S
28 POSTULATES?

1 A. QUITE DIFFERENT. THEY' RE APPLIED TO DIFFERENT
2 THINGS.

3 Q. OKAY. IT IS CORRECT, ISN'T IT, THAT THE
4 SURGEON GENERAL OF THE UNITED STATES DIDN'T COME TO THE
5 CONCLUSION THAT CIGARETTE SMOKING IS MORE LIKELY THAN NOT TO
6 BE THE CAUSE OF CANCER UNTIL HE ISSUED HIS REPORT IN 1964?

7 A. WELL, HE DIDN'T REVIEW THE SUBJECT UNTIL THEN.
8 THE U. S. PUBLIC HEALTH SERVICE HAD REVIEWED IT, BUT THE
9 SURGEON GENERAL HADN'T PAID ANY ATTENTION TO IT.

10 Q. ALL RIGHT. AND IN COMING TO THAT CONCLUSION IN
11 1964, DIDN'T THE SURGEON GENERAL APPLY CRITERIA OR GUIDELINES
12 THAT WERE SIMILAR IN SOME WAY TO WHAT PROFESSOR DOLL -- OR
13 HILL -- I'M SORRY -- HAD BEEN DEVELOPING THROUGH THE '50'S
14 AND INTO THE '60'S?

15 A. YES.

16 Q. SO I'D LIKE TO ACTUALLY TURN A BIT NOW TO THE
17 1964 REPORT.

18 ARE YOU FAMILIAR WITH THAT, THE 1964 --

19 A. YES.

20 Q. -- SURGEON GENERAL'S REPORT?

21 AND FOR THE TIME, IT WAS PRETTY RELIABLE
22 AUTHORITY, WASN'T IT?

23 A. WITHIN ITS LIMITATIONS.

24 Q. PARDON ME A MINUTE.

25 I'VE GOT A COPY OF IT HERE. IT'S A PRETTY
26 THICK DOCUMENT, ISN'T IT?

27 A. IT IS.

28 Q. AND THIS WAS THE RESULT OF A LOT OF WORK BY A

1 LOT OF PEOPLE --

2 A. YES.

3 Q. -- ISN'T THAT TRUE?

4 I THINK IT'S NEARLY 400 PAGES LONG, RIGHT?

5 A. I CAN'T REMEMBER.

6 Q. OKAY. NOW, DO YOU RECALL THAT IN THE SURGEON
7 GENERAL'S REPORT, 1964, THE SURGEON GENERAL SAID -- AND I CAN
8 SHOW THIS TO YOU, IF YOU'D LIKE -- THAT (READING):

9

10

"THE CAUSAL SIGNIFICANCE.

11

STATISTICAL METHODS CANNOT ESTABLISH PROOF OF

12

A CAUSAL RELATIONSHIP IN AN ASSOCIATION. THE

13

CAUSAL SIGNIFICANCE OF AN ASSOCIATION IS A

14

MATTER OF JUDGMENT WHICH GOES BEYOND ANY

15

STATEMENT OF STATISTICAL PROBABILITY. "

16

17

WOULD YOU AGREE WITH THAT?

18

A. THAT IT'S A MATTER OF JUDGMENT, YES, I WOULD

19

AGREE WITH THAT.

20

Q. AND THE CRITERIA THAT THE SURGEON GENERAL

21

APPLIED ARE LAID OUT HERE (READING):

22

23

"THE CONSISTENCY OF THE

24

ASSOCIATION, THE STRENGTH OF THE ASSOCIATION,

25

THE SPECIFICITY OF THE ASSOCIATION, THE

26

TEMPORAL RELATIONSHIP OF THE ASSOCIATION, AND

27

THE COHERENCE OF THE ASSOCIATION. "

28

1 DOES THAT SOUND FAMILIAR?

2 A. YES. I DIDN'T CATCH THE FOURTH ONE.

3 Q. FOURTH. "THE TEMPORAL RELATIONSHIP" --

4 A. OH, YES.

5 Q. -- "OF THE ASSOCIATION. "

6 AND DIDN'T HE SAY THAT APPLYING ALL OF THAT,
7 ALL THOSE CRITERIA TO THE STATISTICAL INFORMATION,
8 DETERMINING CAUSE IS A MATTER OF JUDGMENT?

9 A. YES. AND HIS JUDGMENT, OF COURSE, WAS THAT
10 SMOKING WAS A CAUSE OF LUNG CANCER.

11 Q. NOW, THE SURGEON GENERAL ALSO SAID THAT MOST
12 EXTENSIVE AND DEFINITIVE STUDIES ON THE EFFECTS OF TOBACCO ON
13 HEALTH HAD BEEN UNDERTAKEN AFTER OR SINCE 1950?

14 A. YES.

15 Q. WOULD YOU AGREE WITH THAT?

16 A. YES.

17 Q. OKAY. AND THERE'S A FORWARD TO THIS VERY LARGE
18 DOCUMENT WRITTEN BY THE SURGEON GENERAL, AND IT SAYS HERE
19 (READING):

20

21 "FEW MEDICAL QUESTIONS HAVE
22 STIRRED SUCH PUBLIC INTEREST OR CREATED MORE
23 SCIENTIFIC DEBATE THAN THE TOBACCO HEALTH
24 CONTROVERSY. THE INTERRELATIONSHIPS OF
25 SMOKING AND HEALTH UNDOUBTEDLY ARE COMPLEX.
26 THE SUBJECT DOES NOT LEND ITSELF TO EASY
27 ANSWERS. NEVERTHELESS, IT HAS BEEN
28 INCREASINGLY APPARENT THAT ANSWERS MUST BE

1 FOUND. "

2

3 A. YES.

4 Q. AND DO YOU AGREE WITH THAT ASSESSMENT?

5 A. YES. I'M NOT REALLY QUITE CERTAIN ABOUT ONE OF
6 THE EARLIEST REMARKS THAT YOU MADE, BUT MOST OF THAT
7 ASSESSMENT, I WOULD AGREE WITH.

8 Q. SO IT WAS, AFTER ALL OF THE WORK WAS PUT INTO
9 THIS EFFORT, THAT IN 1964, THE SURGEON GENERAL DETERMINED
10 THAT SMOKING CAUSES CANCER?

11 A. YES. BECAUSE HE DID NOTHING NEW THAT HAD
12 BEEN DETERMINED BY COMMITTEES AT LEAST SEVEN YEARS BEFORE.
13 IT WAS JUST RATHER SLOW IN APPOINTING A COMMITTEE IN THE
14 UNITED STATES TO REVIEW IT.

15 Q. WELL, THIS COMMITTEE WAS APPOINTED IN 1962,
16 WASN'T IT?

17 A. YES. YES.

18 Q. AND IT TOOK THEM TWO YEARS TO GO THROUGH THE
19 DATA AND TO COMPLETE THIS STUDY, RIGHT?

20 A. YES.

21 Q. BUT NEVER -- IT'S YOUR OPINION THAT SCIENTIFIC
22 CONSENSUS WAS ACTUALLY REACHED SEVEN YEARS BEFORE THIS TIME?

23 A. YES. SIX, SEVEN YEARS BEFORE. EVEN WHO, WHICH
24 IS A SLOW BODY TO REACT, HAD REACHED A CONSENSUS IN 1960.

25 Q. YOU'RE FAMILIAR WITH A BOOK CALLED, "SMOKING:
26 ITS INFLUENCE ON THE INDIVIDUAL AND ITS ROLE IN SOCIAL
27 MEDICINE," BY C. VAN PROOSDY?

28 A. NO.

1 Q. MAY I SHOW YOU SOMETHING?

2 A. OF COURSE.

3 THE COURT: APPROACH.

4 Q. BY MR. CARLTON: DO YOU RECOGNIZE THAT NOW?

5 A. OH, WAIT A MINUTE. YES. I'VE HAD SOME
6 INTERACTION WITH IT.

7 Q. LOOKING AT THE FORWARD OF THIS BOOK, ISN'T IT
8 CORRECT THAT YOU WROTE THAT FORWARD?

9 A. YES.

10 Q. I HAVE TO TAKE OFF MY GLASSES HERE. THIS IS A
11 BOOK, AGAIN, ABOUT SMOKING AND DISEASE, RIGHT?

12 A. YES.

13 Q. AND IN YOUR FORWARD, DIDN'T YOU WRITE
14 (READING):

15

16

"ALTERNATIVE EXPLANATIONS

17

HAVE, IN FACT, BEEN PUT FORWARD, AND THOUGH

18

SOME OF THEM MAY APPEAR TO BE RATHER

19

IMPLAUSIBLE, THERE ARE EXPERIENCED SCIENTISTS

20

WHO REGARD THEM AS MORE PLAUSIBLE THAN THE

21

SUGGESTION THAT SMOKING IS A CAUSE OF

22

DISEASE. IN FACT, IT WOULD HAVE BEEN

23

EXTRAORDINARY HAD THIS NOT BEEN SO, BUT WHEN

24

THE NATURE OF THE DISEASE MAKES IT IMPOSSIBLE

25

TO CARRY OUT LOGICALLY CONCLUSIVE

26

EXPERIMENTS, THERE IS ALWAYS ROOM FOR HONEST

27

DIFFERENCE OF OPINION. "

28

1 AND YOU WROTE THAT?

2 A. I WROTE THAT, YES.

3 Q. AND THIS BOOK WAS PUBLISHED IN 1960, WASN'T IT?

4 A. CAN I EXPLAIN WHY I WROTE THAT?

5 Q. WELL, THAT'S FINE. I'M SURE YOUR LAWYER WILL
6 ASK YOU WHEN HE HAS AN OPPORTUNITY.

7 THE COURT: COUNSEL, YOU'RE A LAWYER.

8 MR. CARLTON: I'M SORRY.

9 THE COURT: THANK YOU.

10 MR. CARLTON: MR. PIUZE.

11 MR. PIUZE: I'D BE HONORED IF HE WANTED ME TO BE.

12 THE COURT: OKAY. ENOUGH COLLOQUY ON BOTH SIDES.
13 PROCEED.

14 MR. PIUZE: SORRY.

15 Q. BY MR. CARLTON: ACTUALLY, I THINK IN THIS
16 FORWARD, YOU ALSO -- (READING):

17

18 "CERTAINLY, IT HAS NOT BEEN
19 EASY FOR A NICOTINE ADDICT TO RECOGNIZE THE
20 HARMFUL EFFECTS OF HIS ADDICTION," I THINK
21 YOU WROTE IN HERE AS WELL.

22

23 BACK IN 1960, DID YOU BELIEVE THAT NICOTINE WAS
24 ADDICTING?

25 A. YES.

26 Q. IT WASN'T AN OPINION YOU HELD ALONE AT THE
27 TIME, WAS IT?

28 A. NO.

1 Q. AND I'D LIKE TO DRAW YOUR ATTENTION TO 1962, IF
2 WE COULD. AS SOON AS I CAN FIND WHAT I'M LOOKING FOR.

3 AND YOU WROTE AN ARTICLE IN 1962 CALLED,
4 "INVESTIGATION INTO CIGARETTE SMOKING AND ATMOSPHERE
5 POLLUTION AND THE ETIOLOGY OF LUNG CANCER"?

6 A. CAN YOU HELP ME A BIT.

7 Q. YES.

8 A. WAS THIS FOR THE INTERNATIONAL UNION AGAINST
9 CANCER?

10 Q. I'LL SHOW YOU A COPY OF THIS.

11 DO YOU RECALL THAT?

12 A. YES. I THINK THIS WAS INTERNATIONAL UNION
13 AGAINST CANCER.

14 Q. AND IN THAT ARTICLE, DIDN'T YOU WRITE THAT
15 (READING):

16
17 "IT IS NOW GENERALLY AGREED
18 THAT THE EVIDENCE LEADS INESCAPABLY TO THE
19 CONCLUSION THAT CIGARETTE SMOKING IS CLOSELY
20 RELATED TO THE DEVELOPMENT OF LUNG CANCER,
21 BUT IT DOES NOT NECESSARILY FOLLOW THAT THE
22 RELATIONSHIP IS CAUSAL. "

23

24 A. I DARE SAY, I HAVEN'T FOUND IT.

25 Q. IT WOULD BE, I THINK, ON PAGE 17?

26 A. YES. IT'S TRUE.

27 Q. ALL RIGHT. AND THEN LATER ON IN THAT ARTICLE,
28 YOU TALK ABOUT SOME OF THE ALTERNATIVE EXPLANATIONS, DIDN'T

1 YOU?

2 A. YES.

3 Q. AND YOU SAID -- LET ME SEE IF I CAN FIND
4 THIS -- THAT (READING):

5
6 "THE POSSIBILITY THAT
7 CIGARETTE SMOKING IS A CAUSE OF LUNG CANCER
8 IN THE ORDINARY SENSE HAS SEEMED TO BE THE
9 MOST REASONABLE CONCLUSION TO THE MANY
10 INDEPENDENT BODIES THAT HAVE BEEN SET UP TO
11 EXAMINE THE EVIDENCE IN SEVERAL DIFFERENT
12 COUNTRIES. "

13

14 A. YES.

15 Q. ALL RIGHT. AND, BUT YOU ADDED (READING):

16

17 "NONE, HOWEVER, COULD CLAIM
18 THAT IT HAD BEEN PROVED IN THE STRICT LOGICAL
19 SENSE. "

20

21 SEE THAT RIGHT THERE?

22 A. YES, SIR. I'D SAY THAT TODAY.

23 Q. OKAY. SO THERE WERE --

24 A. IN A MATHEMATICAL SENSE.

25 Q. ALL RIGHT. AND YOU WOULD AGREE, THEN, THAT
26 THERE IS A DIFFERENCE BETWEEN HAVING SOME EVIDENCE OF
27 SOMETHING AND HAVING PROOF OF IT?

28 A. I HAVE NO DOUBT, AND I HAVE SAID THAT CIGARETTE

1 SMOKING IS PROVED TO BE A CAUSE OF LUNG CANCER IN THE SENSE
2 IN WHICH THE WORD IS NORMALLY USED IN A COURT WHEN YOU ARE --
3 SOMEBODY IS ACCUSED OF A CRIME. IT'S THE EVIDENCE -- IT
4 POINTS TO THE VIRTUAL CERTAINTY THAT THIS IS THE CORRECT
5 SOLUTION. THAT'S ALL I'VE EVER SAID ABOUT PROOF.

6 Q. OKAY. AND IN THE STRICT LOGICAL SENSE, AT
7 LEAST WHEN YOU WROTE THIS, YOU DIDN'T BELIEVE IT --

8 A. I STILL SAY THAT'S THE CASE IN A MATHEMATICAL
9 SENSE OF STRICT PROOF, SURELY.

10 Q. ALL RIGHT.

11 A. BUT IN THE ORDINARY SENSE IN WHICH WE USE THE
12 WORD AND WHICH IT'S USED IN COURTS OF LAW, THEN, YES, IT IS
13 PROOF.

14 Q. NOW, IN THE 1960'S, IT WAS BELIEVED, WASN'T IT,
15 BY MANY THAT EPIDEMIOLOGICAL OBSERVATIONS COULD NOT PROVE
16 THAT AN AGENT IS THE CAUSE OF A DISEASE EVEN WHEN COUPLED
17 WITH THE RESULTS OF ANIMAL EXPERIMENTS?

18 A. SOME PEOPLE BELIEVE THAT. I DID NOT BELIEVE
19 IT. AND LOTS OF OTHER PEOPLE DIDN'T.

20 Q. LET ME GO GET ANOTHER DOCUMENT.

21 A. YES, PLEASE.

22 Q. WOULD YOU GIVE ME A MINUTE.

23 THANK YOU.

24 DO YOU RECALL WRITING AN ARTICLE IN CANCER
25 RESEARCH IN NOVEMBER OF 1963 CALLED, "INTERPRETATIONS OF
26 EPIDEMIOLOGIC DATA"?

27 A. YES, I DO.

28 Q. AND LET ME COME BACK UP HERE.

1 NOW, LOOKING AT THIS ARTICLE, DIDN'T YOU WRITE
2 (READING):

3
4 "IT IS AXIOMATIC THAT
5 OBSERVATION ALONE CANNOT PROVE IN THE STRICT
6 SENSE OF THE WORD THAT ANY PARTICULAR AGENT
7 IS THE CAUSE OF DISEASE IN MAN; NOR, IT MAY
8 BE ADDED, CAN OBSERVATION COUPLED WITH THE
9 RESULTS OF EXPERIMENTS ON ANIMALS. "

10

11 A. I DID, AND THAT'S WHAT I'VE BEEN SAYING NOW
12 THAT IT CAN BE PROVED BEYOND REASONABLE DOUBT, BUT NOT PROVED
13 IN THAT STRICT SENSE.

14 Q. AND DID YOU GO ON TO ADD HERE (READING):

15

16 "WE MUST, THEREFORE, RECOGNIZE
17 THAT IN STUDYING THE ETIOLOGY OF CANCER IN
18 MAN, WE SHALL USUALLY HAVE TO MAKE DECISIONS
19 ON THE BASIS OF EVIDENCE THAT IS SHORT OF
20 PROOF. "

21

22 A. YES.

23 Q. OKAY. NOW, I DON'T KNOW, AND I CAN'T RECALL
24 WHETHER WE TALKED ABOUT THIS EARLIER. BUT CAN YOU TELL THE
25 LADIES AND GENTLEMEN OF THE JURY WHAT ETIOLOGY MEANS?

26 A. YES. ETIOLOGY IS, AS IT SOUNDS, IS THE
27 CAUSATION OF A DISEASE; THE ETIOLOGY OF THE DISEASE IS THE
28 FACTORS WHICH CAUSE THE DISEASE.

1 Q. ALL RIGHT. THANK YOU.

2 I THINK YOU TALKED EARLIER TODAY A BIT ABOUT
3 CARCINOGENS.

4 A. YES.

5 Q. OR CARCINOGENS. I'VE NEVER BEEN SURE WHICH WAY
6 IS CORRECT.

7 A. I THINK YOU CAN HAVE IT EITHER WAY.

8 Q. EITHER WAY. OKAY.

9 NOW, ISN'T IT TRUE THAT IN THE EARLY 1950'S, IT
10 WAS KNOWN THAT THERE WERE SOME CARCINOGENS IN CIGARETTE
11 SMOKE?

12 A. MID 19 -- YES. YES. YES.

13 Q. AND THERE WERE SOME -- SOME OF THE CHEMICALS
14 THAT COMPOSED CIGARETTE SMOKE WERE KNOWN IN THE EARLY 1950'S
15 AS WELL, RIGHT?

16 A. YES. I'M NOT SURE OF THE EXACT YEAR, BUT EARLY
17 1950'S -- IT WASN'T IN 1950 -- BUT IT WAS CERTAINLY BY 1955.

18 Q. AND TODAY, WE KNOW THAT THERE ARE ABOUT 4,000
19 CHEMICALS IN CIGARETTE SMOKE?

20 A. SO I BELIEVE.

21 Q. NOW, ISN'T IT TRUE THAT MANY OF THOSE CHEMICALS
22 WERE DISCOVERED BY THE CIGARETTE COMPANIES?

23 A. I SHOULD HOPE SO.

24 Q. AND PUBLISHED?

25 A. IT'S THEIR JOB.

26 Q. OKAY. AND WHAT IS A CARCINOGEN?

27 A. A CARCINOGEN IS A FACTOR WHICH WILL -- IS
28 CAPABLE OF CAUSING CANCER IN AN ANIMAL. AND COUNTING HUMANS

1 AS ANIMALS IN THIS CASE.

2 Q. OKAY. NOW, JUST BECAUSE SOMETHING IS A
3 CARCINOGEN DOESN'T MEAN THAT IT WILL ALWAYS CAUSE CANCER --
4 WELL, THAT'S A BAD QUESTION.

5 LET'S SAY, THIS: CARCINOGENS ARE NOT UNCOMMON;
6 WOULD THAT BE CORRECT?

7 A. WELL, WE'RE ALL EXPOSED TO THEM AS WE SIT HERE
8 FROM THE RADIATION FROM THE WALLS OF THIS ROOM

9 Q. AND WOULDN'T IT ALSO BE TRUE -- ISN'T IT TRUE
10 THAT MANY OF THE ITEMS THAT YOU WOULD SEE IN A SUPERMARKET,
11 BROCCOLI, RUTABAGAS, IF YOU BROKE THEM DOWN TO THEIR
12 INDIVIDUAL CHEMICAL COMPONENTS, WOULD INCLUDE SOME
13 CARCINOGENS?

14 A. IF YOU TEST THE CHEMICALS THAT ARE PRESENT IN
15 ORDINARY FOOD, IN FRUITS AND VEGETABLES, IN THE WAY THAT THE
16 NATIONAL CANCER INSTITUTE REQUIRES CHEMICALS TO BE TESTED,
17 THAT'S TO SAY, BY GIVING THE MAXIMUM DOSE THAT YOU CAN GIVE
18 WITHOUT KILLING THE ANIMAL, THEN PRACTICALLY EVERYTHING WE
19 EAT CONTAINS CARCINOGENS.

20 Q. AND THE EFFECT OF THOSE CARCINOGENS DEPENDS ON
21 HOW MUCH OF THEM YOU'RE EXPOSED TO, DOESN'T IT?

22 A. YES.

23 Q. AND THAT'S WHY --

24 A. WELL, I WOULD QUALIFY THAT. I'M NOT SURE TESTS
25 THAT ARE REQUIRED ACTUALLY DOES IMPLY THAT IT WOULD EVER
26 CAUSE CANCER FROM SMALL AMOUNTS. BUT INsofar AS THEY COULD
27 CAUSE CANCER, IT WOULD ONLY BE FROM VERY HEAVY, HEAVY
28 EXPOSURES.

1 Q. OKAY. AND I GUESS THE POINT I'M TRYING TO MAKE
2 IS, JUST BECAUSE YOU'RE EXPOSED TO SOME CARCINOGEN DOESN'T
3 MEAN YOU'RE GOING TO GET CANCER?

4 A. THAT'S ABSOLUTELY RIGHT.

5 Q. AND CARCINOGENS ARE GENERATED THROUGH BURNING,
6 ISN'T THAT TRUE, ALSO?

7 A. SOME ARE, YES.

8 Q. SOME. COOKING FOOD?

9 A. YES, INDEED.

10 Q. AND CHARBROILING A STEAK?

11 A. YES. MANY CARCINOGENS.

12 Q. IN A SENSE, CARCINOGENS ARE ALL AROUND US?

13 A. WE LIVE IN A SEA OF CARCINOGENS.

14 Q. NOW, IS IT FAIR TO SAY -- WELL, IS IT ACCURATE
15 THAT SINCE THE 1950'S, MANY, MANY DOCTORS AND SCIENTISTS HAVE
16 STUDIED THE MECHANISM BY WHICH NORMAL CELLS TRANSFORM
17 THEMSELVES INTO CANCER CELLS?

18 A. YES.

19 Q. AND IS IT FAIR TO SAY THAT EVEN TODAY, THE
20 MECHANISM BY WHICH A NORMAL LUNG CELL IS TRANSFORMED INTO A
21 CANCER CELL STEP BY STEP BY STEP HAS NOT BEEN COMPLETELY
22 DESCRIBED?

23 A. I THINK THAT'S SO, YES. MANY OF THE STEPS ARE
24 KNOWN.

25 Q. BUT THERE ARE STILL GAPS?

26 A. THERE ARE STILL GAPS.

27 Q. SO, EVEN AS WE SIT HERE, THERE'S NO ONE WHO CAN
28 TELL THIS JURY EXACTLY HOW CIGARETTE SMOKE CAUSES LUNG

1 CANCER?

2 A. THERE' S NO ONE WHO COULD TELL THE JURY EXACTLY
3 HOW ANYTHING CAUSES LUNG CANCER OR CAUSES ANY CANCER. WE
4 KNOW MDRE ABOUT HOW CIGARETTE SMOKE CAUSES LUNG CANCERS THAN
5 WE DO MDST THINGS.

6 Q. BECAUSE IT' S A VERY COMPLEX AND MULTIFACTORIAL
7 DISEASE?

8 A. AND WE KNOW SOME OF THE THINGS, THE CHANGES
9 THAT ARE BROUGHT ABOUT IN THE CELLS BY THE CHEMICALS IN
10 CIGARETTE SMOKE. MORE HAS BEEN KNOWN ABOUT THAT THAN ABOUT
11 MDST OF THE CANCERS FROM WHICH WE WILL SUFFER. I CAN DRAW
12 YOUR ATTENTION TO PAPERS, IF YOU WANTED THEM

13 Q. YOU TALKED -- YOU TALKED A LITTLE BIT TODAY
14 TOWARDS THE END ABOUT LOW-TAR CIGARETTES. ACTUALLY, LET ME
15 JUST CHANGE THE SUBJECT COMPLETELY FOR HALF A SECOND HERE.

16 YOU' VE PUBLISHED A LOT OF ARTICLES, RIGHT?

17 A. YES.

18 Q. HAVE MDST OF THOSE ARTICLES BEEN IN PEER REVIEW
19 JOURNALS?

20 A. YES.

21 Q. AND WHY IS THAT?

22 WHY DO YOU PUBLISH IN PEER REVIEW JOURNALS?

23 A. BECAUSE THEY ARE THE JOURNALS THAT ARE MOSTLY
24 READ BY OTHER SCIENTISTS.

25 Q. AND I THINK YOU EARLIER TODAY DESCRIBED THE
26 PEER REVIEW PROCESS, AND IF I UNDERSTOOD IT CORRECTLY, BEFORE
27 AN ARTICLE CAN BE PUBLISHED IN A PEER REVIEW JOURNAL, IT HAS
28 TO BE REVIEWED BY YOUR PEERS, RIGHT?

1 A. YES. IT'S NOT WHOLLY TRUE, BECAUSE THE EDITORS
2 OF SOME OF THE MOST FAMILIAR, PRETIGIOUS ONES, LIKE THE
3 U. S. ENGLAND JOURNAL OF MEDICINE, LANCET, OCCASIONALLY, THEY
4 THINK, THIS IS SUCH A GOOD ARTICLE, EVEN I CAN DECIDE IT CAN
5 BE PUBLISHED. THEY DO SOMETIMES PUBLISH THEM WTHOUT ACTUAL
6 REVIEW, BUT THAT'S RATHER USUAL.

7 Q. THERE'S ACTUALLY PEER REVIEW JOURNAL SCRUTINY
8 THAT DOESN'T APPLY IN OTHER PUBLICATIONS?

9 A. I'M ONLY CONCERNED WTH PEER REVIEW JOURNALS
10 MYSELF, MY PUBLICATIONS.

11 Q. WOULD YOU CONSIDER NON-PEER REVIEW ARTICLES FOR
12 PUBLICATIONS TO BE RELIABLE AUTHORITY?

13 A. I HAVEN'T PAID ATTENTION TO THEM COULDN'T
14 COMMENT.

15 Q. OKAY. THE WYNDER AND GRAHAN MOUSE-PAINTING
16 STUDY, YOU'RE FAMILIAR WTH THAT?

17 A. YES. NOT IN DETAIL, I MUST SAY. IT'S A LONG
18 TIME AGO. BUT I'M FAMILIAR WTH IT.

19 Q. YOU READ ABOUT IT AT THE TIME?

20 A. YES, SURE.

21 Q. AND HAVE YOU TALKED WTH PROFESSOR WYNDER ABOUT
22 IT OVER THE YEARS?

23 A. I HAVE, INDEED, YES.

24 Q. AND YOU'RE FAMILIAR WTH OTHER KINDS OF
25 MOUSE-PAINTING EXPERIMENTS?

26 A. YES.

27 Q. THAT INVOLVED -- THOSE PROFESSOR WYNDER'S
28 EXPERIMENTS INVOLVED IN PARTICULAR TAKING CIGARETTE TAR AND

1 CONDENSING IT; ISN'T THAT RIGHT?

2 A. YES.

3 Q. CONDENSING IT TO A DEGREE THAT WOULD BE MUCH
4 STRONGER THAN THE TAR ONE WOULD BE EXPOSED TO IN REGULAR
5 SMOKE?

6 A. WELL, IT'S DISSOLVED IN THE AIR, ISN'T IT, IN
7 AEROSOLS IN REGULAR SMOKE. IT'S NOT DISSOLVED AS A LARGE
8 AMOUNT OF SOLID MATTER.

9 Q. RIGHT. SO PROFESSOR WYNDER TOOK THIS CONDENSED
10 TAR AND SHAVED THE BACKS OF MICE AND PAINTED IT ON THE MICE,
11 RIGHT?

12 A. YES.

13 Q. AND MANY OF THOSE MICE GOT CANCER FROM THAT?

14 A. YES.

15 Q. NOW, ISN'T IT TRUE THAT EVEN PROFESSOR WYNDER
16 DID NOT BELIEVE YOU COULD CONCLUDE FROM THAT EXPERIMENT THAT
17 HUMANS WOULD GET CANCER FROM SMOKING A CIGARETTE?

18 A. THAT'S TRUE OF ALL ANIMAL EXPERIMENTS. YOU
19 CAN'T CONCLUDE BECAUSE YOU CAN PRODUCE CANCER IN A LABORATORY
20 ANIMAL THAT THE SAME MATERIAL WILL CAUSE CANCER IN A HUMAN,
21 BECAUSE OUR METABOLISMS ARE DIFFERENT.

22 THERE'S A GENERAL RULE, IF YOU CAN PRODUCE
23 CANCERS IN EXPERIMENTAL ANIMALS, YOU ARE HIGHLY SUSPICIOUS
24 THAT THE MATERIAL WILL CAUSE CANCER IN HUMANS, BUT YOU HAVE
25 ALWAYS GOT THE POSSIBILITY OF METABOLIC DIFFERENCES. THAT IS
26 TO SAY, THE WAYS IN WHICH THE CHEMICAL IS HANDLED IN THE --
27 BY THE PERSON IN THE BODY MAY DIFFER. SO YOU CAN'T MAKE A
28 100 PERCENT -- BE 100 PERCENT CERTAIN.

1 Q. SO THERE'S NO EQUATION, CANCER IN ANIMALS
2 EQUALS CANCER IN HUMANS?

3 A. NO. IF YOU SAY ANIMALS, MEANING SEVERAL
4 DIFFERENT TYPES OF ANIMAL, THEN THE ANSWER PROBABLY IS YES,
5 THAT IT WOULD BE IN HUMANS. BUT IF YOU JUST MEANT IN ONE
6 TYPE OF ANIMAL, NO, CERTAINLY, YOU CAN'T TRANSFER IT TO
7 HUMANS.

8 Q. AND IN THIS CASE, WE'RE TALKING ABOUT ONE TYPE
9 OF ANIMAL?

10 A. YES.

11 Q. A MOUSE?

12 A. YES.

13 Q. AND ISN'T IT TRUE THAT THOSE MICE WERE
14 SPECIALLY BRED TO MAKE THEM SUSCEPTIBLE TO CANCER SO THE
15 EXPERIMENT WOULD MOVE QUICKLY?

16 A. THEY ALWAYS ARE, YES, IN EXPERIMENTS.

17 THE COURT: MR. CARLTON.

18 MR. CARLTON: YES.

19 THE COURT: WOULD NOW BE A GOOD TIME IN YOUR
20 QUESTIONING?

21 MR. CARLTON: PERFECTLY FINE.

22 THE COURT: THANK YOU, SIR.

23 LADIES AND GENTLEMEN, WE'RE NOW GOING TO TAKE A
24 BREAK FOR THE AFTERNOON, AND WE'LL BE BACK AT FIVE MINUTES
25 PAST 3:00.

26 LEAVE YOUR NOTEBOOKS ON YOUR CHAIR.

27 AND DON'T DISCUSS THE CASE WITH ANYONE.

28

1 (RECESS.)

2

3 THE COURT: GOOD AFTERNOON, LADIES AND GENTLEMEN.

4 SIR.

5 COUNSEL.

6 MR. CARLTON: THANK YOU, YOUR HONOR.

7 THE COURT: PLEASE BE SEATED.

8 MR. CARLTON, YOUR WITNESS.

9 Q. BY MR. CARLTON: DOCTOR, EARLIER TODAY,
10 MR. PIUZE SHOWED YOU A DOCUMENT THAT REFERRED TO SOMETHING
11 CALLED THE GENETIC THEORY.

12 DO YOU REMEMBER THAT?

13 A. YES.

14 Q. AND I THINK YOU TESTIFIED ABOUT SOME STUDIES
15 THAT WERE DONE OVER A PERIOD OF YEARS THAT ULTIMATELY
16 DISPROVED THAT THEORY?

17 A. YES.

18 Q. AND YOU REFERRED SPECIFICALLY TO A STUDY OF
19 SWEDISH TWINS; ISN'T THAT RIGHT?

20 A. YES.

21 Q. IS THAT A STUDY ON WHICH YOU PARTICULARLY
22 RELIED IN CONCLUDING THAT THE GENETIC THEORY DOESN'T HAVE ANY
23 BASIS?

24 A. WELL, IT PRODUCED RELEVANT EVIDENCE.

25 Q. AND WOULD IT SURPRISE YOU TO LEARN THAT THAT
26 STUDY WAS FUNDED BY THE TOBACCO INDUSTRY THROUGH CTR?

27 A. NOT AT ALL. I KNEW IT WAS. THEY THOUGHT IT
28 WAS GOING TO SHOW THE OPPOSITE.

1 Q. AND THAT STUDY, WHEN IT WAS CONCLUDED, WAS
2 PUBLISHED?

3 A. YES, IT WAS.

4 Q. ALL RIGHT. NOW, LET'S TURN TO LOW-TAR
5 CIGARETTES.

6 I THINK YOU TOLD MR. PIUZE ON DIRECT THAT TAR
7 IS NOT A GOOD THING, RIGHT?

8 A. BY NOT A GOOD THING, YOU MEAN NOXIOUS?

9 Q. BIOLOGICALLY.

10 A. BIOLOGICALLY HARMFUL, YES.

11 Q. AND --

12 A. I MEAN, IT'S A VERY GOOD THING FOR COVERING
13 ROADS WITH.

14 Q. AND YOU WOULD AGREE THAT OVER THE YEARS, A
15 GREAT NUMBER OF EFFORTS HAVE BEEN MADE TO REDUCE THE LEVEL OF
16 TAR THAT A CIGARETTE DELIVERS?

17 A. YES.

18 Q. AND THOSE EFFORTS HAVE BEEN QUITE SUCCESSFUL,
19 HAVEN'T THEY?

20 A. NOT PARTICULARLY, NO.

21 Q. ISN'T IT TRUE THAT OVER THE LAST 50 YEARS, THE
22 TAR AND NICOTINE DELIVERY OF CIGARETTE SMOKE HAS DECREASED TO
23 THE POINT THAT NOW, ON A SALES-WEIGHTED AVERAGE, CIGARETTES
24 DELIVER 70 PERCENT LESS TAR AND NICOTINE THAN THOSE SMOKED IN
25 THE EARLY '50'S?

26 A. I'M NOT SURE. ARE YOU TALKING ABOUT DELIVERY
27 AS MEASURED BY THE GOVERNMENT APPARATUS OR DELIVERY AS
28 DELIVERED IN THE HUMAN BODY?

1 Q. LET'S FOCUS RIGHT NOW ON THE MACHINE.

2 A. YES. ON THE MACHINE. I WOULD THINK THAT -- I
3 WOULD THINK THAT WAS RIGHT.

4 Q. AND YOU KNOW, I'M SURE, THAT THE MACHINE
5 TESTING IS SOMETHING THAT IS REQUIRED BY THE GOVERNMENT,
6 RIGHT?

7 A. I -- IT'S NOT -- I TAKE YOUR WORD FOR IT. I
8 HAVEN'T FOLLOWED THAT. I KNOW THEY DO IT.

9 Q. OKAY. YOU KNOW THE GOVERNMENT TESTS THE
10 CIGARETTES, RIGHT?

11 A. YES. YES.

12 Q. AND YOU KNOW THAT THE GOVERNMENT DETERMINED
13 WHAT MACHINE TO USE TO TEST THE CIGARETTES?

14 A. YES.

15 Q. AND YOU KNOW THAT THE CIGARETTE INDUSTRY TOLD
16 THE GOVERNMENT BEFORE IT DID THAT THAT IT WASN'T GOING TO
17 ACCURATELY MEASURE HOW A SMOKER SMOKES?

18 A. I DIDN'T KNOW THAT.

19 Q. OKAY. BUT IN ANY EVENT, YOU WOULD AGREE THAT
20 LOWERING THE TAR, LOWERING THE DELIVERY OF TAR IN A CIGARETTE
21 IS A GOOD THING HEALTHWISE?

22 A. NOT NECESSARILY, NO.

23 Q. OKAY. YOU, AT SOME POINT, YOU ENCOURAGED THE
24 DEVELOPMENT OF LOW-TAR CIGARETTES, DIDN'T YOU?

25 A. YES, I DID.

26 Q. AND I THINK YOU TESTIFIED EARLIER TODAY THAT
27 YOUR OPINION HAS CHANGED --

28 A. YES.

1 Q. -- ON THAT?
2 BUT UNTIL RECENTLY, YOU ADVISED THE TOBACCO
3 COMPANIES IN ONE WAY OR ANOTHER THAT IF THEY WANTED TO REDUCE
4 THE RISK OF LUNG CANCER, THEY SHOULD REDUCE THE TAR IN THEIR
5 CIGARETTE.

6 AND YOU HAVE WRITTEN IN THE PAST THAT LOW-TAR
7 CIGARETTES REDUCE THE RISK OF LUNG CANCER?

8 A. YES. BUT YOU HAVE TO RELATE THAT TO SPECIFIC
9 LOW-TAR CIGARETTES. THAT REFERS TO THE ONES THAT WERE THE
10 LOW ONES IN THE LATE '50'S, EARLY '60'S COMPARED WITH THE
11 30'S. I HAVEN'T WRITTEN THAT IN RELATION TO THE ONES IN THE
12 1980'S OR LATER.

13 Q. WELL, ISN'T IT TRUE THAT IN 1997, YOU TESTIFIED
14 THAT YOU BELIEVE IT HAS BEEN PROVED BEYOND A REASONABLE DOUBT
15 THAT LOWER TAR CIGARETTES DO REDUCE THE RISK OF LUNG CANCER?

16 A. I WAS REFERRING TO THE REDUCTION FROM THE
17 1930'S TO THE 1950'S.

18 Q. DO YOU RECALL TESTIFYING IN THE STATE OF
19 FLORIDA VERSUS THE AMERICAN TOBACCO COMPANY?

20 A. YES, I DO.

21 Q. ON JANUARY 17TH OF 1997?

22 A. I DON'T REMEMBER THE DATE, BUT AROUND THEN.

23 Q. DOES THAT SOUND ABOUT RIGHT?

24 A. SOUNDS ABOUT RIGHT.

25 Q. OKAY. AND I'M READING FROM PAGE 177 OF THAT
26 TRANSCRIPT (READING):

27 "Q. NOW, DOCTOR, YOU BELIEVE THAT
28 THE CASE IS MADE THAT IT HAS BEEN PROVEN THAT

1 LOWER TAR CIGARETTES REDUCE THE RISK OF LUNG
2 CANCER; ISN' T THAT CORRECT?

3 "A. I THINK IT'S BEEN PROVEN
4 BEYOND A REASONABLE DOUBT THAT LOWER TAR
5 CIGARETTES DO REDUCE THE RISK OF LUNG CANCER
6 TO SOME EXTENT. "

7

8 A. YES. I WAS REFERRING TO THE ONES THAT WE USED
9 IN THE 1960'S COMPARED TO THE 1930'S. THAT'S WHAT I HAD
10 EVIDENCE FOR, AND THAT'S WHAT I WAS REFERRING TO.

11 Q. BUT THAT'S NOT MENTIONED IN THAT QUESTION AND
12 ANSWER, IS IT?

13 A. BUT THAT'S WHAT I WAS REFERRING TO.

14 Q. ALL RIGHT.

15 YOU WOULD AGREE, THOUGH, THAT IT WAS COMMONLY
16 ACCEPTED FOR MANY YEARS THAT LOW-TAR CIGARETTES HAD A LOWER
17 RISK OF LUNG CANCER?

18 A. YES, I THINK MANY PEOPLE THOUGHT THAT.

19 Q. AND IT'S TRUE THAT MANY IN THE PUBLIC HEALTH
20 COMMUNITY THOUGHT THAT, TOO, DIDN'T THEY?

21 A. I THINK SO, YES.

22 Q. AND THE GOVERNMENT OF THE UNITED STATES
23 BELIEVED THAT?

24 A. I DON'T KNOW WHAT THE GOVERNMENT OF THE UNITED
25 STATES BELIEVED.

26 Q. ALL RIGHT. BUT YOU WOULD AGREE THAT THEY
27 PROMOTED THE DEVELOPMENT OF LOW-TAR CIGARETTES FOR A PERIOD
28 OF TIME?

1 A. I DON'T KNOW WHETHER THE GOVERNMENT DID, BUT --

2 Q. HAVE YOU EVER HEARD OF THE TOBACCO WORKING
3 GROUP?

4 A. YES.

5 Q. AND THAT WAS A GROUP SPONSORED BY THE NATIONAL
6 CANCER INSTITUTE AND INCLUDING REPRESENTATIVES OF THE
7 GOVERNMENT AND OF THE TOBACCO INDUSTRY?

8 A. YES.

9 Q. AND THE TOBACCO WORKING GROUP SPONSORED EFFORTS
10 TO DEVELOP A SAFER CIGARETTE, RIGHT?

11 A. I BELIEVE THEY TRIED TO, YES.

12 Q. AND A LOW-TAR CIGARETTE?

13 A. YES.

14 Q. AND YOU SAY THAT YOUR OPINION ABOUT THE
15 BENEFITS OF LOW-TAR CIGARETTES HAS CHANGED.

16 THAT'S BEEN QUITE RECENTLY, HASN'T IT?

17 A. IN THE LAST THREE YEARS. BUT THAT IS ONLY
18 REFERRING TO THE MOST RECENT REDUCTIONS, NOT -- AGAIN, I'M
19 NOT CONTRADICTING WHAT I SAID EARLIER ABOUT THE REDUCTION
20 FROM 35 TO 25 MILLIGRAM THAT, I BELIEVE, HAS DEFINITELY
21 BEEN SHOWN TO HAVE HAD A BENEFIT.

22 WHAT I'M NOT CONVINCED HAS BEEN SHOWN TO HAVE
23 BENEFITS -- IN FACT, I BELIEVE THE OPPOSITE -- IS THAT
24 FURTHER REDUCTIONS DOWN TO 15 OR 10 MILLIGRAMS.

25 Q. THEN AGAIN, THAT'S BASED ON VERY RECENT
26 RESEARCH CHANGING YOUR OPINION WITHIN THE LAST THREE YEARS?

27 A. IT'S NOT SO MUCH REALLY RECENT RESEARCH. I
28 HADN'T REALLY STUDIED IT IN THE INTERVENING YEARS UNTIL THE

1 LAST TWO OR THREE YEARS.

2 Q. YOU WOULD AGREE, WOULDN'T YOU, THAT SMOKERS
3 SMOKE THEIR CIGARETTES DIFFERENTLY, EACH INDIVIDUAL HAS A --
4 THEY DON'T ALL SMOKE CIGARETTES EXACTLY THE SAME?

5 A. I'M SURE THAT'S RIGHT, YES.

6 Q. AND TO THE EXTENT THAT A SMOKER MIGHT
7 COMPENSATE IN SMOKING, ANOTHER PERSON MIGHT SMOKE THE
8 CIGARETTE ENTIRELY DIFFERENT?

9 A. I EXPECT SO.

10 Q. SO SOME PEOPLE MIGHT COMPENSATE, SOME PEOPLE
11 MIGHT NOT?

12 A. WE'RE TALKING ABOUT AVERAGE FROM STUDIES THAT
13 HAVE BEEN DONE ON A GROUP OF PEOPLE.

14 Q. ALL RIGHT. YOU HAVE NO INFORMATION AS TO
15 WHETHER THE PLAINTIFF IN THIS CASE, MR. BOEKEN, COMPENSATED
16 IN ANY WAY?

17 A. NO. I CAN MAKE A GOOD GUESS. I DON'T KNOW

18 Q. NOW, QUITTING.

19 A. YES.

20 Q. THE BEST WAY TO REDUCE YOUR RISK OF LUNG
21 CANCER?

22 A. THAT'S THE BEST WAY. THE BEST WAY IS NOT TO
23 SMOKE AT ALL. BUT . . .

24 Q. AND I THINK YOU TESTIFIED EARLIER THAT THERE'S
25 A SUBSTANTIAL BENEFIT TO QUITTING EVEN IF YOU'RE 50 OR 60
26 YEARS OLD?

27 A. YES.

28 Q. AND WOULD YOU AGREE THAT IF YOU QUIT AT THE AGE

1 OF 50 OR 60, BY THE AGE OF 75, YOU' LL REDUCE MOST OF THE RISK
2 OF GETTING LUNG CANCER?

3 A. NOT MOST OF IT. I THINK -- I SAID -- I SAID 50
4 IN RELATION TO 75 YEARS, THAT WAS MORE THAN 50 PERCENT.

5 Q. OKAY. NOW -- AND I THINK YOU WERE READING FROM
6 AN ARTICLE THAT WAS PUBLISHED LAST YEAR?

7 A. YES.

8 Q. THE YEAR 2000. AND THAT IS -- YOU WERE ONE OF
9 THE AUTHORS OF AN ARTICLE ENTITLED, "SMOKING: SMOKING
10 CESSATION AND LUNG CANCER IN THE U. K. SINCE 1950, COMBINATION
11 OF NATIONAL STATISTICS WITH TWO CASE-CONTROLLED STUDIES, "
12 RIGHT?

13 A. YES.

14 Q. AND YOUR CO-AUTHORS WERE DR. PETO, WHOSE NAME
15 WE' VE HEARD?

16 A. YES.

17 Q. AND MS. DARBY, MR. DEO, MR. SILCOCKS AND
18 MS. WHITLEY, RIGHT?

19 A. YES.

20 Q. NOW, IN THAT ARTICLE, YOU TALK ABOUT THE
21 BENEFITS OF SMOKING CESSATION, DON' T YOU?

22 A. YES.

23 Q. AND YOU SAY HERE (READING):

24

25 "SMOKING. STOPPING SMOKING
26 CONFERS SUBSTANTIAL BENEFITS. "

27 AND THEN YOU REFER TO A FIGURE THAT' S IN THE
28 ARTICLE, FIGURE 3, AND IT SAYS (READING):

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"FIGURE 3 INDICATED THAT EVEN PEOPLE WHO STOPPED SMOKING AT 50 OR 60 YEARS OF AGE AVOID MOST OF THEIR SUBSEQUENT RISK OF DEVELOPING LUNG CANCER, " RIGHT?

A. YES.

Q. AND YOU GO ON (READING):

"AND THAT THOSE WHO STOPPED AT 30 YEARS OF AGE AVOID MORE THAN 90 PERCENT OF THE RISK ATTRIBUTABLE TO TOBACCO OF THOSE WHO CONTINUE TO SMOKE. "

A. IN RELATION TO LUNG CANCER, YES.

Q. THAT'S RIGHT. IN RELATION TO LUNG CANCER.

A. YES.

Q. THAT WAS THE FINDINGS OF YOUR STUDY AS RECENTLY AS LAST YEAR?

A. YES.

Q. AND I TAKE IT, THEN, THAT A PERSON WHO QUILTS AT 40 YEARS OF AGE WOULD ALSO VERY, VERY SUBSTANTIALLY REDUCE THE RISK OF GETTING LUNG CANCER IN LATER YEARS?

A. YES. BY SOMETHING OVER TWO-THIRDS. 60 PERCENT. NOT OVER TWO-THIRDS. BY 60 PERCENT.

I'M SORRY. MORE THAN THAT.

OH. BY MUCH MORE THAN THAT. BY NEARLY -- NEARLY 80 PERCENT.

1 Q. BY THE AGE OF 75?

2 A. YES. IF YOU STOPPED AT THE AGE OF 40.

3 Q. CAN YOU TELL FROM THE INFORMATION YOU HAVE
4 AVAILABLE TO YOU WHAT THE REDUCED RISK WOULD BE, SAY, OF
5 SOMEONE WHO QUILTS AT AGE 30, WHAT WOULD BE THEIR REDUCED RISK
6 AT AGE 55?

7 CAN YOU TELL THAT FROM --

8 A. NO.

9 Q. CAN'T TELL THAT?

10 A. NO, I CAN'T GIVE A FIGURE FOR THAT.

11 Q. STILL WOULD BE VERY, VERY SUBSTANTIAL, THOUGH,
12 WOULDN'T IT?

13 A. OH, YES, YES.

14 Q. AND LIKEWISE, EVEN IF A PERSON QUILTS AT AGE 40,
15 BY AGE OF 55, THEIR RISK WOULD BE MUCH LOWER?

16 A. IT WOULD BE SUBSTANTIALLY LOWER, YES. I CAN'T
17 GIVE A FIGURE.

18 Q. OKAY. ALL RIGHT.

19 THANK YOU. THANK YOU, DOCTOR.

20 THE COURT: THANK YOU, COUNSEL.

21

22 REDIRECT EXAMINATION

23 BY MR. PIUZE:

24 Q. HERE'S YOUR CHANCE TO EXPLAIN WHAT YOU WANTED
25 TO EXPLAIN IN THE INTRODUCTION TO THIS SMOKING BOOK.

26 A. YES.

27 Q. THAT'S YOUR INTRODUCTION THAT HAS YOUR
28 SIGNATURE ON IT.

1 A. THANK YOU.

2 YES. THIS WAS A FORWARD THAT I WROTE FOR A
3 BOOK PUBLISHED BY A DUTCHMAN WHO WAS WANTING TO DEMONSTRATE
4 THE EFFECTS OF TOBACCO TO PEOPLE WHO MIGHT NOT BE COMPLETELY
5 CONVINCED OF IT, AND I DIDN'T WANT TO WRITE IN THE FORWARD
6 THAT WHAT THE CONCLUSIONS TO THE BOOK WERE.

7 I WANTED TO WRITE IN THE FORWARD SOMETHING THAT
8 WOULD ENCOURAGE PEOPLE TO READ THE BOOK, AND, THEREFORE, I
9 EXPRESSED -- I SHOWED EVIDENCE OF DIFFERENT OPINIONS IN THE
10 FORWARD SO AS TO MAKE IT WORTHWHILE READING THE BOOK TO FIND
11 OUT WHAT THE ANSWER WAS. BUT THE ANSWER WAS ALWAYS QUITE
12 CLEAR ABOUT THE HARM AND THE PROOF THAT IT WAS HARMFUL.

13 SO THE FORWARD DIDN'T INDICATE MY VIEWS ON THE
14 CONCLUSION. IT INDICATED THE NICEST WAY IN WHICH I COULD
15 WRITE A FORWARD TO ENCOURAGE PEOPLE TO BUY THE BOOK.

16 Q. OKAY. THANK YOU.

17 LET ME JUST TAKE A COUPLE OF MINUTES. THIS IS
18 INTRIGUING TO ME. KOCH'S POSTULATES.

19 TELL US WHAT THAT IS?

20 A. YES. KOCH WAS A VERY WELL-KNOWN GERMAN
21 BACTERIOLOGIST, AND HE WROTE AT THE TIME IN WHICH A NUMBER OF
22 BACTERIA WERE BEING DISCOVERED AS THE CAUSES OF PARTICULAR
23 DISEASES.

24 IT WASN'T UNTIL THE 1870'S OR SO THAT IT WAS
25 RECOGNIZED THAT PARTICULAR BACTERIA COULD BE RECOGNIZED AS
26 THE CAUSES OF PARTICULAR DISEASES; TYPHOID BACILLUS, THE
27 CAUSE OF TYPHOID FEVER; DIPHTHERIA BACILLUS OF DIPHTHERIA, ET
28 CETERA, ET CETERA; SOME SORTS OF STREPTOCOCCOSES THAT CAUSES

1 SCARLET FEVER.

2 AND THERE WAS -- A LOT OF PEOPLE WERE CLAIMING
3 AT THE TIME THEY HAD FOUND THE CAUSE OF A PARTICULAR
4 INFECTION -- IN THOSE DAYS, IT WAS ACUTE INFECTIONS THAT
5 PEOPLE WERE MOST CONCERNED WITH -- AND KOCH WAS TRYING TO SET
6 OUT THE CONDITIONS UNDER WHICH YOU COULD CLAIM THAT YOU HAD
7 DISCOVERED WHAT WAS THE ORGANISM THAT CAUSED A PARTICULAR
8 INFECTION.

9 Q. OKAY. THANKS.

10 AND WAS THE KOCH'S POSTULATE FOR AN INFECTIOUS
11 DISEASE, IF YOU FOUND ONE PERSON WHO HAD THE DISEASE, BUT
12 DIDN'T HAVE THAT -- DIDN'T HAVE SOMETHING, THAT THE THEORY
13 WOULDN'T STAND?

14 A. THAT'S RIGHT, YES.

15 Q. CAN YOU SAY IT BETTER THAN I DID?

16 A. I DON'T THINK SO, NO.

17 Q. WELL --

18 A. YOU HAD TO FIND THE ORGANISM PRESENT IN EVERY
19 CASE OF THE ILLNESS.

20 Q. OKAY. SO IF WHAT -- WAS THIS DR. KOCH OR
21 PROFESSOR KOCH?

22 A. PROFESSOR KOCH.

23 Q. IF PROFESSOR KOCH WAS RIGHT, AND WE GOT, I
24 DON'T KNOW, A MILLION PEOPLE, AND THEY ALL HAD SOME DISEASE,
25 INFECTIOUS DISEASE, AND THERE WAS ONE PERSON LEFT IN THE ROOM
26 THAT DIDN'T HAVE THIS BACTERIA, THAT MEANS THAT THE BACTERIA
27 DIDN'T CAUSE THE DISEASE, RIGHT?

28 A. YES.

1 Q. AND AS FAR AS AN INFECTIOUS DISEASE IS
2 CONCERNED, THAT'S A FINE THEORY?

3 A. YES.

4 Q. BUT ONCE YOU GET OUT OF THE REALM OF AN
5 INFECTIOUS DISEASE, IT DOESN'T MAKE SO MUCH SENSE ANYMORE?

6 A. IT DOES NOT MAKE ANY SENSE. BECAUSE FOR THE
7 INFECTIOUS DISEASE, YOU WERE TALKING ABOUT THE CAUSE, WHAT
8 WAS ONE-TO-ONE RELATIONSHIP BETWEEN A PARTICULAR AGENT AND A
9 PARTICULAR DISEASE.

10 WHEN WE'RE DEALING WITH CHRONIC DISEASES, LIKE
11 HEART DISEASE AND CANCER, ONE'S NOT TALKING ABOUT THE CAUSE,
12 YOU'RE TALKING ABOUT A CAUSE, BECAUSE THEY ALL HAVE MANY
13 DIFFERENT FACTORS WHICH INCREASE THE RISK OF DEVELOPING THAT
14 DISEASE.

15 Q. SO LET ME GIVE YOU A TERRIBLE ANALOGY, BUT I
16 THINK IT MAKES THE POINT.

17 IF SOMEONE WERE TO LINE UP 20 PEOPLE IN A
18 ROOM -- JUST TO MAKE A POINT -- I'M NOT DOING THIS.

19 IF SOMEONE WERE TO LINE UP 20 PEOPLE IN A ROOM
20 AND TAKE OUT A SUBMACHINE GUN AND SHOOT THEM, AND ONE OF
21 THESE PEOPLE DIED OF A HEART ATTACK BEFORE THEY GOT SHOT, IF
22 YOU WANTED TO APPLY KOCH'S POSTULATE TO THAT, THE OTHERS
23 DIDN'T DIE OF THE GUNFIRE EITHER, DID THEY?

24 A. I DON'T THINK THAT WOULD BE -- THAT WOULDN'T
25 LOGICALLY FOLLOW, BECAUSE I THINK YOU SAID BEFORE -- AND THAT
26 WOULD BE FOUND OUT -- AND SO THE OTHER 19 WERE AFFECTED BY
27 THE MACHINE GUN.

28 NO. I DON'T LIKE THAT ANALOGY.

1 Q. I' LL NEVER USE THAT AGAIN.

2 ALL RIGHT. WHATEVER. KOCH' S POSTULATE APPLIES
3 TO INFECTIOUS DISEASES, BUT IF IT TURNS OUT THAT MAYBE IF YOU
4 GOT PEOPLE WHO WERE SMOKING AND NOT EVERY SINGLE SMOKER FALLS
5 DOWN AND DIES OF LUNG CANCER, THAT DOESN' T MEAN THAT
6 CIGARETTES DOESN' T CAUSE LUNG CANCER?

7 MR. CARLTON: OBJECTION. LEADING.

8 THE COURT: SUSTAINED.

9 MR. PIUZE: I APOLOGIZE.

10 I' M NOT EVEN GOING TO ASK IT AGAIN.

11 Q. ONE LAST THING. YOU KNOW WHAT. LET ME ASK
12 YOU, JUST FOR THE RECORD.

13 IF ONE WERE TO APPLY THIS KOCH' S POSTULATE TO
14 SMOKING, AND WE FOUND OUT THAT PEOPLE WHO ARE LONG-TERM
15 SMOKERS, 40 TO 50 PERCENT OF THEM DIE PREMATURELY DUE TO
16 SMOKING-RELATED ILLNESSES, BUT THE OTHER 50 PERCENT OR
17 60 PERCENT DON' T, IF YOU APPLIED THE KOCH' S POSTULATE, THAT
18 WOULD MEAN THAT THIS 40 TO 50 PERCENT THAT DIED, IT REALLY
19 WASN' T TOBACCO AFTER ALL?

20 A. IF YOU WERE A FOOL, YOU WOULD APPLY KOCH' S
21 POSTULATE TO SUCH A SITUATION, BECAUSE WE KNOW THAT IT' S JUST
22 NOT APPROPRIATE.

23 Q. ALL RIGHT.

24 A. WHAT WE' RE LOOKING FOR NOW IS PROOF BEYOND
25 REASONABLE DOUBT, AND THAT, YOU OBTAIN QUITE OTHERWISE.

26 Q. THANK YOU. ONE LAST THING.

27 WE WERE TALKING EARLIER ABOUT HOW MANY DEATHS
28 IN DEVELOPED COUNTRIES PER YEAR FROM TOBACCO-RELATED

1 ILLNESSES.

2 REMEMBER THAT?

3 A. YES.

4 Q. DOES THE NUMBER -- WHAT IS THE NUMBER,
5 ULTIMATELY?

6 DID YOU HAVE A CHANCE TO TAKE A LOOK?

7 A. YES. I THINK I SUGGESTED IT MIGHT BE 2 MILLION
8 AND THEN CHANGED TO 1 MILLION. I THINK THE CORRECT ANSWER IS
9 SOMETHING IN BETWEEN THE TWO. ABOUT 1.8 MILLION WAS THE
10 ESTIMATE MY COLLEAGUE PROFESSOR PETO --

11 Q. PER YEAR?

12 A. PER YEAR.

13 Q. I' M ALL DONE.

14 THANK YOU VERY MUCH. APPRECIATE YOUR COMING.

15 MR. CARLTON: NOTHING, YOUR HONOR.

16 THE COURT: NOTHING FURTHER.

17 SIR, YOU MAY STEP DOWN.

18 THE WITNESS: THANK YOU.

19 THE COURT: THE WITNESS IS EXCUSED.

20 MR. PIUZE: THANK YOU, YOUR HONOR.

21 PLAINTIFF CALLS DR. WILLIAM FARONE

22 AS HIS NEXT WITNESS.

23 THE COURT: SIR, IF YOU WOULD PLEASE STEP FORWARD.

24 STEP UP RIGHT HERE. FACE ME.

25 RAISE YOUR RIGHT HAND AND BE SWORN AS A

26 WITNESS.

27

28 WILLIAM FARONE,

1 CALLED AS A WITNESS BY THE PLAINTIFF, HAVING BEEN FIRST DULY
2 SWORN, TESTIFIED AS FOLLOWS:

3

4 THE COURT: YOU MAY BE SEATED, SIR.

5

6

DIRECT EXAMINATION

7

BY MR. PIUZE:

8

Q. GOOD AFTERNOON.

9

A. GOOD AFTERNOON.

10

Q. TELL US YOUR OCCUPATION, PLEASE.

11

A. I'M PRESIDENT AND CHIEF EXECUTIVE OFFICER OF A

12

COMPANY CALLED APPLIED POWER CONCEPTS, INCORPORATED.

13

Q. WHAT DOES THAT DO?

14

A. THAT DEVELOPS BIOCHEMICAL, CHEMICAL AND ENERGY

15

TECHNOLOGY.

16

Q. HOW LONG HAVE YOU BEEN AFFILIATED WITH THAT

17

ORGANIZATION?

18

A. THIS IS THE FIFTEENTH YEAR.

19

Q. WHERE IS THE COMPANY?

20

A. ANAHEIM, CALIFORNIA.

21

Q. DID YOU USED TO WORK FOR PHILIP MORRIS?

22

A. YES, I DID.

23

Q. FROM WHEN TO WHEN?

24

A. FROM 1976 UNTIL 1984.

25

Q. WHERE?

26

A. IN RICHMOND, VIRGINIA.

27

Q. DOING WHAT?

28

A. I HAD TWO POSITIONS AT PHILIP MORRIS. THE

1 FIRST YEAR WAS AN EXPLORATORY YEAR. I WAS ASSOCIATE
2 PRINCIPAL SCIENTIST. THE SECOND YEAR THROUGH THE EIGHTH
3 YEAR, I WAS DIRECTOR OF APPLIED RESEARCH. BOTH POSITIONS
4 REPORTED TO THE VICE-PRESIDENT OF RESEARCH AND DEVELOPMENT.

5 Q. WHAT WAS THE DIFFERENCE BETWEEN THE TWO
6 POSITIONS?

7 YOU TOLD US THE TITLE DIFFERENCE, BUT TELL US
8 THE DIFFERENCE IN THOSE, PLEASE.

9 A. IN THE FIRST YEAR, AFTER I WAS HIRED, I WAS
10 ASKED TO LEARN AS MUCH AS I COULD ABOUT CIGARETTE AND TOBACCO
11 TECHNOLOGY. I LEARNED EVERYTHING FROM HOW IT'S GROWN ON THE
12 FARMS TO HOW IT'S PROCESSED, HOW IT BURNS TO MAKE SMOKE. SO
13 IT WAS AN EDUCATIONAL YEAR TRYING TO DETERMINE WAYS THAT I
14 COULD HELP THEM MAKE THE PRODUCT SAFER.

15 AND FOR THE NEXT SEVEN YEARS, I SUPERVISED A
16 WIDE RANGE OF DIFFERENT TYPE OF SCIENTISTS WORKING ON
17 CIGARETTE TECHNOLOGY.

18 Q. BETWEEN 1976 -- LET'S SAY, JUST IN 1976.

19 IN 1976 WHEN YOU WERE AT PHILIP MORRIS, WAS IT
20 A SECRET THERE AMONG THE SCIENTISTS THAT THE CIGARETTES THEY
21 WERE MAKING CAUSED LUNG CANCER?

22 MR. LEITER: OBJECTION. LEADING.

23 THE COURT: OVERRULED.

24 THE WITNESS: NO, IT WAS NOT.

25 Q. BY MR. PIUZE: IN 1976, WAS IT A SECRET AMONG
26 THE SCIENTISTS THERE THAT THE CIGARETTES WERE ADDICTIVE?

27 A. NO, IT WAS NOT.

28 Q. IN 1976 WHEN YOU STARTED WITH THE COMPANY, DID

1 YOU EVER HEAR ANY SCIENTIST FROM PHILIP MORRIS EVER SAY THAT
2 HE OR SHE DID NOT BELIEVE THAT THE PRODUCTS, THE CIGARETTES,
3 CAUSED LUNG CANCER?

4 A. I DID NOT.

5 Q. IN 1976 WHEN YOU STARTED THERE, DID YOU EVER
6 HEAR ANY SCIENTIST AT PHILIP MORRIS SAY THAT HE OR SHE DID
7 NOT BELIEVE THAT CIGARETTES WERE ADDICTIVE?

8 A. NOT THAT I HEARD THEM SAY. THERE WAS A COUPLE
9 OF REPORTS WRITTEN BY PEOPLE AT THE REQUEST OF OTHER
10 DIRECTORS THAT IMPLIED THAT THEY WERE NOT ADDICTIVE.

11 Q. LET ME BROADEN OUT THE QUESTIONS FROM '76 TO
12 TAKE CARE OF EIGHT YEARS WORTH OF TIME AT PHILIP MORRIS.

13 BETWEEN 1976 AND 1978 WHILE YOU WERE AT
14 PHILIP MORRIS, DID YOU EVER HEAR ANY SCIENTIST AT
15 PHILIP MORRIS SAY THAT CIGARETTES DID NOT CAUSE LUNG CANCER?

16 A. I DID NOT.

17 Q. BETWEEN 1976 AND 1978, OTHER THAN YOU JUST
18 STATED IN A REPORT, DID YOU HEAR ANY SCIENTIST EVER SAY AT
19 PHILIP MORRIS THAT CIGARETTES WERE NOT ADDICTIVE?

20 A. I DID NOT.

21 Q. WERE YOU AWARE DURING THE TIME THAT YOU WERE AT
22 PHILIP MORRIS THAT THE PUBLIC STATEMENTS OF THE CORPORATION
23 FOR PUBLIC DISSEMINATION WERE AT ODDS WITH WHAT THE
24 SCIENTISTS EMPLOYED BY THE COMPANY THOUGHT AS FAR AS THE FACT
25 THAT ITS PRODUCTS CAUSE THE LUNG CANCER?

26 A. VERY MUCH SO. WELL, I DIDN'T REALLY TRACK WHAT
27 THE COMPANY WAS SAYING, BUT I KNEW, FOR EXAMPLE, THAT WHEN
28 WE, AS SCIENTISTS, WENT OUT TO VISIT VARIOUS COLLEGES AND

1 UNIVERSITIES, AND WE TALKED TO STUDENTS AT THOSE COLLEGES AND
2 UNIVERSITIES, WE WOULD INDICATE THAT WE WERE -- THE PROBLEMS
3 WE WERE FACING WITH TRYING TO MAKE TECHNOLOGY THAT COULD MAKE
4 IT SAFER, AND WE DID NOT SAY THAT IT DIDN'T CAUSE CANCER AND
5 WE DIDN'T SAY IT WASN'T ADDICTIVE.

6 AS A MATTER OF FACT, WE WOULD APPROACH OUR
7 DISCUSSIONS AT THE UNIVERSITY IN A MANNER WHERE WE WOULD SAY,
8 THESE ARE THE PROBLEMS, AND WE ARE TRYING TO FIX IT. WE'RE
9 TRYING TO FIX IT WITH THE PROGRAMS WE'RE DOING.

10 SO I WAS AWARE FROM TALKING TO MY
11 VICE-PRESIDENT OF RESEARCH THAT I REPORTED TO THAT THIS WAS
12 AT ODDS WITH THE COMPANY'S POSITION.

13 Q. YOU KNEW THAT THE SCIENCE WAS AT ODDS WITH THE
14 COMPANY'S POSITION?

15 A. YES.

16 Q. OKAY. LET'S -- THANK YOU. I'D LIKE TO GET YOU
17 TO TALK ABOUT YOURSELF A BIT.

18 WHERE ARE YOU FROM?

19 A. ORIGINALLY FROM A PLACE CALLED SYRACUSE,
20 NEW YORK.

21 Q. HOME OF GENERAL ELECTRIC?

22 A. THAT'S CORRECT.

23 Q. WHERE DID YOU GO TO SCHOOL, PLEASE.

24 A. WENT TO NORTH SYRACUSE CENTRAL HIGH SCHOOL FOR
25 HIGH SCHOOL.

26 Q. COLLEGE?

27 A. IN 1957, I WENT TO CLARKSON COLLEGE OF
28 TECHNOLOGY. IT'S NOW CALLED CLARKSON UNIVERSITY IN POTSDAM,

1 NEW YORK.

2 Q. ALL RIGHT. WHAT DID YOU STUDY THERE, PLEASE.

3 A. UNDERGRADUATE, I STUDIED A COMBINATION OF
4 THINGS: ELECTRICAL ENGINEERING, CHEMICAL ENGINEERING; AND I
5 RECEIVED MY DEGREE IN CHEMISTRY.

6 Q. DID YOU HAVE FURTHER EDUCATION BEYOND THAT?

7 A. I DID. I IMMEDIATELY, IN 1961, EMBARKED ON A
8 PROGRAM FOR THE DOCTOR OF PHILOSOPHY DEGREE IN CHEMISTRY.

9 Q. AT THE SAME SCHOOL?

10 A. AT THE SAME SCHOOL.

11 Q. DID YOU SUCCEED?

12 A. I DID. I RECEIVED MY -- I FINISHED THE PROGRAM
13 IN 1964 AND RECEIVED MY PH. D. IN 1965.

14 Q. THANK YOU.

15 NOW, I'D LIKE YOU TO TELL THE JURY A LITTLE BIT
16 ABOUT YOUR OCCUPATIONAL HISTORY.

17 LET'S START -- LET'S NOT START YOU WITH A PH. D.
18 LET'S START YOU AT COLLEGE.

19 DID YOU WORK IN COLLEGE?

20 A. YES, I DID.

21 Q. WHAT DID YOU DO?

22 A. HAD SEVERAL POSITIONS.

23 DURING MY COLLEGE TIME, I WORKED FOR GENERAL
24 ELECTRIC THAT WE JUST TALKED ABOUT BEFORE, SEMICONDUCTOR
25 PRODUCTS DEPARTMENT. BUT AS I GOT FURTHER INTO MY COLLEGE
26 CAREER, I BEGAN TO BE INVOLVED IN THE KINDS OF CHEMISTRY
27 WHICH WE CALL COLLOID, C-O-L-L-O-I-D, CHEMISTRY, WHICH HAS TO
28 DO WITH AEROSOLS, A-E-R-O-S-O-L-S. AEROSOLS ARE -- LIKE,

1 SMOKE IS AN AEROSOL.

2 IN MY SENIOR YEAR IN COLLEGE, I WORKED ON TWO
3 DIFFERENT THINGS. ONE WAS A PROGRAM TO CALCULATE THE SIZE
4 DISTRIBUTION OF SMOKE PARTICLES. AND THE SECOND WAS
5 CHEMISTRY RELATING TO THE KINDS OF COMPOUNDS THAT ARE FOUND
6 IN SMOKE THAT ARE CARCINOGENIC. THESE ARE SO CALLED
7 POLYNUCLEAR AROMATIC HYDROCARBONS. SO THE CHEMISTRY OF THE
8 KINDS OF THINGS THAT WAS IN THE SMOKE.

9 Q. AND YOU WERE DOING THAT WHILE YOU WERE STILL IN
10 COLLEGE?

11 A. IN MY SENIOR YEAR, YES.

12 Q. ALL RIGHT. THANK YOU.

13 NOW, WHILE YOU WERE WORKING TOWARDS YOUR PH. D.
14 IN CHEMISTRY, DID YOU WORK?

15 A. CONTINUED THAT WORK AND STARTED OBTAINING
16 PUBLICATIONS. DID A LOT OF WORK ON AEROSOLS, AIR POLLUTION,
17 COMBUSTION CHEMISTRY, THINGS OF THAT TYPE.

18 Q. FOR WHOM?

19 A. WELL, FOR -- I HAD A NATIONAL DEFENSE EDUCATION
20 ACT FELLOWSHIP SO, ACTUALLY, MY GRADUATE STUDIES WERE PAID
21 FOR BY THE U. S. GOVERNMENT. IT WAS FUNDED BY THE DEPARTMENT
22 OF DEFENSE AND SO, IN A WAY, A LOT OF THAT WORK WAS UTILIZED
23 BY THE DEPARTMENT OF DEFENSE.

24 Q. OKAY. NOW, I'M ABOUT TO MOVE YOU OUT OF
25 NEW YORK. BEFORE I DO, IS THERE ANY OTHER OCCUPATIONAL JOB
26 BACKGROUND YOU WANT TO TALK ABOUT IN NEW YORK THAT YOU THINK
27 MIGHT BE INTERESTING TO THE JURY?

28 IF NOT, I'LL MOVE YOU OUT OF NEW YORK.

1 A. NO. I LEFT NEW YORK AS SOON AS I HAD MY PH. D.

2 Q. OKAY. THANK YOU.

3 THEN LET'S TRACE YOUR JOB HISTORY ONCE YOU GOT
4 YOUR PH. D.

5 WHAT'S THE FIRST JOB THAT YOU HAD, PLEASE.

6 A. I WORKED AS AN ATMOSPHERE SCIENTIST AT WETSANDS
7 MISSILE RANGE, WHICH WAS A CONTINUATION OF MY WORK ON AIR
8 POLLUTION AND THINGS THAT ARE IN THE AIR. I DID THAT FOR ONE
9 YEAR FOR THE DEPARTMENT OF DEFENSE.

10 Q. WHAT EXACTLY WERE YOU DOING?

11 NOT TOO EXACT, BUT . . .

12 A. WE WERE LOOKING AT ATMOSPHERIC OZONE PROFILES.
13 YOU'VE HEARD A LOT ABOUT OZONE HOLES AND THINGS OF THAT TYPE.
14 WE WERE AMONG THE FIRST TO SHOOT ROCKETS UP INTO THE AIR TO
15 MEASURE THE OZONE IN THE AIR, AND WE WERE ALSO INTERESTED
16 IN -- I HAD A PROJECT DEALING WITH A PHENOMENA CALLED RADAR
17 ANGELS, WHICH ARE THINGS WE USED TO SEE IN RADAR THAT WE
18 THOUGHT WERE UFO'S FOLLOWING AIRPLANES, AND IT TURNED OUT TO
19 BE THE CONDENSATION TRAIL OFF THE BACK END OF THE AIRPLANE.
20 I WAS ABLE TO PROVE THAT AND PUT A LOT OF PEOPLE'S MINDS AT
21 REST.

22 SO THE PROJECTS I HAD HAD TO DO WITH MEASURING
23 THINGS THAT HAPPEN IN THE ATMOSPHERE.

24 Q. OKAY. THANK YOU.

25 AFTER A YEAR WITH THE GOVERNMENT AT THE MISSILE
26 RANGE, DID YOU CHANGE OCCUPATIONS?

27 A. I DID.

28 Q. TO WHAT?

1 A. I ACCEPTED A POSITION AS ASSOCIATE PROFESSOR OF
2 CHEMISTRY AT VIRGINIA STATE UNIVERSITY IN PETERSBURG,
3 VIRGINIA.

4 Q. HOW LONG WERE YOU THERE, PLEASE.

5 A. TWO YEARS.

6 Q. TEACHING CHEMISTRY?

7 A. TAUGHT GRADUATE CHEMISTRY, AND I HAD FUNDING
8 FROM THE NATIONAL INSTITUTE OF HEALTH TO STUDY AIR POLLUTION.

9 Q. THANK YOU.

10 AFTER TWO YEARS OF STUDYING AIR POLLUTION AND
11 TEACHING CHEMISTRY IN VIRGINIA, DID YOU CHANGE JOBS AGAIN?

12 A. I DID.

13 Q. AND WHERE DID YOU GO, PLEASE.

14 A. I JOINED LEVER BROTHERS COMPANY AT THEIR
15 RESEARCH AND DEVELOPMENT FACILITY, WHICH WAS IN EDGEWATER,
16 NEW JERSEY.

17 Q. WHEN YOU WENT THERE, WHAT WAS YOUR JOB TITLE,
18 PLEASE.

19 A. WHEN I ENTERED THERE THE FIRST YEAR, I WAS A
20 SENIOR SCIENTIST, AND THEN OVER THE NEXT EIGHT YEARS, I
21 PROGRESSED THROUGH A SERIES OF JOBS.

22 Q. WHAT WERE YOU HIRED TO DO THERE, PLEASE.

23 A. I WAS ORIGINALLY HIRED TO DO RESEARCH ON
24 TOOTHPASTE. PROBABLY CLOSE-UP TOOTHPASTE AND AIM TOOTHPASTE.
25 THEY WERE BRAND-NEW PRODUCTS WHEN I WENT THERE, AND BECAUSE
26 THEY' RE MADE FROM SMALL PARTICLES OF SILICA, I WAS HIRED TO
27 STUDY HOW THAT TOOTHPASTE WORKS AND HOW IT STAYS TOGETHER.

28 Q. THANKS. LET' S TALK ABOUT LEVER BROTHERS A

1 LITTLE BIT.

2 I TOLD THE JURY WHEN I WAS DISCUSSING YOU, I
3 MENTIONED UNILEVER.

4 IS THERE A RELATIONSHIP BETWEEN UNILEVER AND
5 LEVER BROTHERS, PLEASE.

6 A. YES. ACTUALLY, THE LEVER BROTHERS THAT I WORK
7 FOR ISN'T THE SAME AS THE COMPANY TODAY.

8 IN 1967 WHEN I JOINED LEVER BROTHERS, THEY HAD
9 ALL OF THE PRODUCTS UNDER ONE ROOF; TOILETRIES, HOUSEHOLD
10 PRODUCTS, COSMETICS, FOODS. AND I WORKED ON RESEARCH ON ALL
11 OF THOSE PRODUCTS. AND THE COMPANY WAS A TOTALLY OWNED
12 SUBSIDIARY OF UNILEVER; THAT IS, IT DOESN'T HAVE ANY
13 STOCKHOLDERS HERE IN THE UNITED STATES. IT'S OWNED TOTALLY
14 BY UNILEVER.

15 SO AS A PART OF THAT, WE WOULD TRAVEL TO THE
16 OTHER LABORATORIES AND SHARE THE RESEARCH BETWEEN THE
17 LABORATORIES IN THE UNITED STATES AND THE ONES IN ENGLAND,
18 THE NETHERLANDS, FRANCE, GERMANY, AROUND THE WORLD.

19 Q. IS UNILEVER A GIANT WORLD ORGANIZATION THAT'S
20 HEADQUARTERED SOMEPLACE IN EUROPE?

21 A. IT'S HEADQUARTERED IN LONDON, AND YES, IT IS.

22 Q. I'D LIKE -- YOU WERE HIRED THERE TO LOOK AT
23 TOOTHPASTE WHICH -- OKAY. DID YOU DO THAT?

24 A. I DID THAT. AND A BUNCH OF OTHER THINGS.

25 Q. I'D LIKE YOU TO DISCUSS SOME OF THE BUNCH OF
26 OTHER THINGS WITH THE JURY, AND I JUST SAY TO YOU IN ADVANCE
27 THAT WHERE I'M ULTIMATELY, AS YOU KNOW, GOING IS TO BE
28 TALKING ABOUT TOBACCO.

1 SO THE KIND OF THINGS THAT YOU DID AT
2 LEVER BROTHERS THAT MAY HAVE SOME RELATIONSHIP OR IMPACT UPON
3 YOUR TESTIMONY ABOUT TOBACCO, THOSE ARE THE KINDS OF THINGS
4 I'D LIKE YOU TO MENTION. OKAY.

5 A. SURE.

6 Q. PLEASE.

7 A. FOR MOST OF MY TIME AT LEVER, I WAS THE
8 DIRECTOR OF SCIENTIFIC RESEARCH. AND IN THAT POSITION, ALL
9 OF THE SCIENTISTS AT LEVER BROTHERS REPORTED TO ME. AND THIS
10 INCLUDED THE TOXICOLOGY AND MICROBIOLOGY.

11 TOXICOLOGY FOR SOME OF THE PRODUCTS, LIKE
12 CLOSE-UP AND AIM TOOTHPASTE, IS COMPLICATED BY THE FACT THAT
13 THESE THINGS ARE DRUGS. THEY'RE REGULATED BY THE FOOD AND
14 DRUG ADMINISTRATION. THE HOUSEHOLD PRODUCTS, LIKE ALL
15 DETERGENT AND WHISK AND DOVE, THAT KIND OF THING, ARE
16 REGULATED BY THE CONSUMER PRODUCT SAFETY COMMISSION.

17 SO IN MY POSITION, I WAS ITS INTERFACE BETWEEN
18 THE COMPANY'S SCIENTISTS AND THE REGULATORY AGENCIES. SO IT
19 WAS MY JOB TO MAKE SURE, FOR EXAMPLE, THAT IF ANY INGREDIENT
20 WE PUT IN DOVE BAR SOAP WAS A NEW INGREDIENT, THAT IT WAS
21 SAFE ENOUGH SO THAT IT WOULDN'T HARM YOU EITHER BY
22 PENETRATING YOUR SKIN OR CAUSING IRRITATION.

23 THE SAME WAY WITH HAIR SPRAY. WITH A HAIR
24 SPRAY, WE WANTED TO MAKE SURE THAT IT DIDN'T CAUSE DAMAGE IF
25 IT GOT IN YOUR EYES, OR THAT IF YOU INHALED IT, THAT YOU
26 WOULDN'T HAVE A PROBLEM DUE TO SOME CHEMICAL IN THE HAIR
27 SPRAY.

28 SO THE BIG FOCUS IN THE CONSUMER PRODUCT

1 COMPANIES, LIKE LEVER BROTHERS, AND IN THE FOOD COMPANIES, IS
2 IN THE QUALITY AND SAFETY OF THE PRODUCTS TO MAKE SURE THAT
3 THE PRODUCT DOES WHAT IT'S SUPPOSED TO DO AND WON'T CAUSE THE
4 CONSUMER ANY HARM

5 Q. OKAY. IF WE'RE GOING TO TALK ABOUT EIGHT YEARS
6 THERE, WOULD THAT BE A FAIR DESCRIPTION OF YOUR JOB, TO MAKE
7 SURE THAT THE PRODUCTS DIDN'T CAUSE THE CONSUMERS HARM?

8 A. THERE WERE -- YES. I WOULD SAY THAT WAS ABOUT
9 A HALF OF IT.

10 THE OTHER HALF IS THAT YOU PROBABLY HAVE
11 WATCHED COMMERCIALS ON TELEVISION FOR A LOT OF THESE AND
12 WONDER HOW IN THE WORLD THEY CAN MAKE THE STATEMENTS THEY DO
13 ABOUT THEM ANOTHER PART OF THE JOB WAS TO MAKE SURE THAT
14 THE INFORMATION BEING PROVIDED WAS TRUTHFUL, BECAUSE THAT
15 COULD COME UNDER SCRUTINY BY THE FEDERAL TRADE COMMISSION.

16 AND LAST BUT NOT LEAST WAS THE DEVELOPMENT OF
17 NEW PRODUCTS TO CONSTANTLY IMPROVE THESE PRODUCTS SO THAT
18 THEY WOULD DO THE JOB BETTER.

19 Q. THANKS.

20 JUST TAKE A MINUTE OR SO TO TALK ABOUT
21 SOMETHING THAT MIGHT GO TO VERIFY THE ADS THAT WERE ON
22 TELEVISION OR NEWSPAPERS SO NO ONE GETS ANGRY AT YOU FOR
23 CLAIMING STUFF THAT REALLY ISN'T RIGHT.

24 A. OKAY. FOR EXAMPLE, IN AIM TOOTHPASTE, BECAUSE
25 IT'S GOT FLUORIDE IN IT, AND IT'S SUPPOSED TO PREVENT
26 CAVITIES, THE WAY WE WOULD DO THAT IS WE WOULD TEST OUR
27 PRODUCT -- SAY, CLOSE-UP VERSUS CREST, WHICH WAS THEN BEING
28 MARKETED, AND WE'D HAVE, LIKE, 400 PEOPLE, AND 200 OF THEM

1 WOULD USE THE CREST AND 200 WOULD USE THE CLOSE-UP, AND THEY
2 WOULD BE MONITORED BY DENTISTS USING THE PRODUCT.

3 EVERY WEEK, THEY' D COME IN FOR A CHECKUP, AND
4 THEY WOULD SCORE OVER THE PERIOD OF A YEAR OR TWO YEARS THE
5 HEALTH OF THEIR TEETH, THEIR GUMS, THE NUMBER OF CAVITIES,
6 AND THIS IS CALLED A CLINICAL TRIAL. AND ON THAT BASIS, YOU
7 WOULD MAKE SURE THAT YOUR PRODUCT WAS FIT FOR THE USE THAT IT
8 WAS SUPPOSED TO BE PUT TO, THAT IT DID, IN FACT, REDUCE TOOTH
9 DECAY.

10 BUT EVEN BEFORE WE PUT IN THAT TEST, WE WOULD
11 TEST THE PRODUCT IN THE ANIMALS. AND YOU PROBABLY DON' T KNOW
12 THIS, BUT YOU CAN BRUSH A RAT' S TEETH, AND WE USED RATS AS
13 THE MODEL FOR A YEAR OR TWO BEFORE YOU LET HUMANS USE THIS
14 PRODUCT TO MAKE SURE THAT IT WORKED, DIDN' T HAVE ANYTHING IN
15 IT THAT CAUSED IRRITATION TO THE RATS, THAT THE INGREDIENTS
16 WERE ACTUALLY FED TO RATS TO MAKE SURE THAT NOTHING IN THERE
17 CAUSED THEM CANCER, NOTHING CAUSED THEIR OFFSPRING TO BE
18 DEFORMED, ALL OF THOSE KINDS OF TESTS. SO YOU DO ANIMAL
19 STUDIES FIRST, AND THEN YOU GO OUT AND DO CLINICAL STUDIES ON
20 THE PRODUCT.

21 AND THAT' S TRUE FOR PROVIDING THE INFORMATION
22 TO THE FOOD AND DRUG ADMINISTRATION. AND ONLY AFTER YOU' VE
23 DONE ALL OF THAT, AND YOU PROVE THAT IT WORKS, THEN YOU CAN
24 SAY, REDUCES CAVITIES, ON THE PACKAGE. SO WHENEVER YOU SAY
25 SOMETHING, YOU HAVE TO HAVE PROOF FOR IT IN YOUR RESEARCH,
26 PROOF, EXPERIMENTS THAT PROVE WHAT YOU SAY.

27 Q. THANK YOU.

28 AND THE OTHER THING YOU MENTIONED HAD TO DO

1 WITH DEVELOPING NEW PRODUCTS, ONE OF YOUR OVER -- YOU WERE
2 SORT OF THE BOSS OF DEVELOPING NEW PRODUCTS --

3 A. RIGHT.

4 Q. TELL US A LITTLE BIT ABOUT THAT TOO, PLEASE.

5 A. WELL, AT THE TIME I WAS THERE, THERE WAS A BIG
6 CONCERN ABOUT PHOSPHATES IN DETERGENTS. PHOSPHATES, WHEN
7 THEY END UP IN THE LAKES, CAN CAUSE A PHENOMENA CALLED
8 EUTROPHICATION, WHICH ESSENTIALLY IS AN ALGAE, RAPID ALGAE
9 GROWTH AND KIND OF CLOGS UP THE WATER.

10 SO THE INTEREST WAS IN REMOVING THIS PRODUCT,
11 THE PHOSPHATES, FROM THE PRODUCT AND PUTTING IN SOMETHING
12 THAT WORKED AS WELL.

13 AND WE DEVELOPED A CHEMICAL -- I'M JUST GOING
14 TO GIVE YOU THE ACRONYM FOR IT -- CMDS. BIG LONG CHEMICAL
15 NAME. BUT WE DEVELOPED THIS CHEMICAL THAT WAS A LITTLE BIT
16 LIKE CITRIC ACID, WHICH IS IN ORANGE JUICE AND LEMON JUICE,
17 BUT IT WAS A SYNTHETIC CHEMICAL.

18 SO IN ORDER TO TEST THAT, WE PUT IT IN
19 DETERGENTS, AND WE WOULD TEST IT IN ALL DIFFERENT WAYS.
20 THESE DETERGENTS ARE USED WITH BLEACH, WITHOUT BLEACH,
21 DIFFERENT KINDS OF SOIL. BUT MORE IMPORTANTLY, WE WERE
22 WORRIED ABOUT WHAT HAPPENED WHEN YOU PUT THIS STUFF IN THE
23 ENVIRONMENT, LIKE, SUPPOSE IT GOT IN YOUR WATER SUPPLY AND
24 YOU DRANK IT.

25 SO WE WOULD CONDUCT -- WE DID CONDUCT A
26 THREE-YEAR STUDY OF THE POTENTIAL CARCINOGENICITY OF THIS
27 MATERIAL; THAT IS, WE FED IT TO RATS, WE FED IT TO MICE. WE
28 HIRED A LAB OUTSIDE. THEY DID THE SAME THING. AND THEN

1 AFTER THREE YEARS OF FEEDING IT, WE WOULD COMPARE THOSE
2 RESULTS TO MAKE SURE THAT THERE WASN'T ANY DIFFERENCE BETWEEN
3 OUR PRODUCT IN THE CONTROL GROUP.

4 THE REASON FOR ALL OF THAT IS BECAUSE, IF
5 SOMETHING WERE TO WORK AS GOOD AS PHOSPHATES, YOU DON'T WANT
6 TO TRADE ONE PROBLEM IN FOR ANOTHER PROBLEM WE DON'T WANT
7 TO SOLVE THE POLLUTION PROBLEM AND END UP -- WE DON'T HAVE
8 THE TROUBLE HERE IN CALIFORNIA -- BUT LIKE IN LONG ISLAND, A
9 LOT OF PEOPLE WERE USING WELL WATER AT THE TIME, AND IT'S
10 VERY COMMON TO HAVE SOME DETERGENT POLLUTION BE IN THE WATER
11 THEY DRINK, UNFORTUNATELY, SO WE WANT TO MAKE ABSOLUTELY SURE
12 THAT THE PRODUCT WAS SAFE.

13 Q. THANK YOU.

14 WHILE YOU WERE AT LEVER BROTHERS, DID YOU WORK
15 AT ALL TO SHOW OR NOT SHOW THAT THE PRODUCTS WERE
16 CARCINOGENIC?

17 A. YES. THAT WAS A PRIME FOCUS OF EVERY MATERIAL
18 WE USED WAS TESTED FOR ITS CARCINOGENIC POTENTIAL; THAT IS,
19 ITS ABILITY TO CAUSE CANCER. AND THE WAY WE DID THAT WAS BY
20 USING WHAT WE CALL ANIMAL MODELS, DEPENDING ON HOW THE
21 PRODUCT WAS USED.

22 I MENTIONED THIS CMDS CHEMICAL. THAT PRODUCT
23 MOST LIKELY WOULD GET TO PEOPLE BY DRINKING IT. SO WE
24 ACTUALLY HAD THE RATS AND MICE INGEST THE PRODUCT FOR THE
25 THREE-YEAR PERIOD. OTHER PRODUCTS WERE USED ON THE SKIN. SO
26 WE WOULD PUT IT ON THE SKIN FOR THAT PERIOD OF TIME, LOOK FOR
27 SKIN CANCER.

28 OTHER PRODUCTS COULD -- IN FACT, LIKE SHAMPOOS,

1 YOU WORRY ABOUT THE EYE, SO YOU WOULD REPEATEDLY PUT THE
2 STUFF IN THE EYE. AEROSOL PRODUCTS, SPRAY, YOU WORRY ABOUT
3 THEM, INHALATION. MUCH AS FOR CIGARETTES. YOU WORRY ABOUT
4 WHAT HAPPENS WHEN THE MATERIAL IS INHALED.

5 Q. OKAY. THANKS.

6 AFTER YOU LEFT LEVER BROTHERS, WHERE DID YOU GO
7 TO WORK?

8 A. FOR ONE YEAR, I WAS VICE-PRESIDENT OF RESEARCH
9 AND DEVELOPMENT OF A COMPANY CALLED PACIFIC VEGETABLE OIL,
10 INCORPORATED.

11 Q. WHAT DID YOU DO?

12 A. I WAS VICE-PRESIDENT OF RESEARCH AND
13 DEVELOPMENT. THAT COMPANY PRODUCED THE RAW MATERIALS THAT
14 COMPANIES LIKE LEVER BROTHERS AND PROCTOR AND GAMBLE USED IN
15 THEIR PRODUCTS. THOSE PRODUCTS WERE MADE -- BY THE NAME, YOU
16 CAN PROBABLY TELL THEY'RE MADE FROM VEGETABLE OIL.

17 SO WE MADE VARIOUS DERIVATIVE CHEMICALS FROM
18 VEGETABLE OILS THAT WERE USED IN DETERGENTS, FOODS,
19 COSMETICS, PHARMACEUTICALS, FOR EXAMPLE, THINGS THAT WERE
20 USED BY, AT THAT TIME, SMITH-KLEIN BEECHAM IN THEIR
21 PHARMACEUTICAL PRODUCTS.

22 Q. DID YOU GET INVOLVED WITH CARCINOGENS AT THIS
23 COMPANY, TOO?

24 A. WELL, THE IDEA WAS TO MAKE SURE THAT YOUR
25 PRODUCTS WEREN'T CARCINOGENIC.

26 YES, WE DID. ALL OF THE PRODUCTS THAT WE SOLD
27 WERE TESTED. USUALLY IN CONJUNCTION WITH THE COMPANY THAT
28 BOUGHT IT. FOR EXAMPLE, IF PROCTOR AND GAMBLE OR

1 LEVER BROTHERS WAS THE CLIENT, THEY WOULDN'T USE THE PRODUCT
2 UNTIL THEY HAD TESTED IT FOR CARCINOGENICITY, TERATOGENICITY,
3 WHAT WAS THE EFFECT TO THE OFFSPRING, OR MUTAGENICITY, WHICH
4 IS SOMETHING THAT HAPPENS BEFORE CARCINOGENS ARE IN THE
5 CELLS. SO THOSE THREE TESTS WERE PERFORMED USUALLY BY OUR
6 CUSTOMERS.

7 AND THE DIFFICULTY FOR A SUPPLIER IS THAT YOU
8 HAVE TO PROVIDE THAT SAMPLE AND KEEP WORKING WITH THEM IT
9 MIGHT BE THREE YEARS BEFORE YOU MAKE YOUR FIRST SALE UNTIL
10 THEY FINISH ALL THE TESTING.

11 Q. ALL RIGHT. THANKS.

12 TOMORROW, RELATIVELY EARLY, I'M GOING TO COME
13 BACK TO THOSE THREE TERMS, BUT I DON'T WANT TO END WITH THEM
14 TODAY. BUT LET ME PROCEED ON FOR NOW.

15 HOW DID YOU WIND UP AT PHILIP MORRIS, PLEASE.

16 A. AT THE END OF 1975, I WAS APPROACHED BY AN
17 EXECUTIVE SEARCH FIRM, AND ORIGINALLY, I DIDN'T KNOW WHAT THE
18 COMPANY WAS, BUT IT WAS SOME OPPORTUNITY FOR A COMPANY THAT
19 TURNED OUT TO BE PHILIP MORRIS, AND I BEGAN INTERVIEWING AT
20 PHILIP MORRIS IN EARLY 1976 AND ACCEPTED THE POSITION,
21 ACTUALLY, I THINK IT WAS APRIL 1ST, 1976.

22 Q. APRIL FOOL'S DAY?

23 A. YES.

24 Q. OKAY. I'M GOING TO GO BACK AGAIN, JUST AS I
25 SAID, TOMORROW TO TALK A LITTLE BIT ABOUT THE RECRUITMENT
26 PROCESS, BUT FOR TODAY, I'D LIKE TO GET YOU INTO THE DOORS OF
27 PHILIP MORRIS.

28 WHEN YOU WERE HIRED THERE, REMIND US, WHAT WAS

1 YOUR TITLE, PLEASE.

2 A. ASSOCIATE PRINCIPAL SCIENTIST.

3 Q. WHO WAS YOUR IMMEDIATE BOSS AT THAT TIME?

4 A. DR. ROBERT B. SELIGMAN, VICE-PRESIDENT OF
5 RESEARCH AND DEVELOPMENT.

6 Q. WHEN YOU GOT IN THE DOORS AT PHILIP MORRIS AND
7 YOU WERE NOW THE --

8 SAY IT ONE MORE TIME.

9 A. ASSOCIATE PRINCIPAL SCIENTIST.

10 Q. -- THE ASSOCIATE PRINCIPAL SCIENTIST, WERE YOU
11 TOLD WHAT YOUR OVERVIEW -- OVERVIEW OF YOUR JOB
12 RESPONSIBILITIES WERE SUPPOSED TO BE?

13 A. WELL, I WAS HIRED, ACTUALLY, TO BECOME A
14 DIRECTOR OF RESEARCH, BUT BECAUSE THEY FELT THAT I DIDN'T
15 HAVE ENOUGH EXPERIENCE WITH PHILIP MORRIS, THE FIRST YEAR WAS
16 AN OPPORTUNITY FOR ME TO LEARN AS MUCH AS I COULD ABOUT THE
17 COMPANY AND THE TOBACCO MAKING BUSINESS.

18 THEY WERE INTERESTED IN MY BACKGROUND BECAUSE I
19 KNEW A LOT ABOUT SMOKE AND AEROSOLS AND CHEMISTRY, BUT THE
20 ACTUAL DESIGN AND MANUFACTURE OF CIGARETTES WAS SOMETHING
21 THAT I LEARNED ABOUT DURING THAT FIRST YEAR. I VISITED ALL
22 THEIR PLANTS AND THEIR PRODUCTION FACILITIES, WENT OUT AND
23 WATCHED, WATCHED THEM HARVEST TOBACCO, WATCHED HOW IT WAS
24 SELECTED, TALKED WITH THE EXTENSION AGENTS AS TO HOW IT WAS
25 GROWN.

26 MR. LEITER: EXCUSE ME, YOUR HONOR. I'M GOING TO
27 OBJECT TO THE NARRATIVE. MAY WE HAVE A QUESTION?

28 THE COURT: ALL RIGHT. WHY DON'T WE JUST BEGIN,

1 THEN -- WE CAN START WITH HIS LEARNING EXPERIENCE AT
2 PHILIP MORRIS, WE CAN START WITH THIS TOMORROW, ALL RIGHT?

3 MR. PIUZE: YES, SIR.

4 THE COURT: THANK YOU, SIR.

5 THANK YOU TO MY GOOD COUNSEL.

6 THANK YOU LADIES AND GENTLEMEN OF THE JURY.

7 REMEMBER, LEAVE YOUR NOTEBOOKS ON YOUR CHAIRS.

8 AND DON'T DISCUSS THIS CASE OR ANYTHING YOU'VE
9 HEARD ABOUT IT TODAY WITH ANYBODY.

10 THANK YOU.

11

12 (AT 4:00 P.M., AN ADJOURNMENT WAS TAKEN

13 UNTIL WEDNESDAY, APRIL 4, 2001 AT 9:00 A.M.)

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