CASE NUMBER: BC 367800
CASE NAME: WILLIAM MOLINA AND ANGELINA MOLINA
VS.
SHELL OIL COMPANY, ET AL.
LOS ANGELES, CA MONDAY, OCTOBER 27, 2008
DEPT. NO. 323-CCW HON. CAROLYN B. KUHL, JUDGE
REPORTER: VIRGINIA R. ISHIDA, CSR 3784
TIME: 9:04 A.M.
APPEARANCES: (AS NOTED ON TITLE PAGE.)

(THE FOLLOWING PROCEEDINGS WERE
HAD IN OPEN COURT OUT OF THE
PRESENCE OF THE JURORS:)

THE COURT: GOOD MORNING. COUNSEL ARE PRESENT. JURORS AND ALTERNATES ARE NOT.

YOU HAVE A QUESTION?

MR. RIFF: I HAVE LODGED WITH THE COURT A PROPOSED

COLLECTION OF POWER POINT SLIDES AS EXHIBIT 132, AND APPARENTLY WE NEED TO TALK TO YOU ABOUT THAT.

THE COURT: SURE.

MR. WAGNON: I HAVE AN OBJECTION TO THESE. AND IT'S ACTUALLY EASIER TO SAY WHICH PAGES I DO NOT HAVE AN OBJECTION TO.

I DO NOT HAVE AN OBJECTION TO PAGE 1 AND PAGE 2, AND THERE'S ANOTHER ONE BURIED DEEP WITHIN THAT ALSO HAS A DIAGRAM. IT IS THE PAGE LABELED "STRUCTURE OF THE LYMPH NODE."

ALL THE REST ARE LENGTHY COMPILATIONS OF TEXTUAL INFORMATION. AND ESSENTIALLY WHAT MR. RIFF IS TRYING TO DO IS SCRIPT UP HIS EXPERT'S TESTIMONY AND PUT A SUBSTANTIAL PORTION OF IT UP IN FRONT OF THE JURY IN A WRITTEN FORM RATHER THAN JUST RELYING UPON THE WITNESS' TESTIMONY FROM THE STAND. I THINK THAT'S IMPROPER.

IT'S OBVIOUSLY DONE TO TRY AND REINFORCE THE KEY STATEMENTS THAT THE WITNESS MAKES BY PUTTING THEM UP SO THAT THE JURY SEES THEM IN A MORE DURABLE MANNER THAN HEARING THEM MADE BY THE WITNESS. IT MAY BE COMMENDABLE, PERHAPS, AS A MATTER OF TRIAL TACTICS, BUT I DON'T THINK IT'S CORRECT WITHIN THE LAW OF EVIDENCE IN TERMS OF HOW WE ARE SUPPOSED TO BE PRESENTING WITNESSES AND THEIR TESTIMONY.

THIS IS FAR DIFFERENT THAN JUST WRITING DOWN A FEW WORDS ON A PAD OF PAPER, WHICH I DO NOT TAKE ISSUE WITH. BECAUSE OF THE EXTENSIVE NATURE OF WHAT'S IN THIS, HE'S ESSENTIALLY INVITING THE JURORS TO COPY ALL OF THIS DOWN DIRECTLY INTO THEIR NOTES.

I THINK THAT'S AN IMPROPER WAY. IT'S HIGHLY PREJUDICIAL. I OBJECT TO IT UNDER 352.

THE COURT: HOW WERE YOU GOING TO USE THIS?

MR. RIFF: FIRST OF ALL, IT WOULD NOT BE OFFERED AS A -- IN THE SENSE THAT IT WOULD GO INTO EVIDENCE AND GO TO THE JURY. THIS WAS GOING TO BE USED AS A -- TO FACILITATE THE WITNESS' TESTIMONY AND OPINIONS.

I DON'T KNOW HOW TO SAY IT BETTER THAN THAT.

THE COURT: WELL, OKAY. YOU CAN'T PUT IT UP AHEAD OF TIME AND WALK HIM THROUGH IT. THAT'S PLAIN.

LET'S LOOK AT PAGE 3.

YOU CAN'T PROMPT THE WITNESS BY GIVING HIM THIS NICE LITTLE OUTLINE OF WHAT HE'S SUPPOSED TO SAY.

MR. RIFF: I UNDERSTAND THAT.

THE COURT: THAT'S WHY I ASKED YOU, HOW ARE YOU GOING TO USE IT?

MR. RIFF: AND I CAN LAY A FOUNDATION, FOR EXAMPLE, FOR NUMBER 3: HAVE YOU EVER HEARD OF SIR BRADFORD HILL, AND HAVE YOU USED HIS METHOD AND WHAT IS IT? WE HEARD A LITTLE BIT ABOUT THAT AND WHAT ARE THE VARIOUS CRITERIA. DO YOU HAVE A SLIDE THAT WOULD HELP REMIND US WHAT THAT IS? AND THEN I WOULD SHOW 3.

I DON'T THINK IT'S VERY DIFFERENT FROM, FRANKLY, WHAT WE SAW FROM DR. WEISENBURGER. I THINK HE HAS THE SAME SLIDE, IF I'M NOT MISTAKEN.

MR. WAGNON: IT WASN'T A SLIDE. I WROTE DOWN THE ONE-WORD NAMES OF EACH OF THE ELEMENTS, WHICH IS DIFFERENT, DIFFERENT THAN WRITING IT ALL UP IN GREAT DETAIL LIKE THIS AS

HE'S DONE.

MR. RIFF: BY THE WAY, I'M NOT GOING TO INVITE THE JURY --

I'M CERTAINLY NOT INVITING THE JURY TO WRITE DOWN EVERYTHING IN THIS POWER POINT.

THE COURT: WELL, THEY MAY OR MAY NOT.

MR. RIFF: CORRECT.

THE COURT: LET'S TAKE THESE ONE AT A TIME.

1 AND 2 I DON'T HAVE A PROBLEM WITH.

3, HE HAS TO TESTIFY FIRST, AND THEN IF YOU WANT

TO PUT IT UP AS A SUMMARY, AS THOUGH YOU WERE WRITING IT OUT, THAT'S ALL RIGHT WITH ME. BUT IT HAS TO SUMMARIZE WHAT HE'S ALREADY SAID.

MR. RIFF: UNDERSTOOD.

THE COURT: WHAT'S PAGE 4?

MR. RIFF: PAGE 4 IS --

PAGE 4 AND PAGE 5 GO TOGETHER. THEY ARE ILLUSTRATIVE OF THE POINT THAT THE RESULTS IN THE PLIOFILM COHORT FOR BENZENE VARIED BETWEEN A.M.L. AND N.H.L. THOSE GO TO THE SO-CALLED "GIST" OF THE ARTICLE.

AND, YOUR HONOR, THIS MORNING I ACTUALLY WAS REVIEWING OUR TRANSCRIPT IN THIS CASE, AND THE COURT MAY REMEMBER THAT I RAISED AS A GROUND RULE QUESTION ON OCTOBER 2ND JUST WHAT A WITNESS CAN DO ON DIRECT WITH RESPECT TO THIS KIND OF THING. AND, IN FACT, USED THE EXAMPLE OF AN EPIDEMIOLOGIST AND WE TALKED ABOUT IT.

I THINK WE HAD AGREEMENT THAT THE EXPERT COULD STATE THE KEY DATA POINTS IN THE, QUOTE, "GIST," END QUOTE,

BUT NOT OTHERWISE REPUBLISH A BUNCH OF HEARSAY FROM THE STUDY. SO THAT'S WHAT TABLES 3 AND 4 TEND TO DO.

I'M HAPPY TO SHOW YOU THAT DISCUSSION WE HAD ON THAT DAY.

THE COURT: ON THESE TWO, MR. WAGNON, WHAT IS YOUR PROBLEM? THAT AGAIN IT'S JUST SORT OF PUTTING TOO MUCH IN --

WELL, IS IT HEARSAY OR IS IT THAT IT'S AN UNFAIR PRESENTATION METHODOLOGY?

MR. WAGNON: THE LATTER.

THE COURT: ALL RIGHT.

WHAT I'M GOING TO DO WITH THESE IS I'M GOING TO TAKE THEM AS THEY COME. I WANT THIS WITNESS TO TESTIFY. I WANT TO HEAR HIS TESTIMONY. AND THEN BASED ON THAT TESTIMONY, YOU CAN TELL ME WHAT PAGE YOU WANT TO DISPLAY FOR THE JURY AS A SUBSTITUTE FOR WRITING IT DOWN, AND I'LL TAKE THEM ONE AT A TIME.

MR. RIFF: THAT'S FINE. I'M HAPPY TO PROCEED THAT WAY.

THE COURT: I KNOW YOU'D RATHER HAVE IT ALL OUT --

MR. WAGNON: I WOULD.

THE COURT: -- BUT I DO THINK SOME OF IT IS OKAY. BUT I'M NOT GOING TO ALLOW IT TO BE USED AS A PROMPT FOR THE WITNESS.

MR. RIFF: THANK YOU.

WITH THAT, WE'RE READY.

MR. WAGNON: AND WE'RE READY.

MR. RIFF: WE HAVE LODGED A PROPOSED VERDICT FORM FOR YOU TO TAKE A LOOK AT THE WHILE THIS IS HAPPENING, IF YOU WISH.

THANK YOU, YOUR HONOR.

(THE FOLLOWING PROCEEDINGS
WERE HAD IN OPEN COURT IN THE
PRESENCE OF THE JURORS:)

THE COURT: ALL JURORS AND ALTERNATES ARE PRESENT. GOOD MORNING. GLAD TO SEE YOU ALL. HOPE YOU ALL HAD A GOOD WEEKEND.

COUNSEL ARE ALSO PRESENT.

I BELIEVE DEFENSE HAS A WITNESS THIS MORNING?

MR. RIFF: YES, YOUR HONOR. WE CALL AS OUR LAST WITNESS, JOHN WHYSNER.

JOHN WHYSNER,

CALLED AS A WITNESS BY THE DEFENSE, WAS SWORN BY THE CLERK AND TESTIFIED AS FOLLOWS:

THE CLERK: WILL YOU PLEASE STATE YOUR NAME AND SPELL IT FOR THE RECORD.

THE WITNESS: JOHN WHYSNER; J-O-H-N, W-H-Y-S-N-E-R.

DIRECT EXAMINATION

BY MR. RIFF:

Q WHAT IS THE NATURE OF YOUR PROFESSION?

A I'M A PHYSICIAN, A SCIENTIST AND I'M A TOXICOLOGIST.

Q ARE YOU A LICENSED PHYSICIAN?

A YES.

Q WHERE ARE YOU LICENSED TO PRACTICE MEDICINE?

A IN THE DISTRICT OF COLUMBIA, WASHINGTON, D.C.

Q DO YOU RESIDE IN THAT AREA?

A NO. I RESIDE IN NEW YORK IN A TOWN CALLED "SLEEPY HOLLOW."

Q YOU SAY YOU'RE A PHYSICIAN. DID YOU SAY YOU ARE A SCIENTIST?

A YES.

Q WHAT KIND OF SCIENTIST ARE YOU, SIR?

A WELL, I'M --

I DID RESEARCH IN TOXICOLOGY. THAT WAS MY PRIMARY. ALTHOUGH, I'VE ALSO DONE CLINICAL TRIALS IN TERMS OF DEVELOPING A COUPLE OF NEW PHARMACEUTICALS, AND I'VE DONE OTHER KINDS OF RESEARCH. I'VE DONE STEROID HORMONE RESEARCH.

Q DR. WHYSNER, WHAT IS TOXICOLOGY?

A TOXICOLOGY IS THE STUDY OF WHAT KINDS OF HEALTH EFFECTS, CHEMICALS OR OTHER AGENTS, CAN HAVE ON EITHER HUMANS, OR WE ALSO USE EXPERIMENTAL ANIMALS AND ALSO CERTAIN TEST TUBE SYSTEMS.

Q NOW, IN THE COURSE OF YOUR TESTIMONY TODAY, THERE ARE SOME TOPICS I WANT TO DISCUSS WITH YOU, AND AMONG THEM ARE THESE:

I WANT TO DISCUSS WHAT THE WORLD PEER-REVIEWED EPIDEMIOLOGICAL LITERATURE TELLS US ABOUT WHETHER BENZENE ON THE ONE HAND AND WHETHER, QUOTE, "SOLVENTS" ON THE OTHER HAND, ARE CAPABLE OF CAUSING NON-HODGKIN'S LYMPHOMA IN HUMANS.

DO YOU UNDERSTAND THE TOPIC?

A YES.

Q AND IS THAT A TOPIC THAT I'VE ASKED TO YOU CONSIDER IN THIS CASE?

A YES.

Q WE'RE GOING TO TALK ABOUT YOUR TRAINING AND EXPERIENCE IN A FEW MOMENTS, BUT JUST TO GET STARTED, IS THAT A TOPIC ON WHICH YOU BELIEVE YOU HAVE TRAINING AND EXPERTISE?

A YES.

Q THEN I'M GOING TO WANT TO TALK WITH YOU ABOUT THE DIFFERENCES BETWEEN THE DISEASE NON-HODGKIN'S LYMPHOMA ON THE ONE HAND, AND A.M.L., ACUTE MYELOGENOUS LEUKEMIA, ON THE

OTHER HAND WITH RESPECT TO THE TOXICOLOGY OF BENZENE.

DO YOU UNDERSTAND WHAT I JUST SAID?

A YES.

Q IS THAT SOMETHING YOU BELIEVE YOUR TRAINING, YOUR EDUCATION AND YOUR EXPERIENCE MAKES YOU AN EXPERT IN?

A YES.

Q AND THEN EVENTUALLY YOU AND I ARE GOING TO TALK ABOUT WHETHER OR NOT, IN YOUR OPINION, TO A REASONABLE DEGREE OF MEDICAL AND SCIENTIFIC PROBABILITY, WHETHER MR. MOLINA'S EXPOSURE TO THE REFINED PETROLEUM HYDROCARBONS AT FIRESTONE WAS A CAUSE IN ANY WAY OF HIS NON-HODGKIN'S LYMPHOMA.

DO YOU UNDERSTAND WHAT I JUST SAID?

A YES.

Q AND IS IT YOUR VIEW THAT ON ACCOUNT OF YOUR TRAINING, YOUR EXPERIENCE AND YOUR EDUCATION YOU ARE AN EXPERT ON THAT POINT?

A YES.

Q SO I WANT TO SPEND A FEW MINUTES WITH YOU, MAYBE

MORE THAN JUST A FEW, EXPLORING WHAT YOU HAVE DONE IN YOUR LIFE PROFESSIONALLY SO THIS JURY HAS A BASIS TO EVALUATE YOUR OPINIONS.

SOUND OKAY WITH YOU?

A YES.

Q LET'S START AT THE BEGINNING.

WHERE DID YOU GROW UP?

A I GREW UP MOSTLY IN LOS ANGELES.

Q WHERE DID YOU GO TO HIGH SCHOOL?

A L.A. HIGH.

Q WHERE DID YOU GO TO COLLEGE?

A I WENT TO JOHNS HOPKINS, BUT I RETURNED EVERY SUMMER AND I DID RESEARCH AT USC MEDICAL SCHOOL DURING THE SUMMERS, AND THEN I WENT TO MEDICAL SCHOOL AT USC.

Q DID YOU OBTAIN AN UNDERGRADUATE DEGREE FROM JOHNS HOPKINS?

A NO. I WAS ADMITTED TO MEDICAL SCHOOL WITHOUT A BACHELOR'S DEGREE.

Q SO YOU WENT TO MEDICAL SCHOOL AT USC.

WHAT YEARS ARE WE TALKING ABOUT?

A 1964 TO 1970.

Q DID THAT PROGRAM -- '64 TO '70, THAT'S SIX YEARS?

A CORRECT.

Q YOU WERE ON THE SIX-YEAR PLAN?

A YES.

Q CAN YOU EXPLAIN WHY?

A AFTER I WAS ADMITTED TO MEDICAL SCHOOL, I

APPLIED FOR A GRANT FOR AN M.D./PH.D PROGRAM, AND SO I SPENT THE SIX YEARS GETTING MY M.D. AND MY PH.D.

Q AND IN WHAT DID YOU GET YOUR PH.D?

A MY PH.D WAS IN BIOCHEMISTRY.

Q IN A SENTENCE OR TWO CAN YOU TELL US WHAT BIOCHEMISTRY IS, PLEASE.

A BIOCHEMISTRY IS STUDYING THE UNDERLYING MOLECULAR THINGS THAT HAPPEN OR MECHANISMS. IN THIS CASE I WAS LOOKING AT STEROID HORMONE PRODUCTION BY THE ADRENAL GLAND.

Q SO 1970 ROLLS AROUND AND YOU HAVE AN MD DEGREE AND A PH.D. FROM USC, TRUE?

A THAT'S RIGHT.

Q WHAT HAPPENED NEXT WITH RESPECT TO YOUR CAREER?

A I WAS A -- DID A FIRST YEAR OF PEDIATRIC RESIDENCY AT BRONX MUNICIPAL HOSPITAL. JACOBY HOSPITAL IT'S ALSO KNOWN AS.

Q OBVIOUSLY IN NEW YORK?

A YES, IN THE BRONX.

Q AND THEN WHAT?

A THEN I WAS -- I WENT INTO THE U.S. PUBLIC HEALTH SERVICE, AND I WAS AT THE NATIONAL INSTITUTES OF HEALTH, THE PART THAT'S CALLED THE NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT.

Q TELL US WHAT THE PUBLIC HEALTH SERVICE IS.

A THE PUBLIC HEALTH SERVICE IS ONE OF THE OLDEST -- IT'S ACTUALLY A MILITARY BRANCH, AND IT WAS -- HAS BEEN RESPONSIBLE FOR STUDYING DISEASE IN THE POPULATION AND

PROVIDING PUBLIC HEALTH SERVICES IN THE POPULATION. THE SURGEON GENERAL IS THE HEAD OF THE PUBLIC HEALTH SERVICE.

Q SO YOU WENT INTO THE PUBLIC HEALTH SERVICE WHICH WAS A FORM OF MILITARY SERVICE?

A YES.

AND WHILE YOU WERE THERE -- I'M NOT CLEAR ON THIS -- DID YOU THEN GO TO THE NATIONAL INSTITUTE OF HEALTH?

A NO. IT'S PART OF THE --

THE U.S. PUBLIC HEALTH SERVICE ACTUALLY STAFFS A LARGE PORTION OF THE N.I.H. -- CENTER FOR DISEASE CONTROL AND

OTHER -- IT ALSO PROVIDES OTHER SERVICES.

Q NOT TO PUT TOO FINE A POINT ON IT, I JUST WANT TO UNDERSTAND WHAT THESE ORGANIZATIONS ARE.

WHEN YOU LEFT PUBLIC HEALTH SERVICE, WHAT IS OR ARE THE NATIONAL INSTITUTES OF HEALTH OR SOMETIMES CALLED N.I.H?

A THE NATIONAL INSTITUTES OF HEALTH ARE PART OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES. SO THERE ARE NATIONAL INSTITUTE OF MENTAL HEALTH. THERE IS NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT, NATIONAL CANCER INSTITUTE.

AND I WAS AT THE NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT, BUT I WAS ACTUALLY DOING CANCER RESEARCH. WE WERE WORKING ON A FORM OF CHILDHOOD BRAIN CANCER CALLED "NEUROBLASTOMA."

Q I THINK WHAT YOU'RE TELLING US IS THAT -- WELL, ENOUGH OF THAT.

HOW LONG WERE YOU AT THE N.I.H. DOING CANCER

RESEARCH ON CHILDHOOD BRAIN CANCER?

A A LITTLE BIT LESS THAN TWO YEARS.

Q THEN WHAT HAPPENED?

A WELL, I WAS PUT ON A DETAIL TO THE EXECUTIVE OFFICE OF THE PRESIDENT. AT THAT TIME --

Q THE PRESIDENT OF WHAT?

A THE UNITED STATES.

Q PLEASE GO AHEAD.

A AT THAT TIME THERE WAS SOMETHING CALLED A "SPECIAL ACTION OFFICE FOR DRUG ABUSE PREVENTION" THAT HAD

BEEN SET UP. ITS PURPOSE WAS --

IT WAS SET UP IN 1970. AND ITS PURPOSE WAS TO TRY TO COORDINATE EFFORTS MOSTLY TO TREAT HEROIN ADDICTION PROBLEMS. THERE WAS AN EPIDEMIC AT THAT TIME. AND SO WE HAD PEOPLE IN THAT OFFICE FROM -- WHO HAD BEEN BROUGHT IN FROM THE NATIONAL INSTITUTES OF HEALTH, FROM THE DEFENSE DEPARTMENT, FROM THE JUSTICE DEPARTMENT, FROM VETERANS' ADMINISTRATION TO TRY TO COORDINATE EFFORTS.

AND THE PRIMARY THRUST, ALTHOUGH THERE WAS SOME LAW ENFORCEMENT ACTIVITIES, WAS TO INCREASE TREATMENT OPTIONS FOR PEOPLE WHO HAD HEROIN ADDITION. I WAS INVOLVED IN THE PART OF THAT THAT WAS RUNNING STUDIES TO DEVELOP -- TRY TO DEVELOP NEW PHARMACEUTICAL TREATMENTS FOR HEROIN ADDITION.

Q WHICH PRESIDENT --

WHO WAS THE PRESIDENT OF THE UNITED STATES WHEN YOU WERE ASSIGNED TO THE EXECUTIVE OFFICE OF THE PRESIDENT?

A NIXON.

Q WHAT DID YOU DO NEXT?

A WELL, AFTER DOING THAT FOR A COUPLE OF YEARS, I LEFT THE GOVERNMENT AND I DID CONTRACT WORK FOR THE GOVERNMENT IN TWO PRIMARY AREAS. ONE WAS THE LEAD-BASED PAINT POISONING PREVENTION PROGRAMS, AND THEN THE OTHER WAS AFTER I HAD WAITED MY YEAR THAT -- THAT I HAD TO IN ORDER TO FULFILL THE LEGAL REQUIREMENT OF BEING OUTSIDE THE GOVERNMENT, I THEN STARTED ALSO WORKING ON THE CLINICAL TRIALS OF SOME OF THOSE SAME PHARMACEUTICALS THAT WE WERE DEVELOPING WHILE I WAS PART OF THE GOVERNMENT.

Q WERE YOU AFFILIATED WITH AN ORGANIZATION AT THAT

POINT?

A I WAS FUNDED BY THE CENTER FOR DISEASE CONTROL. I WAS FUNDED BY THE NATIONAL BUREAU OF STANDARDS. I WAS FUNDED BY THE NATIONAL INSTITUTE ON DRUG ABUSE FOR THE DEVELOPMENT OF THE TREATMENTS FOR HEROIN ADDICTION, AND THE DEPARTMENT OF HOUSING URBAN DEVELOPMENT -- THE LEAD-BASED PAINT AREAS. AND THAT WAS ALSO WITH THE CENTERS FOR DISEASE CONTROL.

Q SO WHAT YEARS ARE WE TALKING ABOUT NOW?

A WE'RE TALKING ABOUT THE RANGE FROM '74 TO '82 ABOUT.

Q WHAT HAPPENED IN 1982?

A IN 1982, ACTUALLY, I WAS DOING CONSULTING WORK. I HAD MY OWN COMPANY, AND I DISCOVERED THAT I REALLY DIDN'T LIKE RUNNING A COMPANY. I HAD A NUMBER OF EMPLOYEES. I ENJOYED DOING THE WORK. SO I CLOSED THE COMPANY. WE HAD FINISHED WHAT WE WERE DOING, AND I DECIDED TO WORK IN THE ENVIRONMENTAL OCCUPATIONAL HEALTH AREA. AND I WENT TO WORK

FOR A COMPANY CALLED "WASHINGTON OCCUPATIONAL HEALTH ASSOCIATES."

Q WHAT KIND OF WORK WERE YOU DOING THERE?

A THE WASHINGTON OCCUPATIONAL HEALTH WAS PRIMARILY INVOLVED IN DOING VARIOUS KINDS OF MEDICAL SURVEILLANCE PROGRAMS, BUT I WAS PARTICULARLY WORKING IN THE AREA CALLED "RISK ASSESSMENT." WE WERE LOOKING AT ENVIRONMENTAL AND OCCUPATIONAL EXPOSURES AND DEVELOPING, FOR EXAMPLE, CLEAN-UP STANDARDS FOR PCB'S AT PUBLIC UTILITIES, AND ACTUALLY DID SOME WORK FOR LOS ANGELES DEPARTMENT OF WATER AND POWER.

THERE WAS A STANDARD THAT WAS DEVELOPED WHERE M.S.D.S.'S WERE REQUIRED TO BE IN THE WORKPLACE, AND WE WERE HIRED BY DEPARTMENT OF WATER AND POWER TO DETERMINE WHETHER OR NOT THEIR EXISTING M.S.D.S.'S WERE PROPER, AND WHETHER OR NOT THEY NEEDED TO BE IMPROVED IN ORDER TO INFORM THEIR WORKERS.

Q WHAT IS OCCUPATIONAL MEDICINE -- WITHDRAWN.

IS THERE A BRANCH OF THE PRACTICE OF MEDICINE CALLED "OCCUPATIONAL MEDICINE"?

A YES.

Q WHAT IS THAT?

A OCCUPATIONAL MEDICINE IS TRYING TO -- BASICALLY TRYING TO PROTECT WORKERS IN THE WORKPLACE AND EVALUATING WHETHER OR NOT THEY HAVE RECEIVED ANY OCCUPATIONAL DISEASES OR EVEN INJURIES SO THEY'RE A VERY WIDE RANGE.

MY ROLE IN THIS IS IN THE AREA OF TOXICOLOGY TO SEE WHETHER OR NOT CHEMICAL EXPOSURES OR OTHER AGENTS HAVE HARMED WORKERS.

Q YOU TOLD US THAT WHILE AT WASHINGTON

OCCUPATIONAL, BACK IN THOSE DAYS, YOU WERE DOING WORK ON THE CHEMICAL CALLED "PCB'S"?

A POLYCHLORINATED BIPHENYLS. THAT WAS THE FIRST ONE I STARTED WORKING ON. ALSO OTHER CHEMICALS: DIOXINS AND FURANS. BUT POLYCHLORINATED BIPHENYLS WERE USED EXTENSIVELY IN LARGE TRANSFORMERS FOR -- BECAUSE THEY WERE FIRE RESISTANT. A LOT OF FIRE CODES REQUIRED THEM TO BE USED. AND ALSO IN ELECTRIFIED RAIL CARS. ON THE EAST COAST WE ESPECIALLY HAVE A LOT OF TRAINS THAT ARE RUN BY ELECTRICITY RATHER THAN BY DIESEL POWER.

Q SOMEWHERE ALONG THE LINE WERE YOU INVOLVED IN DEVELOPING BAD-TASTING PAINT?

A RIGHT.

Q WHAT'S THAT ABOUT?

A THAT WAS AN IDEA OF ACTUALLY A PAINT MANUFACTURER IN NEW YORK THAT IF YOU COULD COAT LEAD-BASED PAINT WITH A BAD-TASTING SUBSTANCE, ONE WOULD BE ABLE TO PREVENT CHILDREN FROM EATING THE PAINT.

WE ACTUALLY DID SOME --

I DEVELOPED SOME ANIMAL TOXICITY TESTING PROGRAM, AND WE ACTUALLY DEVELOPED A TESTING PROTOCOL FOR SOMEBODY WHO DID RESEARCH AT COLUMBIA ON KIDS WHO WERE ACTUALLY -- SEE WHETHER OR NOT THE MOUTHING OF OBJECTS THAT WERE COATED WITH THIS PAINT WOULD MAKE THEM REJECT IT. NOT THE PAINT. THEY WERE USING OBJECTS: BALLS AND THINGS THAT KIDS MIGHT PUT IN THEIR MOUTH.

Q NOW, LET ME ASK YOU ABOUT SOMEBODY. WHO IS ERNST, E-R-N-S-T, WINDER, W-I-N-D-E-R?

A HE WAS THE PRESIDENT OF AN ORGANIZATION CALLED "THE AMERICAN HEALTH FOUNDATION," WHICH IS A NON-PROFIT RESEARCH INSTITUTE THAT I JOINED IN 1989.

Q WHAT WAS ERNST WINDER'S SCIENTIFIC CLAIM TO FAME, AS IT WERE?

A HE WAS THE FIRST PERSON OF THE UNITED STATES THAT DID THE CONVINCING EPIDEMIOLOGY STUDY THAT SHOWED THAT CIGARETTES CAUSED LUNG CANCER. THAT WAS DONE IN 1950.

IN ENGLAND, THE SAME YEAR, SIR RICHARD -- OR RICHARD DOLE AT THAT TIME -- PUBLISHED A PAPER IN ENGLAND

WHICH DID THE SAME THING. SO THE TWO PAPERS TOGETHER REALLY, AT LEAST FROM THE SCIENTIFIC COMMUNITY STANDPOINT, BEGAN ESTABLISHING THE FACT THAT LUNG CANCER WAS CAUSED FROM CIGARETTE SMOKING.

Q SO DID ERNST WINDER FORM SOMETHING CALLED "THE AMERICAN HEALTH FOUNDATION"?

A YES.

Q YOU WENT TO WORK FOR IT?

A YES.

Q AND WHEN YOU WORKED THERE, APPROXIMATELY HOW MANY FOLKS WORKED THERE?

A THERE WERE ABOUT 200, 250.

Q WHAT WAS YOUR JOB TITLE THERE?

A I BECAME DIRECTOR OF THE DIVISION OF PATHOLOGY AND TOXICOLOGY. AND I HAD A DEPARTMENT, BASICALLY ONE OF THE DIVISIONS OF THE FOUNDATION.

Q WHAT WAS THE MISSION OF AMERICAN HEALTH FOUNDATION WHEN YOU WERE THERE?

A PRIMARILY CANCER PREVENTION RESEARCH. WE CONTINUE TO DO A LOT OF RESEARCH ON CIGARETTES AND HOW CIGARETTES CAUSE LUNG CANCER. BELIEVE IT OR NOT, WE STILL DON'T REALLY KNOW. THERE ARE SO MANY DIFFERENT CHEMICALS THAT PROBABLY COME INTO PLAY IN CIGARETTE SMOKE THAT CAUSES LUNG CANCER. BUT THAT WAS ONE OF THE ISSUES.

THERE WAS RESEARCH THAT WAS DONE ON FAT IN THE DIET AND BREAST CANCER. THERE WAS RESEARCH ON FIBER AND COLON CANCER. THERE WERE CERTAIN CHEMO PREVENTATIVE AGENTS THAT WERE BEING TESTED LIKE SELENIUM COMPOUNDS AND OTHER THINGS.

MY DIVISION WAS PRIMARILY INVOLVED WITH LOOKING AT CHEMICAL EXPOSURES, AND WE WERE DOING MOSTLY LABORATORY WORK ON THOSE. WE ALSO HAD --

THE AMERICAN HEALTH FOUNDATION ALSO HAD AN EPIDEMIOLOGY DIVISION. ERNST WINDER WAS AN EPIDEMIOLOGIST. I WAS NOT IN THAT DIVISION, BUT I WORKED CLOSELY WITH THE EPIDEMIOLOGISTS ALSO.

Q WHERE DID THE FUNDING COME FROM FOR THE WORK YOU ALL WERE DOING AT THE AMERICAN HEALTH FOUNDATION?

A ABOUT 80 PERCENT OF THE FUNDING CAME FROM THE NATIONAL CANCER INSTITUTE AND THE OTHER FROM THE AMERICAN CANCER SOCIETY AND THEN FROM PRIVATE COMPANIES.

Q NOW, JUST AS A BASIC TOXICOLOGY CONCEPT, DO TOXICOLOGISTS LOOK AT WHAT IS SOMETIMES CALLED AN "ANIMAL MODEL"?

A YES.

Q WHAT DOES THAT MEAN TO A TOXICOLOGIST, AN ANIMAL MODEL?

A WELL, IT MEANS THAT HOPEFULLY YOU CAN LEARN SOMETHING ABOUT HUMAN DISEASE BY STUDYING THE ANIMAL MODEL FOR THAT DISEASE.

IN THE CASE OF TOXICOLOGY, IT'S WHETHER OR NOT WE CAN --

WE TRY TO DO STUDIES ON EXPERIMENTAL ANIMALS, BECAUSE WE CAN'T REALLY DO STUDIES ON HUMANS. YOU CAN LOOK AT WHAT HAPPENED TO PEOPLE AFTER THEY HAVE EXPOSURES, BUT EXPERIMENTALLY YOU REALLY HAVE TO USE ANIMALS.

OF COURSE, UNLESS YOU ARE WORKING ON DEVELOPING

A NEW PHARMACEUTICAL, BECAUSE THEN YOU ULTIMATELY HAVE TO TEST IT OUT IN HUMANS TO SEE IF IT WORKS AND IF IT'S TOXIC TO HUMAN ULTIMATELY. BUT FROM A TOXICOLOGIST'S STANDPOINT WE DO THE EXPERIMENTAL WORK IN ANIMALS.

Q HAVE YOU, AS PART OF YOUR LIFE'S WORK TO DATE, CONSIDERED THE QUESTION WHETHER THINGS THAT CAUSE CANCER IN ANIMALS NECESSARILY AND INEVITABLY CAUSE CANCER IN HUMANS? IS THAT SOMETHING YOU'VE CONSIDERED?

A THAT WAS ACTUALLY THE PRIMARY FOCUS OF MY RESEARCH WHEN I WAS AT THE AMERICAN HEALTH FOUNDATION.

WE DO HAVE MODELS WHERE WE TEST CHEMICALS FOR CARCINOGENICITY IN EXPERIMENTAL ANIMALS. WE NOW KNOW THAT IN MANY OF THOSE CIRCUMSTANCES, THOSE CHEMICALS WOULDN'T CAUSE THAT PARTICULAR KIND OF CANCER. MAYBE IT WOULDN'T EVEN CAUSE CANCER AT ALL IN HUMANS.

SO WE HAVE BEEN LOOKING AT CERTAIN AREAS WHERE THAT IS THE CASE AND ALSO AREAS WHERE THEIR ANIMAL MODEL SEEMS TO MIMIC WHAT HAPPENS IN HUMANS.

Q WITHOUT SPENDING TOO MUCH TIME ON THIS, WHY IS IT THAT SOME CHEMICALS CAN CAUSE A CANCER IN A PARTICULAR ANIMAL BUT NOT IN HUMANS?

A IT HAS TO DO, AGAIN, WITH THE BIOCHEMISTRY AND PHYSIOLOGICAL DIFFERENCES AND ULTIMATELY THE GENETIC DIFFERENCES BETWEEN ANIMALS AND HUMANS.

WE OBVIOUSLY HAVE --

VISUALLY WE DON'T LOOK LIKE EXPERIMENTAL ANIMALS. SO THAT'S A REFLECTION OF THE FACT THAT THEY'RE GENETICALLY DIFFERENT FROM US.

BUT JUST THE FACT THAT THEY LOOK DIFFERENT FROM US IS ALSO REFLECTED IN TERMS OF THE WAY THEIR BODIES METABOLIZE THE CHEMICALS OR REACT TO CHEMICALS IN COMPARISON TO THE WAY THAT OURS DO.

Q I KNOW WE CAN'T DO EVERYTHING FIRST. I'M GETTING AHEAD OF MYSELF. YOU HAVE JUST USED A WORD THAT WE'RE GOING TO TALK ABOUT AFTER A WHILE AND THAT IS "METABOLIZE."

WHAT DOES IT MEAN TO A TOXICOLOGIST IF A HUMAN OR AN ANIMAL METABOLIZES A CHEMICAL?

A IT MEANS IT CHANGES IT. THE BODY -- ENZYMES IN THE BODY CHANGE THE CHEMICAL. THAT CAN BE FOR MANY REASONS.

FOR EXAMPLE, IF WE TAKE IN GLUCOSE, SUGAR, WE METABOLIZE IT IN ORDER FOR OUR BODIES TO PRODUCE ENERGY.

IF WE TAKE IN A CHEMICAL, THE BODY CAN OFTEN CHANGE IT SO IT'S EASIER FOR THE BODY TO EXCRETE IT, USUALLY MAKE IT MORE WATER SOLUBLE, ATTACH OTHER CHEMICALS TO IT THAT MAKES IT MORE WATER SOLUBLE AND EASIER TO EXCRETE IN THE URINE. SO THOSE ARE A COUPLE OF EXAMPLES.

Q WELL, LET ME GO TO ANOTHER EXAMPLE.

YOU ARE FAMILIAR, ARE YOU NOT, WITH A CHEMICAL SUBSTANCE BENZENE C6-H6?

A YES.

Q ARE YOU FAMILIAR WITH THE MANNER IN WHICH BENZENE IS METABOLIZED IN THE HUMAN BODY?

A YES.

Q IN A SENTENCE OR TWO OR THREE, TELL THE JURY ABOUT WHAT HAPPENS TO BENZENE WHEN IT GETS IN THE HUMAN BODY RELATIVE TO THIS CONCEPT OF METABOLISM.

A RIGHT. ONE OF THE -- THIS IS SORT OF --

THE METABOLISM OF SOME CHEMICALS CAN BE KIND OF A MIXED BLESSING TO THE BODY BECAUSE ON THE ONE HAND IT HELPS THE BODY EXCRETE THE CHEMICALS, BUT THE CHEMICAL REACTIONS IN ORDER TO GET TO THAT POINT CAN OFTEN MAKE THEM MORE TOXIC. IT'S CALLED "BIOACTIVATION."

IN THE CASE OF BENZENE, BENZENE ITSELF DOES NOT APPEAR TO CAUSE ITS TOXIC PROPERTIES OR ITS ABILITY TO PRODUCE LEUKEMIA, BUT IT'S THE METABOLITES OF BENZENE THAT DO THAT THIS, THAT PRODUCE ACUTE MYELOGENOUS LEUKEMIA. AND IT'S A VERY COMPLEX METABOLISM, AND IT'S NOT COMPLETELY UNDERSTOOD EXACTLY HOW EACH OF THOSE METABOLITES THEN GO TO PRODUCING BENZENE. THERE HAVE BEEN --

THERE'S A COUPLE OF REASONABLE HYPOTHESES ABOUT THE WAY THIS HAPPENS, BUT THIS IS AN AREA UNDER ACTIVE STUDY.

Q WE'RE GOING TO GET BACK TO WHO IS JOHN WHYSNER IN A MINUTE, BUT I WANT TO GO BACK TO THE CONCEPT OF THE DIFFERENCE IN ANIMALS AND HUMANS AS THEY -- WITH RESPECT TO

HOW A CERTAIN CHEMICAL OR MIXTURE OF CHEMICALS AFFECT ANIMALS OR HUMANS. I WANT TO PICK A SUBSTANCE THAT WE ALL KNOW A LITTLE SOMETHING ABOUT -- GASOLINE.

YOU KNOW ABOUT GASOLINE, I TAKE IT?

A YES.

Q AND DO YOU KNOW THAT GASOLINE, BOTH HISTORICALLY AND PRESENTLY, CONTAINS BENZENE IN SOME AMOUNT?

A YES.

Q WHAT DO YOU KNOW ABOUT THAT?

A WELL, IT CONTAINS --

GASOLINE CONTAINS SOMEWHERE BETWEEN 1 TO 3 PERCENT OF BENZENE. SOMETIMES AS HIGH AS 5, BUT I WOULD SAY THAT THE SORT OF USUAL RANGE OF BENZENE CONTENT IS 1 TO 3 PERCENT IN GASOLINE.

Q AND IS GASOLINE --

COULD GASOLINE BE DESCRIBED AS A HYDROCARBON MIXTURE?

A YES.

Q HAVE YOU EDUCATED YOURSELF OVER THE YEARS AND BECOME KNOWLEDGEABLE ABOUT THE EXTENT TO WHICH GASOLINE EITHER IS OR IS NOT AN ANIMAL CARCINOGEN ON THE ONE HAND AND A HUMAN CARCINOGEN ON THE OTHER HAND?

DO YOU KNOW ABOUT THAT?

A YES.

Q I THINK WE'RE ALL ON THE SAME PAGE HERE, BUT TELL US WHAT YOU THINK THE WORD "CARCINOGEN" MEANS.

A WELL, CARCINOGEN IMPLIES THAT IT CAUSES CANCER, AND THAT CAN EITHER BE IN EXPERIMENTAL ANIMALS OR IN HUMANS.

SO THERE ARE ANIMAL CARCINOGENS AND THERE ARE KNOWN HUMAN CARCINOGENS.

Q NOW, IN YOUR OPINION, TO A REASONABLE DEGREE OF MEDICAL AND SCIENTIFIC PROBABILITY, HAS GASOLINE, THE MIXTURE, BEEN SHOWN TO BE AN ANIMAL CARCINOGEN?

MR. WAGNON: OBJECTION; RELEVANCE.

THE COURT: OVERRULED.

YOU MAY RESPOND.

THE WITNESS: IT IS BELIEVED TO BE AN ANIMAL CARCINOGEN IN THAT IT CAUSES -- HAS BEEN FOUND TO CAUSE LIVER TUMORS IN

MICE. BUT IT ALSO CAUSES KIDNEY TUMORS IN RATS, BUT THOSE ARE NOT CONSIDERED TO BE RELEVANT TO ITS -- TO HUMAN CARCINOGENICITY.

BY MR. RIFF:

Q DO YOU HAVE AN OPINION, TO A REASONABLE DEGREE OF MEDICAL AND SCIENTIFIC PROBABILITY, WHETHER GASOLINE CONTAINING 1 TO 3 PERCENT BENZENE IS OR IS NOT A HUMAN CARCINOGEN?

A IT HAS NOT BEEN FOUND TO BE A HUMAN CARCINOGEN.

Q WELL, HOW IS IT THAT THIS STUFF CAN CAUSE KIDNEY CANCER IN RODENTS, YET NOT BE A HUMAN CARCINOGEN?

DO YOU HAVE A TOXICOLOGICAL EXPLANATION FOR HOW THAT'S THE CASE?

A YES. ACTUALLY, IN THE CASE OF GASOLINE, ONE OF THE CHEMICALS THAT HAS BEEN BEST STUDIED IS A CHEMICAL CALLED "LIMONENE," WHICH IS THE NATURAL OIL FROM CITRUS FRUIT SKINS. THAT ALSO CAUSES THESE KIDNEY TUMORS IN MALE RATS.

WHAT HAPPENS IS BOTH LIMONENE, GASOLINE AND

THERE ARE A NUMBER OF OTHER COMPOUNDS, BIND TO A PROTEIN THAT IS PRODUCED BY THE LIVER, EXTRUDED IN THE KIDNEY OF THE MALE RAT. THIS PROTEIN IS PRODUCED IN VERY LARGE QUANTITIES BY THE MALE RAT. IT'S THOUGHT ACTUALLY TO BE BINDING TO SOME KIND OF SEX ATTRACTANT THAT IS EXCRETED IN THE URINE OF THE MALE RAT, AND IT PRODUCES LARGE QUANTITIES OF THIS PROTEIN. THE GASOLINE OR LIMONENE WILL BIND TO THIS PROTEIN AND CAUSE TOXICITY IN THE KIDNEY, PREVENT IT FROM BEING EXCRETED PROPERLY AND EVENTUALLY CAUSE TUMORS IN THE RAT KIDNEY.

NOW, HUMANS DON'T HAVE THIS PROTEIN.

Q WHAT IS THE NAME OF THAT PROTEIN?

A IT'S CALLED "ALPHA 2-U GLOBULIN."

Q ALPHA 2-U GLOBULIN. MALE RATS HAVE THIS PROTEIN?

A YES.

Q DO HUMAN BEINGS HAVE THIS PROTEIN?

A NO.

Q FEMALE RATS HAVE THIS PROTEIN?

A NO.

Q FEMALE RATS GET CANCER FROM GASOLINE IN THE KIDNEY?

A NO.

Q DO MICE OF EITHER SPECIES GET KIDNEY CANCER?

A NO. ACTUALLY THEY HAVE A VERY SIMILAR PROTEIN CALLED "MOUSE URINARY PROTEIN" OR M.U.P., BUT YET THEY DON'T GET KIDNEY CANCER BECAUSE THE GASOLINE OR LIMONENE WON'T BIND TO M.U.P. SO THEY DON'T GET THE TOXICITY. SO THIS IS A -- WELL --

Q NOW, TOXICOLOGISTS LIKE YOU ARE LOOKING AT THINGS -- LOOKING AT THE MECHANISMS BY WHICH CANCER IS CAUSED BY SPECIFIC AGENTS; IS THAT TRUE?

A YES.

Q AND IS THIS AN EXAMPLE OF THE IDENTIFICATION OF A PARTICULAR CANCER-CAUSING MECHANISM THAT EXISTS IN ANIMALS, SPECIFICALLY MALE RATS, BUT NOT IN HUMANS?

A YES.

Q NOW, LET ME ASK YOU THIS:

IF YOU PUMP GAS IN THIS STATE, YOU SEE A SIGN ON

THE SIDE OF THE PUMP THAT SAYS WORDS LIKE "VAPORS OF THIS PRODUCT HAVE BEEN SHOWN TO CAUSE CANCER IN LABORATORY ANIMALS."

IS THAT YOU'RE TALKING ABOUT HERE?

A YES. I WOULD PRESUME SO.

Q BUT GASOLINE IS NOT A HUMAN CARCINOGEN, IN YOUR OPINION, TO A REASONABLE DEGREE OF MEDICAL PROBABILITY?

A CORRECT.

Q AND HAVE YOU TESTED -- IF THAT'S THE RIGHT WORD -- HAVE YOU COMPARED YOUR OPINION ON THAT POINT THAT GASOLINE WITH 1 TO 3 PERCENT BENZENE IS NOT A HUMAN CARCINOGEN -- HAVE YOU COMPARED THAT WITH ASSESSMENTS BY AGENCIES, SUCH AS THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, AND THE A.T.S.D.R., AGENCY FOR TOXIC SUBSTANCE AND DISEASE REGISTRY, THE E.P.A., AND THE NATIONAL TOXICOLOGY PROGRAM AND THOSE KINDS OF INSTITUTIONS?

MR. WAGNON: OBJECTION; RELEVANCE; COMPOUND; OVERLY BROAD.

THE COURT: OVERRULED.

YOU MAY RESPOND.

THE WITNESS: YES, I HAVE.

BY MR. RIFF:

Q AND TO YOUR KNOWLEDGE, HAVE ANY OF THOSE AGENCIES CONCLUDED THAT GASOLINE WITH 1 TO 3 PERCENT BENZENE IS A HUMAN CARCINOGEN?

A NO.

Q SO LET'S GO BACK TO YOUR CAREER.

I THINK WE PICKED UP --

IT'S 1989. YOU AND DR. WINDER ARE WORKING TOGETHER AT THE AMERICAN HEALTH FOUNDATION.

HOW LONG DID YOU CONTINUE TO WORK THERE?

A I WORKED THERE UNTIL YEAR 2002.

Q WHILE YOU WERE THERE, DID YOU DO CONSULTING WORK FOR, SAY, THE ENVIRONMENTAL PROTECTION AGENCY?

A YES.

Q IN A COUPLE OF SENTENCES TELL US ABOUT THAT, PLEASE.

A WELL, THE CONSULTING WORK I DID FOR THE E.P.A., AGAIN, WAS HELPING THEM TO DESIGN BIOASSAYS FOR A UNIQUE CHEMICAL THAT WAS FOUND AT A PLACE IN NEW JERSEY.

Q PLEASE STOP. I WANT YOU TO PULL THE MICROPHONE A LITTLE CLOSER TO YOURSELF.

AND NOW TELL THE JURY WHAT A BIOASSAY IS.

A THE BIOASSAY IS THE WAY IN WHICH ONE DETERMINES WHETHER OR NOT A CHEMICAL IS AN ANIMAL CARCINOGEN AND THERE'S A DEFINED PROTOCOL. IN FACT, THERE ARE A NUMBER OF STEPS.

YOU DO SHORTER-TERM STUDIES, AND THEN YOU DO A LONG-TERM STUDY THAT IS FOR THE LIFETIME OF THE ANIMAL, AND YOU GIVE THEM HIGH ENOUGH DOSES SO THAT IT CAUSES SOME TOXIC EFFECTS, BUT NOT SO HIGH SO THAT ANIMALS DON'T SURVIVE FOR THEIR LIFETIME. AND THEN YOU SEE WHETHER OR NOT THE CHEMICAL WILL CAUSE TUMORS IN THE ANIMAL.

Q WHAT KIND OF WORK WERE YOU DOING FOR THE E.P.A., PLEASE?

A THIS WAS A SITUATION THAT WAS A CANCER CLUSTER IN A PART OF NEW JERSEY, CHILDHOOD CANCERS. THERE WERE

INCREASED LEUKEMIAS AND BRAIN TUMORS IN THIS COMMUNITY. AND THEY ACTUALLY DID FIND CHEMICALS IN THE GROUND WATER AND DRINKING WATER AND THEY WANTED TO TEST THEM.

WE ALREADY KNEW SOMETHING ABOUT SOME OF THEM, BUT THERE WAS ONE UNIQUE COMPOUND THAT WAS FOUND IN THIS SITUATION THAT HAD NEVER BEEN TESTED BEFORE. SO I WAS ASKED TO PARTICIPATE IN HELPING TO DESIGN THE ANIMAL TESTING STUDIES.

Q WHILE YOU WERE AT THE AMERICAN HEALTH FOUNDATION DURING THOSE YEARS, DID YOU DO SOME WORK WITH THE AGENCY FOR TOXIC SUBSTANCES ABUSE REGISTRY, THE A.T.S.D.R?

A YES. ONE OF THE THINGS THAT --

I'M ALSO IN AN ORGANIZATION CALLED "THE AMERICAN COLLEGE OF OCCUPATIONAL ENVIRONMENTAL MEDICINE," WHICH IS OUR MAIN POSITION. WE'RE AN ORGANIZATION IN OCCUPATIONAL ENVIRONMENTAL MEDICINE. AND ONE OF THE THINGS THAT THE A.T.S.D.R. DOES WITH THAT ORGANIZATION IS TO PROVIDE CONTINUING EDUCATION FOR DOCTORS RELATED TO TOXIC CHEMICALS.

AND SO I WAS ASKED TO PARTICIPATE IN DEVELOPING SOME OF THE TEACHING TOOLS FOR THAT PROGRAM.

Q IN A COUPLE OF SENTENCES, TELL US ABOUT ANY WORK YOU DID FOR THE CENTERS FOR DISEASE CONTROL IN THOSE DAYS WHILE IT WAS THE AMERICAN HEALTH FOUNDATION?

A WELL, ACTUALLY, THE CENTER FOR DISEASE CONTROL HAD TO DO WITH THE LEAD-BASED PAINT. WORK THAT I HAD BEEN DOING IN THE 70'S.

Q WHAT ABOUT THE UNITED STATES DEPARTMENT OF TRANSPORTATION? WERE YOU DOING WORK FOR IT WHILE YOU WERE AT

THE AMERICAN HEALTH FOUNDATION?

A WELL, ACTUALLY THAT WAS WORK --

I WAS ALSO CO-EMPLOYED BY WASHINGTON OCCUPATIONAL HEALTH ASSOCIATES, TO A CERTAIN DEGREE, DURING THAT PERIOD OF TIME. THE DEPARTMENT OF TRANSPORTATION MAIN OFFICE BUILDING HAD A SITUATION WHERE THE EMPLOYEES WERE HAVING RESPIRATORY PROBLEMS. THERE WERE ABOUT 5,000 PEOPLE IN THIS HEADQUARTERS BUILDING. AND THE QUESTION WAS WHETHER OR NOT THERE WAS SOMETHING IN THE ENVIRONMENT IN THE BUILDING THAT WAS CAUSING THEIR ILLNESS.

AND WE WENT IN AND EXAMINED --

WE TALKED TO THE PEOPLE. WE ACTUALLY DIDN'T PERFORM PHYSICAL EXAMINATIONS ON PEOPLE. WE TALKED TO THEM ABOUT THEIR PROBLEMS AND ORDERED CERTAIN INDUSTRIAL HYGIENE TESTING.

AND WE FOUND SOME THINGS IN THE AIR AND ALSO SOME MOLD, WHAT ARE CALLED "TOXIGENIC FUNGI" IN THE BUILDING. ONE OF THE MOST FAMOUS OF THOSE IS CALLED "STACHYBOTRYS,"

WHICH IS BLACK MOLD THAT CAUSES TOXIC EFFECTS ON THE LUNG.

MR. RIFF: YOUR HONOR, MAY WE MARK FOR IDENTIFICATION AS EXHIBIT 131 THE CURRICULUM VITAE DAY OF JOHN WHYSNER?

THE COURT: YES, 131 MAY BE MARKED.

(MARKED FOR IDENTIFICATION
EXHIBIT 131, CURRICULUM VITAE OF
JOHN WHYSNER.)

BY MR. RIFF:

Q DO YOU HAVE A COPY OF 131 IN FRONT OF YOU?

A YES.

Q THAT'S YOUR C.V?

A YES.

MR. RIFF: MAY I OFFER 131?

MR. WAGNON: NO OBJECTION.

THE COURT: 131 IS RECEIVED.

(RECEIVED IN EVIDENCE

EXHIBIT 131.)

BY MR. RIFF:

Q WELL, HAVE YOU DONE ANY ORIGINAL RESEARCH PUBLISHED IN THE WORLD PEER-REVIEWED PROFESSIONAL SCIENTIFIC LITERATURE IN THE SUBJECT OR ON THE SUBJECT OF BENZENE?

A YES.

Q TELL THE JURY ABOUT THAT, PLEASE.

A ONE OF THE QUESTIONS IS HOW DOES BENZENE CAUSE ACUTE MYELOGENOUS LEUKEMIA. AND WE WERE ASKED BY THE AMERICAN PETROLEUM INSTITUTE TO LOOK AT THIS PROBLEM TO FIND OUT IF THE --

THERE HAVE BEEN 1400 GENOTOXICITY TESTS --

Q WHAT ARE GENOTOXICITY TESTS?

A GENOTOXICITY TESTS ARE TESTS THAT ARE DONE IN VARIOUS KINDS OF SYSTEMS TO DETERMINE WHETHER OR NOT MUTATIONS ARE PRODUCED BY A CHEMICAL, WHETHER OR NOT CERTAIN OTHER KINDS OF CHROMOSOMAL ABERRATIONS OR ABNORMALITIES ARE PRODUCED BY CHEMICALS. AND WE WERE ASKED BY THEM TO TAKE A LOOK AT ALL OF THESE 1400 GENOTOXICITY TESTS TO SEE WHETHER OR NOT THEY POINTED TOWARD ANY PARTICULAR TYPE OF MECHANISM BY WHICH BENZENE COULD PRODUCE ACUTE MYELOGENOUS LEUKEMIA.

Q KIND OF LIKE THIS ALPHA 2-U GLOBIN, THE

MECHANISM CAUSING KIDNEY CANCER IN MALE RATS?

A CORRECT.

Q SO WHAT WAS THE BOTTOM LINE ON THAT WORK?

A THE BOTTOM LINE ON THAT WORK WAS THAT WE FOUND THAT THE MOST PROBABLE MECHANISM --

BENZENE IS NOT A MUTAGEN, OR ITS METABOLITES DON'T ACTUALLY CAUSE SPECIFIC MUTATIONS IN CHROMOSOMES, BUT THEY DO CAUSE CHROMOSOMAL BREAKS, AND WHERE CHROMOSOMES CHANGED PARTNERS BETWEEN EACH OTHER, CALLED "TRANSLOCATIONS."

AND WE THOUGHT THAT THE MOST LIKELY MECHANISM, GIVEN THE PATTERN OF GENOTOXICITY TESTS, WAS SOMETHING CALLED INHIBITION OF AN ENZYME CALLED TOPOISOMERASE II.

Q PLEASE STOP.

IS THERE A NICKNAME THAT YOU TOXICOLOGISTS HAVE FOR TOPOISOMERASE II?

A TOPO II.

Q NOW, I WANT TO TALK ABOUT THIS WITH YOU BECAUSE YOU HAVE NOW TOUCHED ON THE SUBJECT OF A MECHANISM BY WHICH

BENZENE CAUSES ACUTE MYELOGENOUS LEUKEMIA IN HUMANS, TRUE?

A YES.

Q ONE OF THE ISSUES IN THIS CASE FOR THIS JURY IS WHETHER BENZENE CAUSES NON-HODGKIN'S LYMPHOMA IN HUMANS. AND MAYBE I'LL JUST ASK YOU THE QUESTION RIGHT HERE AND NOW.

DO YOU HAVE AN OPINION, TO A REASONABLE DEGREE OF MEDICAL AND SCIENTIFIC PROBABILITY, WHETHER BENZENE IN ANY DOSE, FOR ANY DURATION OF EXPOSURE CAUSES NON-HODGKIN'S LYMPHOMA IN HUMANS?

A YES, I DO.

Q WHAT'S YOUR OPINION?

A MY OPINION IS THAT IT HAS NOT BEEN SHOWN TO CAUSE NON-HODGKIN'S LYMPHOMA.

Q IS THE TOPO II MECHANISM THAT APPLIES TO BENZENE AND A.M.L. IS THAT MECHANISM IN PLAY WHEN YOU'RE TALKING ABOUT BENZENE AND NON-HODGKIN'S LYMPHOMA IN HUMANS IN YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY?

A NO.

Q SO YOU WERE TELLING ME ABOUT THE BOTTOM LINE ON YOUR 1400 GENOTOX TESTS FOR BENZENE, AND I THINK WHAT YOU TOLD US IS YOU HAD -- THE EVIDENCE WAS POINTING A TOPOISOMERASE II INHIBITION MECHANISM BY WHICH BENZENE CAUSES A.M.L. IN HUMANS.

IS THAT WHERE WE WERE?

A YES.

Q IS THERE ANYTHING MORE TO BE SAID ABOUT THAT WORK IN TERMS OF YOUR BOTTOM LINE?

A WELL, IT'S A MECHANISM BY WHICH CERTAIN SPECIFIC KIND OF CHROMOSOMAL CHANGES ARE MADE. IN OTHER WORDS, THESE

TYPES OF TRANSLOCATIONS. IT WOULDN'T CAUSE ALL KINDS OF TRANSLOCATIONS. CERTAIN SPECIFIC ONES. SO I THINK THE CONCEPT HERE IS THAT THE KIND OF TRANSLOCATIONS CAUSE JUXTAPOSITIONS OF CERTAIN GENES THAT THEN CAN LEAD TO ACUTE MYELOGENOUS LEUKEMIA.

TOPOISOMERASE II -- CAN I EXPLAIN FOR A MINUTE JUST WHAT IT IS?

Q HOLD ON. LET ME THINK WHETHER WE SHOULD DO THAT NOW.

(PAUSE.)

Q I'D LIKE TO NOT DO THAT NOW. WE'RE GOING TO COME BLACK TO THAT, THOUGH.

DID YOUR WORK IN THIS REGARD RESULT IN A PUBLICATION ABOUT YOUR 1400 GENOTOX STUDIES?

A ACTUALLY TWO PUBLICATIONS. ONE WAS A PRELIMINARY PUBLICATION. THE OTHER ONE WAS MUTATION RESEARCH IN 2004.

Q AND THAT'S IN EXHIBIT 131 IN EVIDENCE, AND THAT'S "WHYSNER GENOTOXICITY OF BENZENE AND ITS METABOLITES, MUTATION RESEARCH," 2004?

A YES.

Q PAGES 3 -- PAGES 5, 6, 7, 8 AND 9 OF EXHIBIT 131 CONTAIN ALL OF YOUR PUBLICATIONS?

A YES.

Q ROUGHLY HOW MANY ARE WE TALKING ABOUT?

A I HAVEN'T COUNTED THEM, ACTUALLY, BUT 50, 60, MAYBE.

Q SINCE WE'RE TALKING ABOUT YOUR WORK IN THIS CASE

INVOLVING CARCINOGENS, I'LL JUST ASK YOU: HAVE YOU PUBLISHED SOMETHING CALLED "THE IDENTIFICATION AND CLASSIFICATION OF CARCINOGENS" IN A COLLECTION OR BOOK CALLED "CARCINOGENS IN THE WORKPLACE"?

A YES.

Q TELL US ABOUT THAT IN A WORD OR TWO, PLEASE.

A WELL, THAT PUBLICATION HAS COME OUT OF --

I'VE ALSO DONE SOME CONSULTING WITH THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. SO I'VE BEEN INVOLVED IN CLASSIFYING CARCINOGENS FOR THAT AGENCY IN THESE

WORKING GROUPS. AND THAT PUBLICATION WAS AN EXPLANATION OF HOW THE CLASSIFICATION SYSTEMS WORK ACROSS FROM I.A.R.C. TO E.P.A., TO N.T.P. THEY'RE VARIOUS ORGANIZATIONS THAT CLASSIFY CARCINOGENS. AND ALSO SOME OF THE ISSUES LIKE THESE MECHANISM ISSUES THAT COME INTO PLAY IN TERMS OF TRYING TO CLASSIFY CARCINOGENS AND WHETHER SOMETHING IS A HUMAN CARCINOGEN OR IS NOT A HUMAN CARCINOGEN.

Q I WANT TO TALK ABOUT I.A.R.C. IN A FEW MINUTES, BUT LET ME ASK YOU THIS: IF YOU IN YOUR FORMAL LETTERHEAD, I GUESS IT WOULD SAY "JOHN WHYSNER, M.D., PH.D. AND D.A.B.T?

A YES.

Q WHAT IS D.A.B.T., PLEASE?

A IT'S CALLED "DIPLOMAT AMERICAN BOARD OF TOXICOLOGY." THAT IS MY BOARD CERTIFICATION.

Q SO WITHIN THIS WORLD OF TOXICOLOGY, THERE IS A BOARD CERTIFICATION THAT SOME PEOPLE ACHIEVE?

A YES.

Q IS BEING A DIPLOMAT OF THE AMERICAN BOARD OF

TOXICOLOGY, IS THERE A HIGHER DISTINCTION IN TOXICOLOGY THAT YOU'RE AWARE OF THAN BEING A D.A.B.T?

A WELL, IN TERMS OF AT LEAST A --

I'LL TELL YOU ONE THING: THERE'S NO HARDER TEST TO TAKE THAN FOR THE D.A.B.T. BUT, I MEAN, I GUESS SOME AWARDS WOULD BE HIGHER, BUT THIS IS THE STANDARD ONE THAT PEOPLE HAVE TO ACHIEVE IN ORDER TO PRACTICE TOXICOLOGY, AND, FOR EXAMPLE, BE A HEAD OF A DEPARTMENT IN A PHARMACEUTICAL COMPANY OR SOMETHING LIKE THAT.

Q NOW, THERE ARE MORE THINGS WE COULD TALK ABOUT

IN YOUR BACKGROUND, AND I THINK I WILL JUST DO SO IN A RAPID FIRE WAY.

YOU HAVE WITHIN YOUR WORLD OF MEDICINE AND TOXICOLOGY STUDIED THE SUBSTANCE ACRYLONITRILE, A-C-R-Y-L-O-N-I-T-R-I-L-E, WITH RESPECT TO BRAIN CANCER?

A YES.

Q HAVE YOU STUDIED THE FOOD ADDITIVE BUTYLATED HYDROXYANISOLE WITH RESPECT TO ITS TOXICOLOGY?

A YES.

Q HAVE YOU STUDIED THE PHARMACEUTICAL DRUG PHENOBARBITAL WITH RESPECT TO ITS ABILITY OR NON-ABILITY TO CAUSE CANCER IN HUMANS?

A YES.

Q PHENOBARBITAL IS A DRUG SOMETIMES GIVEN TO FOLKS WITH EPILEPSY?

A THAT'S CORRECT.

Q YOU'VE STUDIED PESTICIDES, SUCH AS CHLORDANE WITH RESPECT TO ITS CAPACITY OR TO OTHERWISE TO CAUSE CANCER

IN HUMANS?

A YES.

Q DO YOU TEACH IN THE AREA OF TOXICOLOGY?

A YES, I DO.

Q WHERE DO YOU TEACH?

A I TEACH AT COLUMBIA AT THE SCHOOL OF PUBLIC HEALTH, WHICH IS CO-LOCATED WITH THE MEDICAL SCHOOL.

Q THIS IS COLUMBIA UNIVERSITY IN NEW YORK CITY?

A YES.

Q WHAT DO YOU TEACH THERE?

A I TEACH A COURSE CALLED "FUNDAMENTALS OF TOXICOLOGY" AND IT'S TO GRADUATE STUDENTS IN OUR COURSE. MOST OF THE PEOPLE ARE GETTING THEIR MASTER'S IN PUBLIC HEALTH, BUT WE HAVE ALSO PH.D. STUDENTS IN PUBLIC HEALTH.

Q HAVE YOU TAUGHT IN THE PAST IN A PLACE CALLED THE "NEW YORK MEDICAL COLLEGE"?

A YES.

Q IS THAT A BIG OR A SMALL SCHOOL?

A IT'S ACTUALLY A PRETTY BIG SCHOOL. IT WAS CO-LOCATED ON THE SAME CAMPUS WITH THE AMERICAN HEALTH FOUNDATION, ALTHOUGH WE WERE INDEPENDENT FROM EACH OTHER.

Q WHAT DID YOU TEACH THERE?

A I WAS INVOLVED IN TEACHING RISK ASSESSMENT.

Q HAVE YOU TAUGHT AT YALE?

A YES.

Q WHAT HAVE YOU TAUGHT AT YALE?

A AGAIN, I PARTICIPATED IN THEIR TOXICOLOGY PROGRAM. I GAVE THE LECTURE ON CARCINOGENISIS.

Q IN ABOUT A MINUTE OR FIVE, WE ARE GOING TO GET INTO THE GUTS OF YOUR OPINIONS HERE, BUT I JUST WANT TO MAKE SURE THAT WE TALK ABOUT THIS THING YOU TOLD US ABOUT -- INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. SOMETIMES CALLED I.A.R.C?

A YES.

Q DOES I.A.R.C. PUBLISH SOMETHING CALLED "MONOGRAPHS"?

A YES.

Q TELL THE JURY WHAT THOSE ARE.

A WHAT I.A.R.C. DOES IS ON A REGULAR BASIS, THREE TIMES A YEAR, MAYBE EVEN FOUR TIMES A YEAR, THEY WILL BRING A GROUP OF SCIENTISTS TOGETHER FROM DIFFERENT COUNTRIES WHO ARE EXPERTS IN A PARTICULAR FIELD TO MAKE A DECISION ABOUT GROUPS OF CHEMICALS AND WHETHER OR NOT THEY ARE ANIMAL CARCINOGENS OR HUMAN CARCINOGENS.

THE ONES THAT I WOULD PARTICIPATE IN WERE PARTICULARLY INVOLVED IN THE ISSUE OF CANCER MECHANISM FOR CERTAIN CHEMICALS.

Q DOES I.A.R.C. PUBLISH A SERIES OF MONOGRAPHS IN A DISTINCTIVE ORANGE -- WITH A DISTINCTIVE ORANGE COVER?

A YES.

Q IS THAT WHAT I'M SHOWING YOU FROM ACROSS THE ROOM?

A YES.

Q I.A.R.C. IS PART OF THE WORLD HEALTH ORGANIZATION, YES?

A YES. AND THE MONOGRAPH IS --

BASICALLY WHAT YOU DO AT THESE MEETINGS, YOU ACTUALLY WRITE THE BOOK. YOU BRING DRAFTS. YOU PUT TOGETHER THE DRAFTS. EVERYBODY CRITIQUES THE DRAFTS AND PUT THE BOOKS TOGETHER. AND THEN PEOPLE VOTE ON WHETHER OR NOT THERE IS SUFFICIENT EVIDENCE FOR A CHEMICAL TO BE FOUND TO BE AN ANIMAL OR HUMAN CARCINOGEN.

Q DR. WHYSNER, HOW DID YOUR WORK AT I.A.R.C. ASSIST YOU IN YOUR DEALING WITH AT LEAST ONE OF THE QUESTIONS WE'VE ASKED YOU TO CONSIDER, WHICH IS WHETHER REFINED HYDROCARBON SOLVENTS CONTAINING BENZENE ARE OR ARE NOT CAPABLE

OF CAUSING NON-HODGKIN'S LYMPHOMA IN HUMANS?

A WELL, AS PART OF THE WORKING GROUP, EVERYBODY HAS TO VOTE ON EVERYTHING. SO I HAD TO WORK CLOSELY WITH THE EPIDEMIOLOGISTS THERE. AND SO IN TERMS OF -- PARTICULARLY IN THIS CASE -- ANALYZING THE EPIDEMIOLOGY LITERATURE, IT WAS IMPORTANT FOR ME, ALONG WITH OF COURSE THE WORK I DID AT THE AMERICAN HEALTH FOUNDATION WITH ERNST WINDER -- TO UNDERSTAND -- AND THIS IS SOMETHING THAT TOXICOLOGISTS HAVE TO DO -- IS UNDERSTAND EPIDEMIOLOGY STUDIES IN ORDER TO DETERMINE WHETHER OR NOT A CHEMICAL HAS BEEN SHOWN TO BE A HUMAN CARCINOGEN.

Q IS EPIDEMIOLOGY WITHIN THE SCIENCE OF TOXICOLOGY?

A WELL, IT IS AND IT ISN'T. TOXICOLOGISTS HAVE TO USE -- THERE ARE --

SOME TOXICOLOGISTS ARE PURELY EXPERIMENTAL TOXICOLOGISTS. BUT TOXICOLOGISTS LIKE MYSELF HAVE TO BE ABLE TO USE ALL KINDS OF TESTS, INCLUDING INDUSTRIAL HYGIENE, EPIDEMIOLOGY, ANIMAL TOXICITY TESTS, IN VITRO TESTS -- IN

ORDER TO DO OUR WORK.

Q DO YOU CONSIDER YOURSELF A PRACTICING EPIDEMIOLOGIST?

A NO.

Q DO YOU CONSIDER YOURSELF KNOWLEDGEABLE AND QUALIFIED -- WITHDRAWN.

DO YOU CONSIDER YOURSELF KNOWLEDGEABLE ABOUT THE SCIENCE OF EPIDEMIOLOGY?

A KNOWLEDGEABLE, YES, IN TERMS OF BEING ABLE TO INTERPRET STUDIES. I WOULD NOT, AS AN EPIDEMIOLOGIST WOULD,

DESIGN AND PERFORM AN EPIDEMIOLOGICAL STUDY, BUT IN TERMS OF BEING ABLE TO ANALYZE THE RESULTS OF IT, YES, I DO CONSIDER MYSELF TO BE CAPABLE.

Q TO CAST YOUR VOTE IN LEON, FRANCE AT AN I.A.R.C. MEETING AS TO WHETHER OR NOT SOME SUBSTANCE IS OR IS NOT A HUMAN CARCINOGEN, IS IT NECESSARY FOR YOU TO MASTER THE EPIDEMIOLOGY THAT'S AVAILABLE ON THE TOPIC?

A YES.

Q AND YOU'VE DONE THAT?

A YES.

Q NOW, DO YOU THINK THAT THERE IS ANYTHING ABOUT YOUR BACKGROUND, TRAINING OR EXPERIENCE THAT WE HAVE NOT TALKED ABOUT THAT YOU THINK WE SHOULD SPEND A MINUTE ON WITH THE JURY WHICH WILL HELP THE JURY EVALUATE YOUR OPINIONS, OR HAVE WE PRETTY MUCH COVERED IT IN YOUR VIEW?

A I THINK WE'VE PRETTY MUCH COVERED IT, YES.

Q WELL, THEN LET'S TURN TO SOME VERY BASIC CONCEPTS OF TOXICOLOGY AND GO FROM THERE.

ARE YOU FAMILIAR WITH THE WORD "DOSE"?

A YES.

Q WHAT'S THE RELATIONSHIP OF THE WORD DOSE -- WITHDRAWN.

HOW DOES THE CONCEPT OF DOSE PLAY OR AFFECT THE SCIENCE OF TOXICOLOGY?

A ONE ALWAYS HAS TO TAKE INTO ACCOUNT THE DOSE WHEN ONE IS LOOKING AT WHETHER OR NOT A CHEMICAL IS GOING TO BE TOXIC UNDER CERTAIN CIRCUMSTANCES.

ALL CHEMICALS CAN ACTUALLY BE TOXIC IF YOU PUSH

UP THE DOSE HIGH ENOUGH. AS A MATTER OF FACT, WHEN YOU DO AN EXPERIMENTAL STUDY, THE PURPOSE OF THE STUDY IS TO SHOW TOXIC EFFECTS. SO YOU PUSH UP THE DOSE HIGH ENOUGH TO SHOW A TOXIC EFFECT.

FOR SOME CHEMICALS YOU DON'T HAVE TO GO VERY FAR IN TERMS OF MILLIGRAMS OR KILOGRAMS. FOR OTHER CHEMICALS, YOU HAVE TO GO PRETTY FAR TO DO SO.

Q WHAT DOES THE WORD "TOXIC" MEAN TO A TOXICOLOGIST?

WHEN YOU SAY ALL SUBSTANCES OR MANY SUBSTANCES ARE TOXIC, WHAT ARE YOU TELLING US?

A WE'RE REALLY JUST SAYING THAT ANYTHING CAN BE TOXIC DEPENDING UPON THE DOSE.

Q WHAT DOES "TOXIC" MEAN?

A FOR EXAMPLE, IF YOU HAD A PHARMACEUTICAL AND YOU WERE TAKING IT TO TREAT A CONDITION THAT YOU HAVE, IF YOU TOOK THE AMOUNT THAT WAS RECOMMENDED, IT WOULD BE BENEFICIAL. IF YOU TOOK TOO MUCH, IT WOULD CAUSE HEALTH EFFECTS, WRONG HEALTH

EFFECTS TO YOU. SO THAT WOULD BE A TOXIC EFFECT.

Q AT MY REQUEST DID YOU PREPARE A SLIDE OR TWO TO HELP ILLUSTRATE THIS CONCEPT?

A YES.

MR. RIFF: YOUR HONOR, WE HAVE MARKED A COLLECTION OF SLIDES AS EXHIBIT 132 AND I PROPOSE TO SHOW SLIDE 1.

THE COURT: I THINK AS WE GO ALONG WE SHOULD MARK EACH OF THESE WITH A DASH. THIS WILL BE THE FIRST PAGE YOU ARE DISPLAYING?

MR. RIFF: -1.

THE COURT: WHY DON'T WE DO -1, GIVEN THE NUMBER. SO THIS IS 132-1.

(MARKED FOR IDENTIFICATION
EXHIBIT 132-1, SLIDE 1.)

BY MR. RIFF:

Q IN THIS SLIDE, WHAT ARE YOU SHOWING US?

A WELL, WHAT I'M TRYING TO ILLUSTRATE HERE IS THAT TAKING A CHEMICAL THAT EVERYBODY KNOWS ABOUT, ASPIRIN, AND TO SHOW THAT AT LOW DOSES ONE TABLET PER DAY OR EVEN LESS THAN ONE TABLET PER DAY, IT'S RECOMMENDED FOR PREVENTION OF HEART ATTACKS. AND AT A HIGHER DOSE, IT'S USED TO TREAT HEADACHES AND ARTHRITIS.

NOW, WHEN WE GET INTO THE HIGHER DOSES, FOR EXAMPLE, TO TREAT ARTHRITIS, IN OTHER WORDS, EIGHT TABLETS A DAY, WE CAN ALSO BEGIN TO SEE ONE OF ITS TOXIC EFFECTS AND THAT'S TINNITUS, WHICH MEANS RINGING IN THE EAR. SO YOU CAN --

SOMETIMES PEOPLE WHO ARE TAKING LARGE DOSES OF

ASPIRIN, ALTHOUGH MOST PEOPLE TAKE IBUPROFEN THESE DAYS OR TYLENOL, BUT WHEN PEOPLE TOOK IT -- HAD TO TAKE ASPIRIN FOR ARTHRITIS, THEY WOULD HAVE TINNITUS.

THE MAXIMUM DAILY DOES RECOMMENDED IS 12 ASPIRIN TABLETS A DAY. IF YOU GET INTO OVER TWICE THAT AMOUNT, SAY, 30 ASPIRIN TABLETS A DAY, LARGE NUMBERS OF PEOPLE WILL --

SOME PEOPLE ARE VERY SENSITIVE. THEY WILL BEGIN TO GET STOMACH UPSET FROM ASPIRIN, BUT MOST PEOPLE WILL BEGIN TO FIND GASTROINTESTINAL BLEEDING AND ULCERS.

90 TABLETS -- AND PEOPLE HAVE TRIED TO COMMIT

SUICIDE TAKING ASPIRIN. 90 TABLETS CAUSES METABOLIC ACIDOSIS THAT LEADS TO DEATH SO IT CAN BE LETHAL AS WELL.

Q SO ANOTHER WITNESS IN THIS CASE, I THINK, HAS USED THE EXPRESSION THAT "DOSE MAKES THE POISON."

HAVE YOU EVER HEARD THAT BEFORE?

A YES.

Q HOW DOES THAT APPLY TO THIS CONCEPT, WHAT YOU'RE SHOWING HERE WITH ASPIRIN?

A IT APPLIES. "THE DOSE MAKES THE POISON" WAS STATED BY A PERSON WHO WAS SORT OF CONSIDERED TO BE THE ORIGINAL TOXICOLOGIST, PARACELSUS, IN THE 1500'S.

Q LET ME SHOW YOU OR ASK US TO MOVE TO 132-2, WHICH IS ANOTHER EXAMPLE USING ANOTHER SUBSTANCE ALCOHOL.

NOW, ON THIS SLIDE YOU HAVE --

WELL, WHY DON'T YOU TELL US WHAT YOU'RE SHOWING US ON THIS SLIDE, PLEASE.

A DOWN HERE ARE THE BLOOD ETHANOL LEVELS. THIS IS THE RESPONSE. AND SO AT THIS -- IN THIS RANGE UP TO .08,

WHICH IS CONSIDERED TO BE SORT OF THE MINIMAL LEGAL LIMIT FOR SOBRIETY, ALCOHOL IS CONSIDERED TO NOT HAVE EFFECTS ON SOBRIETY -- NOT HAVE ADVERSE EFFECTS ON SOBRIETY. SO THIS IS CONSIDERED TO BE THE SOBER RANGE OF --

THIS IS TAKING ONE OR TWO GLASSES OF WINE WITH DINNER.

Q THEN WHAT?

A AT HIGHER DOSES YOU HAVE SOMETHING CALLED "EUPHORIA," WHICH IS THE GOOD FEELING THAT PEOPLE GET FROM ALCOHOL AND WHICH IS SOMETIMES THE DESIRED EFFECT. AT HIGHER

DOSES WE HAVE EXCITEMENT, WHICH IS BEGINNING TO BE SIGNS OF TOXICITY. THIS IS OVER EUPHORIA. THIS IS EXCITEMENT. THIS IS IN SOME CASES PEOPLE NOT BEING ENTIRELY RATIONAL WITH THEIR EUPHORIA.

THEN AT EVEN HIGHER LEVELS WE GET CONFUSION --

THE COURT: CAN I JUST STOP RIGHT HERE FOR JUST A MINUTE?

I'M JUST CONCERNED ABOUT THE LASER POINTER AT THE EYES OF THE COURT REPORTER. IF YOU'RE GOING TO USE IT, COULD YOU JUST STAND UP AND THEN YOUR LINE OF USING IT WILL BE SAFE.

MR. RIFF: THANK YOU, YOUR HONOR.

THE WITNESS: I PROBABLY DON'T NEED TO USE IT.

THE COURT: DON'T BE DETERRED FROM USING IT. JUST STAND UP, AND I THINK THE LINE TO THE SCREEN WILL BE BETTER.

BY MR. RIFF:

Q LET ME JUST GO ALL THE WAY HERE.

BY THE WAY, ALCOHOL, THE STUFF IN BEER AND WINE

AND VODKA, IS THAT A HUMAN CARCINOGEN?

A YES. IT CAUSES LIVER CANCER.

Q AND I GATHER WHAT YOU'RE SHOWING US IN THIS TABLE IS THAT WITH INCREASING DOSE THERE IS INCREASING EFFECT?

A WELL, INCREASING EFFECT BUT ULTIMATELY INCREASING TOXIC EFFECTS.

Q NOW, I'M MOVING ON TO THE NEXT TOPIC.

WE'RE GOING TO COME BACK TO THIS DOSE CONCEPT A LITTLE LATER THIS MORNING OR EARLY THIS AFTERNOON.

I WANT TO TALK TO YOU AT THAT TIME ABOUT WHAT IS

THE DOSE OF BENZENE THAT HAS BEEN ESTABLISHED, THE MINIMUM DOSE, NECESSARY TO CAUSE A.M.L. IN HUMANS?

WE'RE GOING TO TALK ABOUT THAT THIS AFTERNOON OR LATER ON THIS MORNING.

RIGHT NOW I WANT TO MOVE ON TO A DIFFERENT TOPIC.

HERE'S THE QUESTION: IN ORDER TO EVALUATE THE QUESTION, WHETHER BENZENE ON THE ONE HAND OR SOLVENTS ON THE OTHER HAND ARE CAPABLE AT ANY DOSE FOR ANY DURATION OF EXPOSURE, ARE CAPABLE OF CAUSING NON-HODGKIN'S LYMPHOMA IN HUMANS -- WHAT DID YOU DO TO TRY TO ANSWER THAT QUESTION IN THIS CASE?

A WELL, I LOOKED AT ALL THE LITERATURE I COULD FIND THAT BORE ON THIS QUESTION, WHERE IT WAS EITHER --

THERE WERE STUDIES OF NON-HODGKIN'S LYMPHOMA, VARIOUS TYPES OF EPIDEMIOLOGY STUDIES OF NON-HODGKIN'S LYMPHOMA AND BENZENE EXPOSURE AND ALSO EXPOSURES TO PETROLEUM-BASED SOLVENTS.

Q WHEN YOU SAY YOU LOOKED AT ALL THE LITERATURE YOU COULD FIND, WHAT KIND OF LITERATURE DID YOU LOOK AT?

A PRIMARILY I LOOKED AT THE EPIDEMIOLOGY LITERATURE.

Q WHY?

A BECAUSE THE EPIDEMIOLOGY LITERATURE IS THE ONE THAT REALLY TELLS US WHETHER OR NOT A CHEMICAL CAN CAUSE CANCER IN HUMANS.

Q WE'RE GOING TO SEE IN A FEW MINUTES COLLECTIONS OF EPI-STUDIES THAT YOU ORGANIZED FOR US.

I WANT YOU TO EXPLAIN TO US, ONCE YOU HAVE A COLLECTION OF THESE EPIDEMIOLOGY STUDIES AND YOU'VE GOT A PILE THAT LOOKS LIKE THIS THAT SAYS, YES. YOU HAVE ANOTHER PILE THAT MAY BE BIGGER OR SMALLER THAT SAYS, NO. AND ANOTHER PILE IN THE MIDDLE.

IS THERE A METHOD THAT SCIENTISTS LIKE YOU USE TO TRY TO MAKE SENSE OF AND EVALUATE THAT COLLECTION OF INFORMATION?

A YES.

Q WHAT IS THAT METHOD AND WHAT IS IT CALLED?

A I THINK THE GENERALLY-ACCEPTED METHOD IS REFERRED TO AS THE BRADFORD-HILL METHODOLOGY.

Q WHO IS OR WAS BRADFORD-HILL?

A WELL, AS I MENTIONED BEFORE, THE STUDIES DONE BY ERNST WINDER ON CIGARETTE SMOKING AND SIR RICHARD DOLE, WELL, THERE WERE MOSTLY POSITIVE STUDIES BUT ALSO SOME NEGATIVE STUDIES ON THIS PARTICULAR TOPIC. SO IN ORDER TO EVALUATE THOSE, A METHODOLOGY HAD TO BE DEVELOPED. AND RICHARD DOLE

WAS ONE OF THE -- NOT RICHARD DOLE -- BRADFORD-HILL WAS ONE OF THE PEOPLE WHO WAS RESPONSIBLE FOR DOING THIS EVALUATION WORK.

AND SO HE IN THE PROCESS OF DOING THAT PUT TOGETHER HIS METHODOLOGY. AND THAT METHODOLOGY INVOLVED SEVERAL ELEMENTS THAT I THINK ARE NOW CONSIDERED TO BE GENERALLY ACCEPTED IN THE MEDICAL AND SCIENTIFIC COMMUNITY FOR LOOKING AT THIS.

AND THAT METHODOLOGY HAS BEEN USED BY THE E.P.A. AND THE SURGEON GENERAL'S WORK IN LOOKING AT CIGARETTE SMOKING AND LUNG CANCER AS WELL.

Q SO BRADFORD-HILL -- ACTUALLY, IT'S SIR AUSTIN BRADFORD-HILL IN ENGLISH, EPIDEMIOLOGIST?

A YES.

Q BRADFORD-HILL IS HIS TWO-PART LAST NAME?

A I BELIEVE SO.

Q DID YOU UTILIZE THE BRADFORD-HILL METHODOLOGY, HIS CRITERIA, IN EVALUATING FOR THIS JURY THIS MASS OF INFORMATION ABOUT BENZENE AND SOLVENTS AND NON-HODGKIN'S LYMPHOMA IN HUMANS?

A YES.

Q DO YOU HAVE A SLIDE THAT BRIEFLY DISCUSSES WHAT THOSE VARIOUS BRADFORD-HILL CRITERIA ARE -- BRADFORD-HILL ELEMENTS ARE?

A YES.

MR. RIFF: YOUR HONOR, I PROPOSE TO THEN DISPLAY AS 132-3, THAT SLIDE.

MR. WAGNON: OBJECTION; HEARSAY.

THE COURT: I THINK THE WITNESS HAS TO TESTIFY TO HIS

OPINION FIRST, TO HIS ANALYSIS FIRST.

MR. RIFF: OKAY.

Q WELL, WHAT ARE THE ELEMENTS?

A WELL, THE --

THE MAJOR ELEMENTS INVOLVED IN ACTUALLY LOOKING AT THE EPIDEMIOLOGY, ONE, IS STRENGTH OF ASSOCIATION. AND THIS MEANS THAT YOU LOOK TO SEE HOW MUCH CANCER IS INCREASED AMONG THE POPULATION THAT YOU'RE STUDYING.

FOR EXAMPLE, IN COHORT STUDIES, WHAT YOU DO IS YOU COMPARE A GROUP OF PEOPLE WHO HAVE BEEN EXPOSED TO A

PARTICULAR CHEMICAL AND EITHER COMPARE THEM TO ANOTHER GROUP THAT HAS NOT BEEN EXPOSED OR YOU COMPARE THEM TO SOME STATISTICS THAT YOU HAVE ABOUT THE RATE OF THAT DISEASE IN THE GENERAL POPULATION.

Q WAIT A SECOND, PLEASE.

BEFORE WE --

IS IT USEFUL TO TAKE A MINUTE TO TALK ABOUT THE DIFFERENCE BETWEEN COHORT STUDIES AND CASE CONTROLLED STUDIES BEFORE GETTING INTO THE BRADFORD-HILL SPECIFICS OR NOT?

A NO. I CAN DISCUSS STRENGTH OF ASSOCIATION JUST WITH THE ILLUSTRATION OF THE COHORT STUDY.

Q STRENGTH OF ASSOCIATION. GIVE US AN EXAMPLE OF WHAT YOU'RE TALKING ABOUT.

A SO CIGARETTE SMOKING CAUSES ABOUT A 10 TO 20-FOLD INCREASE IN THE RATE OF LUNG CANCER.

Q OVER WHAT? AS COMPARED TO WHAT?

A AS COMPARED TO THE PEOPLE WHO DON'T SMOKE.

SO THAT WOULD BE WHAT WE CALLED A "STANDARDIZED

MORTALITY RATE" OF 10 TO 20.

Q IS THAT THE STRENGTH OF ASSOCIATION?

A THAT'S CORRECT.

Q NOW, IN AN EPIDEMIOLOGICAL STUDY, IF THE EXPOSED POPULATION HAS THE SAME INCIDENCE OF DISEASE AS THE UNEXPOSED POPULATION, WHAT IS THE -- WHAT NUMBER, IN TERMS OF ASSOCIATION, THAT IS ATTACHED TO THAT SITUATION, WHERE THE UNEXPOSED AND THE EXPOSED PEOPLE HAVE THE EXACT SAME OUTCOME?

A ONE.

Q AND SOMETIMES IS THAT REFERRED TO AS A RELATIVE

RISK?

A NOW YOU'RE TALKING ABOUT A DIFFERENT KIND OF STUDY.

Q IS THAT SOMETIMES CALLED AN "S.M.R"?

A YES.

Q S.M.R. EQUALS ONE.

IF IN SOME CIGARETTE STUDY, IF THE S.M.R., STANDARD MORTALITY RATIO, WAS 10, WOULD THAT BE CONSIDERED A STRONGER ASSOCIATION?

A YES.

Q AND IS THAT WHAT BRADFORD-HILL IS TALKING ABOUT WHEN TALKING ABOUT STRENGTH OF ASSOCIATION?

A YES.

Q AND WHEN YOU WENT THROUGH THIS MASS OF STUDIES REGARDING NON-HODGKIN'S LYMPHOMA AND BENZENE IN SOLVENTS, IS ONE OF THE THINGS YOU WERE LOOKING FOR THE STRENGTH OF ASSOCIATION?

A YES.

Q PART OF YOUR METHOD; IS THAT TRUE?

A YES.

MR. RIFF: YOUR HONOR, WHENEVER IS CONVENIENT FOR THE COURT, I CAN KEEP GOING OR STOP, WHATEVER YOU WISH.

THE COURT: IF THIS IS A GOOD POINT, WE CAN BREAK.

WHY DON'T WE COME BACK, LADIES AND GENTLEMEN, AT 10 MINUTES UNTIL 11:00, SO THAT WILL GIVE US ABOUT 15 MINUTES.

THANK YOU.

(RECESS.)