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EXHIBITS INDEX
DEPOSITION OF NEWELL E. BOLTON
January 11, 1993

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<u>Attachment</u>	"Challenge of the '80's: The Mystical Safety-Industrial Hygiene Interface" by Newell Bolton	105

DEPOSITION
FILE COPY

DEPOSITION SUMMARY

NEWELL BOLTON -JANUARY 11, 1993

IH - Industrial Hygienist
UC - Union Carbide

- Worked almost 34 years for UC (Union Carbide). 1952 - Oak Ridge; S. Charleston - 1957-1961; Oak Ridge - 1961 - 1978.
- B.S. Chemistry 1951 - University Georgia
- Certified IH
- Based in Japan with Corp of Engineers. PFC in military.
- Assigned job as junior chemist at Oak Ridge (Inorganic chemist).
- Stayed gases diffusion plant until 1955 then went to Y-12 at Oak Ridge until 1957.
- IH at S. Charleston
- Early 1953 began working in IH.
- Worked with Dave Stoddard (IH) at Oak Ridge. Stoddard was there 3 or 4 years before Newell Bolton. Stoddard worked only at K-25 at Oak Ridge.
- Newell Bolton took air samples.
- Had electrostatic precipitators, Davis Micro-Analyzer, Bausch & Lomb equipment, kinemeter, impinger.
- Newell Bolton analyzed some sample, but little dust counting.
- Newell Bolton's first boss was T. C. Whitson.
- Newell Bolton became head man in IH in 1961 when he returned to Oak Ridge.
- Newell Bolton was assistant IH at S. Charleston.
- * 1955-1956 UC had a comprehensive program for determining health problems and was very advanced. Everything was classified because top secret.

- UC had two IH's, full medical department (doctors and nurses), people doing testing of samples full-time, full-time sample takers; very cutting edge testing and screening.
- Tennessee Eastman ran Y-12 at Oak Ridge until 1948 then UC took over.
- Leo LeFrance implemented IH program at Oak Ridge.
- 10 or 12 people who did nothing but take samples at Oak Ridge.
- About 15,000 air samples taken monthly. Recordings taken of all samples.
- Had very high concentrations of materials in several areas.
- Had wonderful ventilation system at Oak Ridge.
- Did lead burning, did casting work, handling solvents, vapor degreasers.
- Newell Bolton didn't become an IH until he returned to Oak Ridge in 1961.
- Plaintiff worked almost 5 years on Nickel Carbonile. Nickel Carbonile was abandoned because couldn't control it because too dangerous.
- Newell Bolton worked for Vernon "Smokey" Stack at S. Charleston. Smokey was basically an environmental engineer.
- Newton Ketcham was Newell Bolton's boss for a while.
- Schools that taught IH; University Cincinnati; Harvard; Johns-Hopkins; Michigan & Pittsburgh.
- Had periodic IH meetings at UC. Newell Bolton felt that UC's health care and protection programs were excellent. Management was very accessible.
- IH's at Bushy Run and Skeleton Island.
- 1955-60 had between 12-18 working in IH. UC had about 26 or 27,000 employees everywhere and about half were at Oak Ridge.
- Newton Ketcham was the IH consultant for UC and oversaw all IH's.
- Newell Bolton was leaving S. Charleston when Bob Peele was arriving.

- Most IH work done concerning 1% (high risk) of employees and normal IH procedures handled the rest.
- UC was about middle of the road with regards to staffs to handle IH problems.
- All plants, even Seadrift (newest and smallest) had full medical staffs.
- Roy Joyner was medical person at Texas City. Newell Bolton worked with several medical personnel from different plants.
- Henry Smith was medical director at Bushy Run.
- Newell Bolton felt that UC's management was a concerned management.
- Ed Henson was medical person.
- Medical staff was good at diagnosing problems associated with work place materials/occupational medicine).
- Dolph Kammar was an expert in occupational medicine and worked as consultant for UC.
- If protection couldn't be done by instrumentation, then done by ventilation and respirators.
- Newell Bolton did noise testing at Texas City for about total of 2 weeks (2 trips).
- Newton Ketcham ran IH department from S. Charleston. Mr. Peguese (Piggy) was local IH at Texas City.
- 1979 Newell Bolton did quick check at Texas City and Seadrift while director of IH for UC. Both facilities in Texas were self-sufficient with regards to IH and UC had commitment to these areas.
- 1937 N.Y. office made decision to begin toxicology department and hired Henry Smith. Smith published findings and was very autonomous.
- 1965 or 66, Newell Bolton became board certified IH.
- Newell Bolton worked for Lindy McClain and said that nothing in IH could be done without management commitment and UC had that commitment.
- Newell Bolton had ability and authority to shut plant down, but never had to do so.

- Health and safety programs supported by management and Newell Bolton can't remember health and safety budget ever being cut.
- Walsh-Healy Act - predecessor OSHA. Oak Ridge not subject to Walsh-Healy Act of OSHA because of Federal Government work at Oak Ridge. Oak Ridge IH program was better than that required by Walsh-Healy or OSHA.
- Compliance with OSHA is not enough to have a good IH program. Not comprehensive TLV's (Threshold limit values) for all potential hazards and the TLV's are just numbers. Need to know other factors not covered by numbers.
- There are probably as many IH programs as there are IH's.
- Higher probability or risk of harm, the more precautions taken.
- Depend on your senses and feelings to determine if an IH program should be set up and/or what type.
- First step in IH program is to check with medical department and see what potential health effects certain materials have. If there is a health regulation, this is normally enough information.
- In late '50's would look at first and/or second volumes of PADDY for information concerning materials. Also look at information developed at Bushy Run, some publications from IH digest, networking with individuals.
- Bushy Run research center did toxicology research on different compounds. Program under Henry Smith. Henry Smith set up a bibliography regarding different compounds. Bushy Run is synonymous with Carnegie Mellon.
- Chemical hygiene Fellowship started in 1937 to determine problems to humans of products sold by UC.
- Newell Bolton felt that Bushy Run was cutting edge. They did animal toxicology (during early 1960's) (mice, rats and rabbits). Both short and long term testing, inhalation, skin contact and eye contact.
- Bushy Run set up to test compounds that were being or would be produced by UC. Done to provide safe work place.
- In 1937 no other place doing toxicology work, except possibly Haskell which were set up in 1936.

- Greensheets sent out with products to provide information regarding products and earliest Newell Bolton recalls them was in late 1950's.
- Newell Bolton authored December '92 article on Dr. Henry Smith regarding pioneers of profession.
- Henry Smith taught at University of Pittsburgh.
- Newell Bolton left all his files at UC.
- Dr. Smith provided teaching programs at UC.
- Dr. Carpenter (about '83 or '84) lives in Pittsburgh and worked with Newell Bolton.
- Newell Bolton first met Dr. Smith at a conference in Atlantic City in 1957 or '58.
- Newell Bolton's Curriculum Vitae doesn't contain a listing of all his publications because only goes through 1973.
- 1978 - Newell Bolton promoted to Director of IH. IH program consisted of 8 certified IH's at that time, not including Newell Bolton. Each major division at UC had an IH.
- 45,000 UC employees world-wide. Some plants had their own IH's, may be 12 to 15 others.
- Newell Bolton began to learn of hazards of asbestosis in early '50's, but not major concern. Thinks that it became major concern in late '60's or early '70's. * only learned that asbestos was a carcinogen after Selikoff did his studies.
- UC had an asbestos mine in California. It was the Nelson Mining Co. which had control of this.
- Had staff in Grand Junction, Colorado, which oversaw mining operations.
- Asbestos mining only done in summer. Also mined uranium. Paul McDaniel oversaw work in Grand Junction.
- Asbestos used for research, brake linings, tile.
- Some old insulation at Lindy Division had asbestos, but it was specially marked for sake of precaution.
- Asbestos also used in cylinders.
- Newell Bolton doesn't think Bakelite contained asbestos.

- Process at King City, California, was a wet process and lot of ventilation. Rigid control there.
- Had medical monitoring program at King City.
- Newell Bolton doesn't think that synergistic effect of smoking and asbestos was known until synergistic effect testing done by Yukimoto (?) (Doctor in Grand Junction, Colorado) regarding smoking and radon.
- Newell Bolton characterized asbestos monitoring system as "bad".
- Medical monitoring program was in place during Newell Bolton's career. He had 35 or 36 exams during his career. Program evolved over time as new information came to light (i.e., it was dynamic). Newell Bolton thinks he was tested so often because he was exposed to so many areas and potential hazards.
- Mentors of Newell Bolton: Henry Smith, John Zapp at DuPont, D.K. Rowe at Dow, Tom Lincoln at UC, C.P. Carpenter at UC, Henry Schulte and Ed Hyatt at Los Alamos (Ed Hyatt was "Mr. Respirator"), Jack McClane at UC, Bill Bradley, Clyde Beard, Al Fedway at Liberty Mutual (lives in Florida).
- Newell Bolton member of compressed Gas Assoc. Bd.
- Ethylene Oxide recognized as potential carcinogen before Newell Bolton retired and UC produced ethylene oxide. Newell Bolton was member of Chemists Manufacturing Association.
- Newell Bolton taught IH course at Tennessee Tech in 1972/74. Newell Bolton wrote the material used in course. Covered pneumoconiosis.
- 1937 report from Standard Oil of New Jersey (Bonsid Report). Newell Bolton never saw it previously. Newell Bolton doesn't know how author did testing, but thought some dust counting numbers were odd because not normally done. Very tedious and thorough report. Newell Bolton thinks report must have taken several years to compile.
- Bill Yant, Dr. Sayers were given credit in Bonsid Report and Newell Bolton knew them.
- API toxicological report for Benzene in 1948 was never seen by Newell Bolton. Prof. Drinker's reputation known by Newell Bolton, but not personally.
- Clyde Barry memo (not seen by Newell Bolton) (Newell Bolton knew him). Barry had been employee of Standard Oil of New Jersey.

- Shell Development memo written by Dr. Charles Heim. (not seen by Newell Bolton).
- 1944 Journal of American Medical Association regarding Environmental cancer (mentions asbestos and benzene) (not seen by Newell Bolton). Newell Bolton didn't know of Journal's existence until late '50's or early '60's.
- 1948 memo by Dr. Barry. Newell Bolton doesn't agree with #5 that aim is to eliminate exposure to known carcinogens because can't eliminate, unless know longer using material, but should try to reduce exposure as much as possible.
- Had special medical exams at UC in 1952 with regard to an employee's work and any hazards.
- Richard Baker in charge of Health Physics at Paducah.
- Eugene E. Brown worked for Newell Bolton in New York from 1978-80 and was Corporate IH (Lives in Illinois).
- Thomas J. Burnett was Health Physicist at Oak Ridge in 1956 (now deceased).
- Bob Cope was IH at S. Charleston and then took Newell Bolton's place in New York in 1981. Retired in mid-80's.
- Dr. A. G. Cranch preceded Dr. Nail at UC.
- John Dermott was IH at S. Charleston when Newell Bolton returned to Oak Ridge (Thinks he is at Texas City or Seadrift).
- Thomas Hellman (doesn't know).
- Herbert Higdon was assigned IH job in 1960's at Oak Ridge's gaseous diffusion plant.
- Mr. Leon LeFrance was IH at Y-12 in 1955 and was Newell Bolton's boss. Mr. LeFrance worked for Texas Eastman at one time.
- Kenneth Lane was assistant medical director at Y-23 or Paducah and then went to New York in early '70's.
- James F. Moorehead, Jr. was IH at Y-12 when Newell Bolton went back to Oak Ridge, but he is dead.
- Dr. T. W. Nail (medical doctor) came after Dr. Cranch. Retired about 1977. Medical director at UC for about 15 years.

- Joe Neff was at Charleston and in charge of methods development work. 10 or 12 years younger than Newell Bolton.
- G.O. Nelson (can't recall).
- John G. Schoenburg was IH at UC, but no longer an IH.
- Charles Taroque was IH at Paducah.
- A. G. Voress was V.P. of Occupational Health in N.Y. He was Newell Bolton's advocate to management.
- Fred Williams was superintendent in charge of analytical work in IH at Oak Ridge.
- Robin Purtz (doesn't know).
- Kenneth V. Johnson (doesn't know).
- Newell Bolton did handful of sampling for asbestos. Used a kinemeter (has measured volume chamber and gather air with plunger and put it on or impinged sample on glass). Had microscope (200 power) on kinemeter, which had accuracy of +- 30. Quick and dirty test.
- Newell Bolton did asbestos testing at K-25 (gaseous diffusion plant) (1954-55). Did about same amount of testing upon return to Oak Ridge in 1961. Employees wore respiratory equipment.
- Plant at Oak Ridge was built in 1943, 44 or 45 (all insulation had asbestos then). Employees wore cumfo respirators by Mine Safety (MSA).
- When tear out done, it was handled very carefully (sealed off and bagged) because of fear of alpha particles (radiation) in 1961 and possibly before. Whole plant was a radio-active zones and everything assumed to be radioactive. Began wetting because of fear of asbestos in late '60's or early '70's.
- Employees told to use respirators when working with asbestos containing products because asbestosis known about and it was a debilitating disease that should be avoided. Asbestos not known to be a carcinogen until later.
- Dust counts with wiffel disc were not practical at Oak Ridge because ground always shaking because of power being used and causing ground to shake.
- * Very little sandblasting done at Oak Ridge. Doesn't recall sandblasting at K-25 or Y-12. Newell Bolton's group did sampling inside hoods with midget impingers to see if

sandblasting equipment was working properly. Newell Bolton thinks he tested Bullard or Pulmosand Hoods.

- Newell Bolton gave deposition while UC employee and testified regarding sandblasting and respiratory equipment. (The case was in Beaumont with Joe Blanks).
- Mr. Peele did a report regarding asbestos (Kalo) exposure and Newell Bolton questioned regarding it in Beaumont case.
- Newton Ketcham went to American IH meetings in Pittsburgh.
- UC employees were not members of ACGIH because had to work for state or federal government to do so.
- Newell Bolton did attend National Safety Association (NSA), but not a member.
- Newell Bolton on ethylene oxide task force for Chemical Manufacturing Association (CMA). UC was a member of the Association and sent representatives. Had regular (quarterly) meetings and minutes kept.
- UC library was very technical and comprehensive. Had journals regarding IH, medical, etc. If you needed book or journal, person would make P.O. and it would go on expense account.
- Newell Bolton knew and knows Jim Hammond of Standard Oil. Met him in early '60's.
- Newell Bolton read Journal of American IH Association.
- Newell Bolton had no involvement with testing regarding sandblasting in Texas City.
- Newell Bolton only looked at noise testing equipment at Texas City and not sandblasting equipment.
- Jack Welch, Tom Lincoln, Bill Gullet, Ken Lane, Tom Nail, Walt Hausher were all medical doctors at headquarters in N.Y. when Newell Bolton was there.
- J.J. Dugan (Newell Bolton doesn't know).
- UC never sent its IH to its customers to see if they had problems which UC should oversee.

NEWELL BOLTON - 1/12/93

- IH department was physically in same location at UC with the medical department.

- Medical director oversaw IH department at UC.
- Jackson Browning during Newell Bolton's last 10 years was Health Safety director regarding environmental problems.
- Newell Bolton said that a foreign language was required in school to get his degree and this was typical.
- Newell Bolton can't recall any name brands of asbestos products used at UC.
- Dust counting of asbestos was done in a hood with an exhaust.
- Newell Bolton has been to King City, Sistrerville, Ohio, Institute, Lindy, Seadrift, Texas City, Deer, Fontana California.
- Newell Bolton visited battery plants in several places.
- Anti-freeze was made at East Hartford and one other he can't remember.
- Newell Bolton replaced Paul McDaniel in N.Y. Mr. McDaniel had been there from 1952-78.
- UC quit buying asbestos insulation around early 1970's.
- Started using a black insulation (sulfite odor from it) as an alternative to asbestos.
- Newell Bolton doesn't know but thinks UC probably did do epidemiology studies. Director of epidemiology was Susan Gates Austin right after Newell Bolton went to N.Y.
- Michael Utigeon was director to toxicology.
- UC had a mortality study in place for many years.
- Had radon test and follow-up with Sokimoto in Grand Junction, Colorado.
- Newell Bolton recalls seeing MSD (mid to late '60's, maybe earlier) sheets relating hazards of asbestos from manufacturers.
- Most of demolition at UC (re: insulation) was done by Rust Engineering & Ferguson.
- It was UC's policy to inform employees that they were working with a known carcinogen after a certain period of time, but Newell Bolton can't remember when.

- During early days of IH didn't tell employees why they were taking air samples because didn't want to scare them unnecessarily.
- Doctors at UC felt employees should be told and this was done, especially Tom Lincoln.
- U.S. government owned and still owns Oak Ridge and UC was just a Kor.
- Two safety engineers at Oak Ridge who were UC employees.
- Atomic Energy department had employees overseeing UC activities at Oak Ridge.
- 1982-1991 Newell Bolton went from N.Y. to Gases division with UC. Newell Bolton was in N.Y. from 1978-82.
- UC provided respirators (UC could control type of respirator and filters used) to outside Korsk and hazards or sampling monitoring was done only on big jobs by outside Korsk and monitoring left up to Korsk on small jobs.
- Fit testing was done at UC because of information from MSA (3M) and other manufacturers and also from information from other Korsk. This was at least in early 1960's. Testing for fitting was because of aberrations in medical information on employees regarding alpha particles.
- Health physics department detected aberrations in radiation which led to UC suspecting a fitting problem with respirators.
- Whole body counters used to detect radon exposure.
- Employees were monitored at UC and if aberrations noted, steps taken to eliminate exposure.
- Joe Zntac was Corp. IH in early '60's at MSA. Newell Bolton invited to come to facilities to look at quality control programs. Looked respirators program.
- Met John Pendergras who was IH at 3M.
- Met an IH from American Optical. Met Bill Rivoir at American optical.
- MSA gave fit testing information to UC in early '60's.
- Newell Bolton recalls Kemper insurance re: work comp.
- In 1952-55 Newell Bolton's sampling on approximately 6

- In 1952-55 Newell Bolton's sampling on approximately 6 occasions was around insulators.
- Insulators used respirators and wet down operations. Operation was not dusty. Dust samples were below the TLV and only about 10% of TLV's.
- Respirators used to control radioactive dust, not really for fear of asbestos.
- Problems with asbestos came to foreground in late '60's or early '70's because of Selikoff's studies.
- Newell Bolton believes there was no conspiracy to quash information on asbestos or sandblasting but said information was disseminated.
- Knowledge that asbestos caused asbestosis was known prior to connection between asbestos and cancer.
- Painters did sandblasting at UC.
- Newell Bolton learned of silicosis hazards when he went back to Oak Ridge the second time (early '60's).
- Painters doing sandblasting wore Bullard air-fed hoods.
- Painters told by UC that they should use respiratory protection when sandblasting because of silicosis.
- Sandblasting done in a huge building.
- Cartridge respirators not used for sandblasting.
- Most cleaning done by acid, mostly nitric acid.
- The watcher or buddy of sandblaster would use cartridge respirator.
- Electric Arc welding done at Oak Ridge. Used inert (heliarc) gas welding, not stick rod welding. Had welding booths.
- Newell Bolton knew welding caused pneumoconiosis in early '50's.
- Vast amount of beryllium (daily) sampling done, but Newell Bolton can't ever remember getting a positive result because of testing. Did area sampling, not personal air sampling. Used ventilation and respirators.
- Newell Bolton knows of no employees who contracted silicosis.

- Newell Bolton thinks there was no appreciable differences between sandblasting hoods.
- Air samples were taken up under hoods (clipped to collar under hood).
- No sandblasting with desert hoods.
- Air sampling taken under hood was done at a painter's suggestion, but no appreciable amounts done.
- Fit testing done in early '70's showed that one respirator size did not fit all.
- UC sold stick rods, but didn't manufacture them.

Newell Bolton - 1/11/93

- 1
- 2 Worked almost 34 yrs ~~for~~ for UC (Union Carbide). Oak Ridge, ¹⁹⁵² ~~at~~ ^{S. Charleston} ~~1957-6~~
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4 Mentors of NB: Henry Smith, John Zapp @ DuPont, D.K. Rowe @ Dow,
5 Tom Lincoln @ UC, C.P. Carpenter @ UC, Harry Schulte & Ed Hyatt @ Los
6 Alamos (Ed Hyatt was "Mr. Respirator."), Jack McClane @ UC, Bill
7 Bradley, Clyde Beard, Al Fedway @ Liberty Mutual (lives in Fla.).

8 NB member of Compressed Gas Assoc. Bd.

9 Ethylene Oxide recognized as potential carcinogen b/c NB retired @ UC
10 produced ethylene oxide. NB was member of Chemists mfging. Assoc.

11 NB taught IH course @ Tenn. Tech. in 1972-74. NB wrote the material
12 used in course. Covered pneumoconiosis.

13 1937 Report from Std. Oil of N.J. (Bonsid Report). NB had never seen it
14 previously. NB doesn't know how author did ~~testing~~ ^{testing}, but thought some
15 dust counting #s were odd b/c not normally done. Very tedious &
16 thorough report. ^{NB thinks report must have} ~~NB doesn't know how~~ taken several yrs. to
17 compile.

18 Bill Yant, Dr. Sayers were given credit in Bonsid Report & NB knew them.

19 API toxicological report ^(for Benzene in 1948) never seen by NB. Prof. Drinker's ^{reputation} known by NB, but
20 not personally. (Not seen by NB)

21 Clyde Barry memo (NB knew him). Barry had been EE of Std. Oil of N.J.

22 Shell Development memo written by Dr. Charles Heim. (Not seen by NB).

23 1944 Journal of Am. Medical Assoc. re: Environmental Cancer (mentions asbestos &
24 benzene). (Not seen by NB). NB didn't know of Journal's existence until late
25 '50's or early '60's.

26 1948 memo by Dr. Barry. NB ^{doesn't agree} ~~agrees~~ w/ #3 that aim is to eliminate exposure to
27 known carcinogens b/c can't eliminate, unless know longer using material, but
28 should try to reduce ^{exposure} as much as possible.

- 1 Had special medical exams @ UC in 1952 w/ re: to an EEs work & any hazards.
- 2 Richard Baker in charge of Health Physics @ Paducah.
- 3 Eugene E. Brown worked for NB in N.Y. from 1978-80 & was Corp. I H (Lives
- 4 in Ill.).
- 5 Thomas J. Burnett was Health Physicist @ Oak Ridge in 1956 (dead now).
- 6 Bob Cope was I H @ S. Charleston & then took NB's place in N.Y.
- 7 in 1981. Retired in mid-80's.
- 8 Dr. A.G. Cranch preceded Dr. Nail @ UC.
- 9 John Dermott was I H @ S. Charleston when NB returned to Oak
- 10 Ridge (Think he is @ Tx. City or Seadrift).
- 11 Thomas Hellman (doesn't know).
- 12 Herbert Higdon was assigned I H job in 1960's @ Oak Ridge's gaseous
- diffusion plant.
- 14 Mr. Leo LeFrance was I H @ Y-12 in 1955 & was NB's boss. Mr. LeFrance
- 15 worked for Tx. Eastman @ one time.
- 16 Kenneth Lyne was Ass. medical Dir. @ Y-12 or Paducah & then went to N.Y.
- 17 in early '70's.
- 18 James F. Moorehead, Jr. was I H @ Y-12 when NB went back to Oak Rid
- 19 but he is dead.
- (medical Dir.)
- 20 Dr. T.W. Nail came after Dr. Cranch. Retired about 1977. Medical dir. @ UC
- 21 for about 15 yrs.
- 22 Joe Neff was @ Charleston & in charge of methods development work.
- 23 10 or 12 yrs. younger than NB.
- 24 G. ^{O.} Nelson (can't recall).
- 25 John G. ^{Schoenberg} ~~Schoenberg~~ was I H @ UC, but no longer an I H.
- Charles Taroque was I H @ Paducah.
- 27 A.G. Voreess was v.p. ~~of~~ of Occupational Health in N.Y. He was NB's advoca
- 28 to mgmt.

- 1- Fred Williams was Super. in charge of Analytical work in I H @ Oak Ridge.
- 2- Robin Puritz (don't know)
- 3- Kenneth V. Johnson (don't know).
- 4- NB did handful of sampling for asbestos. Used a Kinometer (has measured volume chamber & gather air w/ plunger & put it on or impinged sample on glass).
- 5- Had microscope (200 power) on Kinometer, which had accuracy of ± 30 . Quick & dirty test.
- 6- NB did ^(Gaseous Diffusion Plant) testing @ K-25 (1954-55). Did about same amt. of testing upon return to Oak Ridge in 1961. EEs wore respiratory equip.
- 7- Plant @ Oak Ridge was built in 1943, 44 or 45 (All insulation had asbestos then EEs wore cumfo respirators by Mine Safety (MSA).
- 8- When tear out done, it was handled very carefully (sealed off & bagged) b/c of fear of alpha particles (radiation) in 1961. Whole plant was a radioactive zone & everything assumed to be radioactive. Began worrying b/c of fear of asbestos in late '60's or early '70's.
- 9- EEs ^{told to} used respirators when working w/ asbestos containing prods. b/c asbestosis known about & it was a debilitating disease that should be avoided. Asbestos not known to be a carcinogen until later.
- 10- Dust counts w/ wiffel disc ^{were} not practical @ Oak Ridge b/c ground always shaking b/c of power being used & causing ground to shake.
- 11- ~~Some~~ Very little sandblasting done @ Oak Ridge. Doesn't recall sandblasting @ K-25 or Y-12. NB's group did sampling inside hoods w/ medjet impingers to see if sandblasting equip. was working properly. NB thinks he tested Bullard or Pulmosand Hoods.
- 12- NB gave depo. while UC EE & testified re: sandblasting & respiratory equip. ^(Kalo) The case was in Beaumont w/ Joe Blum. NO questioned re: it in Beaumont.
- 13- Mr. Peele did a report re: asbestos exposure. The case was in Beaumont.
- 14- case.
- 15- Newton Ketcham went to Am. I H meetings in Pittsburgh.

1 UC EEs were not members of ACGIH b/c had to work for state of fed.
2 gov. to do so.

3 NB did attend one Nat. Safety Assoc., but not a member. (NSA)

4 NB on ethylene oxide task force for ~~Chemical Mfging~~ ^{Chemical Mfging} Assoc. (CMA). UC was a
5 member of the Assoc. & sent reps. Had regular meetings ^(quarterly) & minutes kept.

6 UC library was very technical & comprehensive. Had journals re: IH, medicine
7 etc. If you needed book or journal, person would make P.O. & it would go
8 on expense account.

9 NB knew & knows Jim Hammond for Std. Oil. Met him in early '60's.

10 NB read Journal of Am. IH Assoc.

11 NB had no involvement w/ testing re: sandblasting in Tx. City.

12 NB only looked @ Noise testing equip @ Tx. City & not ~~Sandblasting~~ Sandblasting equip;

13 Jack Welch, Tom Lincoln, Bill Gullet, Ken ^{Lane} ~~Ross~~, Tom Nail, Walt ^{Hausner} ~~Hausner~~
14 were all @ Medical Drs. @ head quarters in N.Y. when NB was there.

15 J.J. Dugan (NB doesn't know).

16 UC never sent its IH to its customers to see if they had probs. which
17 UC should oversee.

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Newell Bolton - 1/12/93

- 1
- 2 IH dept. was physically in same location @ UC w/ the medical dept
- 3 Medical dir. oversaw IH dept. @ UC
- 4 Jackson Browning during NB's last 10 yrs. was Health Safety dir. re:
5 environmental probs.
- 6 NB said that a foreign language was required in school to get his
7 degree & this was typical.
- 8 NB can't recall any name brands of asbestos prods. used @ UC.
- 9 Dust counting of asbestos was done in a hood w/ an exhaust.
- 10 NB has been to King City, Sisterville, Ohio, Institute, Lindx, Seadrift
11 Tx. City, Deer, Fontana Cal.
- 12 NB ~~was~~ ^{visited} battery plants in several places.
- 13 Anti-freeze was made @ East Hartford & 1 other he can't remember.
- 14 NB replaced Paul McDaniel in N.Y. Mr. McDaniel had been there ~~since 1952~~ ^{from 1952-78}
15 ~~UC quit~~ ^{UC quit} buying asbestos insulation around early 1970's.
- 16 Started using a black insulation (sulfite odor from it) as an alternative to
17 asbestos.
- 18 NB doesn't know but thinks UC probably did ~~do~~ ^{do} epidemiology studies.
- 19 Dir. of epidemiology was Susan Gates Austin ^{rt.} after NB went to N.Y.
- 20 ~~Previous dir. was~~ Michael ^{Utigson} ~~Utigson~~ was dir. of toxicology.
- 21 UC had a mortality study in place for many yrs.
- 22 Had radon test & follow-up w/ Sokimoto in Gravel Junction, Cal.
(mid to late '60's, maybe earlier)
- 23 NB recalls seeing MSD sheets relating hazards of asbestos from mfyers.
^{re: insulation} ^{done by}
- 24 Most of demolition @ UC was Rust Engineering & Ferguson.
- 25 It was ~~was~~ UC's policy to inform EEs that they working w/ a known
carcinogen after a certain period of time, but NB can't remember when.
^{of IH}
- 27 During early days ^{of IH} didn't tell EEs why they were taking air samples b/c
28 didn't want to scare them unnecessarily.

- 1 Drs. @ UC felt EEs should be told & this was done, especially Tom Lincoln.
- 2 U.S. gov. owned & still owns Oak Ridge & UC was just a Kor.
- 3 2 safety engineers @ Oak Ridge who were UC EEs.
- 4 Atomic Energy dept. had EEs overseeing UC activities @ Oak Ridge.
- ✓ 5 1982-1991 NB went from N.Y. to the Gases division w/ UC. NB was in
6 N.Y. from 1978-82.
7 UC could control type of respirator ~~and~~ & filters used)
- 7 UC provided respirators to outside Kors & hazards or sampling monitoring
8 was done only on big jobs by outside Kors & monitoring left up to Kors on
9 small jobs.
- 10 Fit testing was done @ UC b/c of info. from MSA, ^(3M) other mfgs. & also
11 from info. from other Kors. This was @ least in early 1960's. Testing for
12 fitting was b/c of aberrations in medical info. on EEs re: alpha particles.
13 Health physics dept. detected aberrations ^(in radiation) which led to UC suspecting
14 a fitting prob. w/ respirators.
- 15 Whole body counters used to detect radiation exposure.
- 16 EEs were monitored @ UC & if aberrations noted, steps taken to eliminate
17 exposure.
- 18 Joe Zatus was Corp. IH in early '60's @ MSA. NB invited to come to
19 Met John Pendergras who was IH @ 3M. & facilities to look @ quality
20 Met an IH ~~from~~ from Am. Optical. Met Bill Rivoir @ Am. optical. control programs. looked respira
21 MSA gave fit testing info. to UC in early '60's. program.
- 22 NB recalls Kemper ins. re: Work. Comp.
- 23 In 1952-55 NB's sampling on approx. 6 occasions was around insulators.
- 24 Insulators used respirators & wet down operations. Operation was not
25 dusty. ^{Dust samples} ~~Power~~ were below the TLV & only about 10% of TLV's.
- 26 Respirators used to control radioactive dust, not really for fear of asbestos.
- 27 Probs. w/ asbestos came to foreground in late '60's or early '70's b/c of
28 Selikoff's studies.

- 1 NB believes there was no conspiracy to quash info. on asbestos or sandblasting
- 2 but said info. was disseminated.
- 3 ^{Knowledge} ~~He knew~~ that asbestos caused asbestosis was known prior to connection
- 4 b/twn asbestos & cancer.
- 5 Painters did sandblasting @ UC.
- 6 NB learned of silicosis hazards when he went back to Oak Ridge the 2d
- 7 time (early '60's).
- 8 Painters doing sandblasting wore Bullard air-fed hoods.
- 9 Painters told by UC that they should use respiratory protection when
- 10 sandblasting b/c of silicosis.
- 11 Sandblasting done in a huge bldg.
- 12 Cartridge respirators not used for sandblasting.
- 13 Most cleaning done by acid, mostly nitric acid.
- 14 The watcher or buddy of sandblaster ~~was~~ would use cartridge respirator (helium)
- 15 Electric Arc welding done @ Oak Ridge. Used inert gas welding, not stick rod
- 16 welding. Had welding booths.
- 17 NB ~~he~~ knew welding caused pneumoconiosis in early '50's.
- 18 Vast amt. of beryllium ^(daily) sampling done, but NB can't ever getting a positive
- 19 result b/c of testing. Did area sampling, not personal air sampling. Used
- 20 ventilation & respirators.
- 21 NB knows of no EEs who contracted silicosis.
- 22 NB thinks there was no appreciable difference b/twn ~~h~~ sandblasting hoods.
- 23 Air samples were taken up under hoods (clipped to collar under hood).
- 24 No sandblasting w/ desert hoods.
- 25 Air sampling taken under hood was done @ a painter's suggestion, but no
- 26 appreciable amts. done.
- 27 Fit testing done in early '70's showed that one ^{respirator} ~~the~~ size did not fit all.
- 28 UC sold stick rods, but didn't mfg. them.

B-126,986

RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 AMERICAN PETROFINA, ET AL * 60TH JUDICIAL DISTRICT

A-134,614

FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 BETHLEHEM STEEL CORP., ET AL * 58TH JUDICIAL DISTRICT

B-141,242

ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 AMERICAN OPTICAL CORP., ET AL * 60TH JUDICIAL DISTRICT

A-138,633

MARGARET FAULKNER, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 AKRON CHEMICAL CO., ET AL * 58TH JUDICIAL DISTRICT

A-136,143

KEITH GIBLIN, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 MOBIL OIL CORPORATION, ET AL * 58TH JUDICIAL DISTRICT

VIDEO DEPOSITION OF NEWELL E. BOLTON

TAKEN ON JANUARY 11th & 12th, 1993

COPY

E-141,216

JOSEPH E. BARNARD, ET UX * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 ALLIED-SIGNAL, INC., ET AL * 172ND JUDICIAL DISTRICT

A-140,498

JOYCE A. BORNE, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 ALLIED-SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT

* * * * *

VIDEO DEPOSITION OF
NEWELL E. BOLTON

On January 11th & 12th, 1993, the video deposition of Newell E. Bolton, a Witness in the above-styled cause, was taken at the instance of the Plaintiffs at the Hilton Resort, 23 Ocean Lane, Hilton Head Island, South Carolina, pursuant to Stipulation of Counsel contained herein.

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18 COMPANY, INC., MCKESSON CHEMICAL
19 CORPORATION, NECHES BUTANE, INC., OXY
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S T I P U L A T I O N

IT IS STIPULATED AND AGREED between Counsel for the parties hereto that the deposition of the Witness named herein is taken pursuant to Notice attached hereto.

IT IS FURTHER STIPULATED AND AGREED that the Witness may sign said deposition before any duly authorized and acting Notary Public for the appropriate area in which signature is obtained.

IT IS FURTHER STIPULATED AND AGREED that this deposition, or any part of same, may be used upon the trial of this cause with the same force and effect as if the Witness were present in Court and testifying in person.

IT IS FURTHER STIPULATED AND AGREED that all objections, other than those that relate to the form of the question and responsiveness of the answer, are

1 hereby preserved and may be made at the time any
2 testimony herein is sought to be offered upon the trial
3 of this cause, despite no objection having been made at
4 the time the testimony was taken.

5
6
7 IT IS FURTHER STIPULATED AND AGREED that
8 Rick Smith, a Certified Shorthand Reporter in and for
9 the State of Texas, may act as a Certified Shorthand
10 Reporter in and for the State of South Carolina for
11 purposes of swearing the witness in this deposition.

12
13
14 IT IS FURTHER STIPULATED AND AGREED that
15 the original deposition will be given To Herschel Hobson
16 for safekeeping and for use at the time of trial.

17
18
19 * * * * *

D E P O S I T I O N I N D E X

EXAMINATION BY MR. HOBSON	12-207
EXAMINATION BY MR. BLANKS	208-289
EXAMINATION BY MR. MARTIN	290-299
EXAMINATION BY MR. HALEY	299-301
RE-EXAMINATION BY MR. MARTIN	301-302
RE-EXAMINATION BY MR. HOBSON	302-316
RE-EXAMINATION BY MR. BLANKS	316-338
RE-EXAMINATION BY MR. HOBSON	338-369

1 NEWELL E. BOLTON,
2 having been duly sworn, testified as follows, to-wit:

3 EXAMINATION BY MR. HOBSON:

4 Q. Would you introduce yourself, please, sir.

5 A. My name is Newell Bolton.

6 Q. And, Mr. Bolton, my name is Herschel
7 Hobson. We have met at least - it's a little bit of
8 a ---

9 A. (Interrupting) In the distance past
10 perhaps.

11 Q. Yes. Would you tell us please, sir, just
12 in summary fashion your employment history, please.

13 A. I worked almost 39 years for Union Carbide
14 Corporation in various assignments from -- I started out
15 in Oak Ridge. I went from Oak Ridge to Charleston, West
16 Virginia. I went back to Oak Ridge in 1961. I went to
17 New York in 1978 and retired from -- The office then
18 moved out of New York to Danbury, Connecticut. And I
19 actually retired from there in '91.

20 Q. And would you give us, sir, your
21 educational background briefly, please.

22 A. I have a Bachelor's degree in Chemistry
23 from the University of Georgia in 1951 and some graduate
24 studies also at the University of Georgia.

25 Q. And you are a certified industrial

1 hygienist?

2 A. Yes, I am.

3 Q. What other certifications do you possess,
4 sir?

5 A. That's the only one.

6 Q. You found it just to be enough; right?

7 A. (No response)

8 Q. Did you have any employment other than
9 Union Carbide professionally?

10 A. No.

11 Q. What took you to Oak Ridge?

12 A. A new baby that was born premature and I
13 had to have a job. It happened to be close. I applied
14 and got a job. I look back on it as an incredible
15 experience frankly.

16 Q. And you began there in what year, sir?

17 A. 1952.

18 Q. And you came right out of the University of
19 Georgia then ---

20 A. (Interrupting) Yes.

21 Q. --- with your chemistry degree?

22 A. Right.

23 Q. What kind of chemistry degree did you have,
24 please?

25 A. Just a B.S. in chemistry.

1 Q. No specialty area?

2 A. No, not really. Microanalytical chemistry
3 was my first love, and that's what I was hired to do at
4 Oak Ridge when I first went there.

5 Q. I take it that as a chemistry student, you
6 took courses in organic and inorganic chemistry and at
7 least the usual string of courses of physical chemistry
8 and quantitative chemistry?

9 A. Well, I wouldn't want to be quizzed on what
10 I had in school; but I think I had every course that
11 they taught at the University of Georgia but two
12 chemistry courses as I recall. I remember that's --
13 That was 1950.

14 Q. Yes, sir.

15 A. It's not today.

16 Q. Were you in the military?

17 A. Yes.

18 Q. And where were you in the military,
19 please?

20 A. In Japan.

21 Q. And your military occupation or specialty.

22 A. I was in the Corps of Engineers.

23 Q. And what kind of work would you have done
24 for the Corps of Engineers?

25 A. We built bridges mainly. Built them and

1 then blew them up.

2 Q. The same ones?

3 A. The same ones.

4 Q. I guess practice makes perfect.

5 A. I guess so.

6 Q. What was your rank upon discharge, please?

7 A. PFC.

8 Q. When you got to Oak Ridge, what kind of
9 activities did they put you doing at that time?

10 A. I was assigned the job as a junior chemist
11 I guess is the best way to describe it, doing analytical
12 work, primarily inorganic chemistry. That's not a
13 chemical plant in the sense that we think of chemical
14 complexes today. It was all inorganic chemistry. We
15 were looking at uranium and things like that.

16 Q. I understand that some activities, perhaps
17 even most activities at Oak Ridge were classified?

18 A. In those days you couldn't even tell your
19 wife.

20 Q. Just in case there are still any residual
21 secrets that you might know of ---

22 A. (Interrupting) If -- I wondered about that
23 frankly. If you ask a question that deals with the Y-12
24 plant, I probably will not answer it because I don't
25 honestly know what's clarified and what's not anymore.

1 Q. I was just going to say if I even get close
2 to a top secret type of thing, let me know and I will
3 move to some other area.

4 A. Okay.

5 Q. How long did you continue in the same
6 capacity there at Oak Ridge after you started as a
7 junior chemist?

8 A. I was at the gaseous diffusion plant - the
9 Oak Ridge gaseous diffusion plant from 1952 to 1955. In
10 1955 I transferred to the Y-12 plant, which is also in
11 Oak Ridge. And in 1956 I went to South Charleston, West
12 Virginia to work in the chemicals - it was the Carbide
13 and Carbon Chemicals Company as I recall. And I stayed
14 there -- Well, that answers your question I guess. I'm
15 sorry.

16 Q. That's all right. How long did you stay at
17 South Charleston?

18 A. Five years.

19 Q. So, that puts you up to about '61?

20 A. '61.

21 Q. And you were in the plastics - chemicals
22 and plastics ---

23 A. (Interrupting) I was in the development
24 department of the chemicals and plastics -- Not -- It
25 wasn't called chemicals and plastics in those days. It

1 was called Union - Carbide and Carbon Chemical Company;
2 four C's. It didn't become Union Carbide Corporation
3 until sometime later.

4 Q. What was your job at South Charleston,
5 please?

6 A. I was an industrial hygiene chemist.

7 Q. What happened along the way that got you
8 interested or got you into industrial hygiene?

9 A. That's a terrible question to ask me. I
10 got into industrial hygiene by accident. And the reason
11 is that the youngest staff member at K-25 got assigned
12 the job of filling in on vacation for the person who did
13 all the field sampling for the medical department - for
14 the industrial hygienist in the medical department. And
15 all of a sudden I found something that I really enjoyed.
16 I worked -- I got to work with people. I saw people
17 every day, different people, different parts of the
18 plant. And, so, that's how I got into industrial
19 hygiene.

20 Q. Instead of your three feet of bench, you
21 actually saw a person?

22 A. I actually saw real people every day.

23 Q. And about what time period was that,
24 please?

25 A. Well, that was shortly after I went -- I

1 was hired in September of '52. It would have been the
2 early part of '53.

3 Q. Who were the folks there at Oak Ridge that
4 were doing the industrial hygiene work at that time
5 period?

6 A. At the K-25 plant it was me and the
7 industrial hygienist.

8 Q. Who would the industrial hygienist have
9 been?

10 A. His name was Dave Stoddard.

11 Q. And was Mr. Stoddard a professional
12 industrial hygienist?

13 A. Yes.

14 Q. Would you have any recollection of about
15 how long Mr. Stoddard had been at Oak Ridge?

16 A. He was there when I got there. It would be
17 a guess. It would be little more than a guess. I
18 just -- I don't know. He had been there three or four
19 years I guess or something like that.

20 Q. Would you know where Mr. Stoddard is these
21 days?

22 A. No, I have no idea. North Carolina I
23 think, but that's -- I lost track of him when he
24 retired. He's considerably older than I am. 20 years
25 anyway.

1 Q. Did Mr. Stoddard stay at Oak Ridge, or did
2 he work anywhere else for Union Carbide to your
3 knowledge?

4 A. I think he worked only at K-25. He retired
5 from there as I recall.

6 Q. In those early days as a fill in on the
7 industrial hygiene activities at Oak Ridge, what kinds
8 of things did they have you doing?

9 A. Oh, we had a -- We had a regular monthly
10 schedule where we ran certain kinds of activities in
11 certain buildings. And it depended on what kind of
12 activity was going on in that building. It may have
13 been a powder plant. It may have been part of the
14 gaseous diffusion process. So, it was a litany --
15 Mostly - mostly things associated with separating
16 uranium 235 from 238.

17 Q. Were you actually collecting air samples or
18 just doing the analytical ---

19 A. (Interrupting) No, I took the air samples.

20 Q. In these times in early 1953, what kinds of
21 analytical equipment were available to the industrial
22 hygienist there at Oak Ridge?

23 A. Oh, boy. We had electrostatic
24 precipitators. We had -- What was the name of it? It
25 was an instrument we used to determine trichloroethylene

1 concentrations. It's the old Davis microgas analyzer.
2 Boy, you've got -- You've got me straining now.

3 There was some other things. We had -- We
4 had the normal equipment to do dust sampling - Bausch &
5 Lomb whipple disk, that kind of thing. We also had a
6 konimeter as I recall. I know we did because I have
7 used the konimeter. The balance of it was done with
8 either bubblers or giant impingers. There was no filter
9 technology in those days. So, everything you took was a
10 wet sample or a grab sample. We evacuated -- Had flasks
11 which we pumped vacuums on and things like that.

12 Q. And would you also do the analysis of the
13 samples you had collected?

14 A. Some of them, not all of them. Some of
15 them had to be titrated very quickly. And in that case,
16 I usually did that.

17 Q. Would you have done the dust counts?

18 A. Not necessarily. It took too long. I
19 think -- My supervisor as I remember was the one that
20 did the dust counts directly. Now, if it was on the
21 konimeter, I probably did it. But the ones with the
22 Bausch & Lomb, he did them.

23 Q. That would have been Mr. Stoddard?

24 A. No, I was not in -- Mr. Stoddard was in the
25 medical department. I was in the works laboratory. And

1 we did everything on a - on a request, on a work order
2 kind of operation. I worked in the laboratory for -- My
3 first boss was named T. C. Whitson. W-h-i-t-s-o-n if it
4 makes any difference.

5 Q. Thank you. Did you begin to learn anything
6 about Union Carbide while you were at Oak Ridge?

7 A. Only the -- Only the plant that I was in.

8 Q. So, you really didn't begin to get any
9 knowledge about what this corporation called Union
10 Carbide, whatever it was at that time period was doing?

11 A. Not at all.

12 Q. When did that come? When did you begin to
13 learn about the corporation that supported Oak Ridge?

14 A. When I -- When I transferred to - I guess
15 when I transferred to South Charleston.

16 Q. In this time period between early '53 and
17 when you transferred to South Charleston in '56, did
18 your activities in the field of industrial hygiene
19 change?

20 A. I'm not sure I understand the question.

21 Q. Did you stay sort of the fill-in chemist
22 that went around once in a while ---

23 A. (Interrupting) Oh, no. I became the -- I
24 became the individual responsible for all of the
25 industrial hygiene sampling programs.

1 Q. How did that transpire? How did you get to
2 that job?

3 A. Well, the person that was doing it had a
4 hernia operation or something and was out of work for
5 six or eight months. And when he came -- Not -- Or six
6 or eight weeks. And when he came back, he found that he
7 was working in the office and I was working in the
8 field. And it stayed that way.

9 Q. And then I take it your interest even got
10 greater in the area of industrial hygiene when you could
11 do it full time?

12 A. Yeah. I -- I still didn't -- Even in those
13 days I still didn't know anything about industrial
14 hygiene. I knew the chemistry that I was doing. But I
15 really didn't know what happened until the answers were
16 written on a piece of paper and they were mailed over to
17 the medical department and something wonderful happened.
18 And that's all -- That's all I really knew.

19 Q. When did you make that transition then to
20 you being the person who was going to be deciding what
21 the numbers meant?

22 A. That wouldn't have been until '61 when I
23 went back to Oak Ridge from Charleston.

24 Q. While you were still at Oak Ridge then, and
25 after this became a full-time occupation for you, did

1 your duties change; or did it stay that way pretty much
2 until you went to South Charleston in '56?

3 A. Well, at the -- I guess at the Y-12 plant I
4 was - my title was assistant industrial hygienist. I
5 worked for the industrial hygienist directly. He was --
6 He had -- When I went - transferred and went to work for
7 him, he had a very well-defined industrial hygiene
8 program. And, so, it was just a simple matter of me
9 taking part of it and following it and him doing the
10 rest of it.

11 Q. When you say that he had - I think you said
12 a "well-defined program" ---

13 A. (Interrupting) "Well-defined" is a relative
14 term. They had -- They had people doing field sampling.
15 They had identified - my guess is they'd probably
16 identified every potential chemical and physical stress
17 in the plant and had an appropriate program running to
18 make sure the employees weren't overexposed to whatever
19 it was.

20 Q. And at about what time period was this?

21 A. That would have been '56 to - '55 and '56.
22 September of '55; September of '56.

23 Q. And you say they had apparently, as far as
24 you could tell, determined all of the chemical and
25 physical hazards in the area they were responsible for?

1 A. What little bit of industrial hygiene I
2 knew, that would - that would have been my estimate of
3 what they did. And looking back on it from this vantage
4 point, they had a very outward - outreaching program.
5 It was -- I look back on those days and think, "Boy,
6 that was an incredible program that we had for the
7 employees."

8 All the material was classified. And, you
9 know, we really couldn't -- We really couldn't talk
10 about it. Everything had a code name. You know, you
11 couldn't call it by what the element was. You called it
12 by something else. And, so, you learned a whole new
13 jargon. It's kind of like - I guess the legal
14 profession has its jargon. We have ours. But that was
15 even a more complicated jargon because everything was
16 classified.

17 Q. Now that you look back on that program, why
18 do you think it was that way?

19 A. Because in the time when industrial hygiene
20 was sort of in its infancy, it would be my - the way I
21 would describe it, here is a program at a plant that has
22 5,000 people working in it as I recall - 5,500 maybe.
23 They had a full-blown medical department and half a
24 dozen doctors full time. They had a full-time nursing
25 staff. There was two people in industrial hygiene,

1 myself included.

2 There were people in the laboratory
3 dedicated full time to running industrial hygiene
4 samples, whether that was air samples or urine samples
5 or what have you. There must have been eight or nine
6 people in that laboratory operation. There were -- We
7 called them field inspectors, but there were - gosh,
8 12 - 10 or 12 full-time field inspectors that did
9 nothing but take air samples all day long for a variety
10 of compounds, a variety of chemicals.

11 So, you know, you look at that and you say,
12 "Gee, that was 1955." That's pretty racy for the time
13 if you think about it. So, that's my - at least that's
14 my perception.

15 Q. Do you attribute that to dedicated
16 management, dedicated personnel who were running the
17 programs or somebody in Washington ordering the people
18 running Oak Ridge to get this kind of a program and have
19 it no matter what?

20 A. I'm -- I'm not sure I'm qualified to answer
21 that question. I can give you my opinion.

22 Q. Just your perception.

23 A. My perception is that this program was a
24 combination of an individual that was a great salesman,
25 knew a lot of toxicology -- As a matter of fact, he was

1 more -- He was more in toxicology than he was in
2 industrial hygiene. But he was a natural to move into
3 the industrial hygiene position. He went to work at
4 Y-12 during 1944, something like that. So, he was there
5 in the early days doing some of the toxicology work
6 that they did.

7 He -- And he was able to convince
8 management that they ought to commit this kind of
9 resource. And I think management looked at him and
10 said, "We hear you. We are going to do it." Carbide
11 didn't -- Let's see. When -- Carbide didn't always run
12 the Y-12 plant. They took it over in 19 - I think 1948.
13 Tennessee Eastman had run it up until that point. And
14 I'm -- I'm talking now about four years later when this
15 individual - his name was Leo LaFrance. I never will
16 forget him because he had the ability to look management
17 straight in the eye and say, "Dammit, you have to do
18 that. You don't have a choice."

19 And by the time he got through with them
20 they said, "You are right. We don't have a choice."
21 So, I guess just looking at it, there were -- The K-25
22 plant was not a complex plant. The Y-12 plant was
23 extremely complex. And, so, I think it was the - it was
24 a combination of the management and the individual
25 industrial hygienist in this case.

1 Q. You told me that there were a number of
2 people who were dedicated to catching - taking air
3 samples throughout the plant. How many people was that?

4 A. Gosh, what did I say?

5 MR. BLANKS: You said eight or
6 nine.

7 (By Mr. Hobson)

8 Q. Eight or nine.

9 A. No, it was ---

10 MR. BLANKS: (Interrupting) I'm
11 sorry. 10 or 12.

12 A. 12 - 12 or 14. 10 or 12, yeah. I would
13 have to go back and count. If you ask me 20 minutes
14 from now, I may give you a different number because I
15 suddenly remember - "Oh, yeah, there was the beta
16 buildings as well as the alpha buildings." But there
17 were a number of people involved in this activity.

18 (By Mr. Hobson)

19 Q. With the technology of the day, this being
20 the mid-'50's, I guess in the early '50's, how many
21 samples a day for the different materials you were
22 handling would these people be able to collect?

23 A. You are getting into an area now where I'm
24 a little uncomfortable. I will give you an answer to
25 the question, but I won't tell you what the material is.

1 In a month's time with this crew, we would take upwards
2 of 13, 14, 15,000 individual, discrete air concentration
3 determinations. These were -- A lot of them were
4 instrumental. They were direct reading instruments, but
5 they were taken as a discrete measurement at this column
6 or standing next to this piece of equipment or standing
7 in the operators' booth or what have you. So, there was
8 a tremendous number of air samples.

9 Q. I take it that when measurements were made
10 such as you just described, they were recorded?

11 A. Yes.

12 Q. And were you keeping a record of these
13 recordings so that you could compare what was happening
14 over time?

15 A. Yes.

16 Q. And what would be the purpose of doing
17 something like that?

18 A. Well, one of the -- One of the things is
19 that we knew very little about the material that we were
20 analyzing. We were doing a biological bioassay program
21 to - in conjunction with the air sampling program so
22 that we could come up with some kind of - figure out,
23 okay, how much air -- How much air -- What air
24 concentration do you breathe to get an equivalent amount
25 in the urine sample? And this was just to help us

1 better understand the toxicology that was involved. And
2 I'm not a toxicologist. But it was to understand what
3 the effect is going to be and be better able to predict
4 what would happen to the employees. At what point do
5 you take them out of this area and put them in a
6 different kind of job, transfer them? And then
7 transfers were fairly routine in those days. You had
8 very high concentrations of some of these materials.

9 Q. Were there efforts to reduce the
10 concentrations through engineering means as well?

11 A. Oh, yeah. We had rooms that you went into
12 that you needed weights on your feet almost to keep from
13 getting pulled into the vacuum system. We had high
14 speed - or high velocity, low volume pick-up systems.
15 We had general ventilation. We had -- We had taken
16 whole walls out of the end of the building, and you were
17 looking at a whole bank of fans - of air movers to keep
18 a cyclone going through here. Boy, it got cold in the
19 Wintertime.

20 I can remember being out there on the
21 graveyard shift and you would be so cold that you didn't
22 know what you were doing hardly. But it was quite an
23 experience.

24 Q. I take it that not every hazard that was
25 evaluated at Oak Ridge was something new and novel and

1 had to do with nuclear energy.

2 A. These weren't.

3 Q. There must have been some traditional ones.

4 A. These weren't new and novel. They were
5 just peculiar to this activity. You know, the lead
6 burning activity that we had; there had to be a lot of
7 shielding fabricated. So, there was a fairly large lead
8 shop. They were making castings; so, there was a
9 graphite shop where they machined out, milled out the
10 pieces that they were going to use as a mold and so
11 forth. So, it was quite an operation.

12 Q. Handling solvents I take it?

13 A. Oh, yeah. We had one -- We had one
14 degreaser at K-25 that was as big as this room, deeper
15 than this room is high, where you could put a very large
16 piece of equipment down in it and degrease it
17 completely. So, this was a vapor degreaser.

18 Q. And those kinds of operations you have just
19 described you'd find in other kinds of industrial
20 operations not just something at Oak Ridge?

21 A. I would guess degreasing operations you
22 would have probably not to the degree we had because
23 nobody - nobody would think about degreasing a piece of
24 equipment that was 36 feet long and 22 feet in diameter.
25 I mean this is a big piece of equipment. So, it was a

1 unique technology when you look back at it.

2 Q. Now, you left Oak Ridge I think you told me
3 in '56 and went to South Charleston?

4 A. Right.

5 Q. Did you change job titles at Oak Ridge
6 before you went to South Charleston? Did you actually
7 become an industrial hygienist along the way while you
8 were at Oak Ridge?

9 A. No, not really. Not really. I was -- I
10 was the extra pair of hands in the office that ran all
11 of the calculations. I added up all of the
12 concentrations and did the averaging for that particular
13 area for that day. And I sort of kept track of -- I was
14 a records keeper in a lot - in a sense of the word; but
15 I was also his eyes and ears. I would -- I spent a lot
16 of time in the field looking at operations and talking
17 with people and seeing how they were doing something, if
18 they were following the procedure that was set up for it
19 and so forth.

20 But, no, I didn't -- Really in my mind I
21 didn't become an industrial hygienist until well after I
22 got back to Oak Ridge the second time.

23 Q. So, what happened that led up to your
24 relocating to South Charleston?

25 A. They had a position open for an industrial

1 hygiene chemist. Somebody in management up there
2 decided that they needed somebody to look - develop air
3 sampling techniques for some of the materials that were
4 of interest to the corporation. Many of the materials
5 had no threshold limit values in those days. And, so, I
6 was hired basically to go in and look at a litany of
7 whatever the - whatever the development department was
8 working on in their processes, that the toxicology
9 people at Bushy Run had said, "Hey, this is something
10 you need to worry about." That's what I did all of my
11 work on. I worked almost five years on one compound.

12 Q. Do you mind if I ask what that was?

13 A. Nickel carbonyl. We were -- We were
14 involved -- Oh, that's an interesting story by itself.
15 It's one of the -- One of -- I guess there were two
16 processes. That's one process which they abandoned
17 because they didn't feel that they could control the
18 nickel carbonyl, the hazard of nickel carbonyl.

19 After working on it for five years, we had
20 developed an analytical instrument which would detect
21 parts per billion range. It was sensitive all the way
22 down to three - two or three parts per billion as I
23 remember. And we had it all done. We had written
24 programs. We were going to go into a full production on
25 this, and they -- Somebody in New York decided, "No, we

1 are not going to do that." And they just cancelled the
2 project.

3 Q. Just too hazardous?

4 A. Just -- They simply did not feel that they
5 could control it. And the literature was a little
6 ambivalent about whether nickel carbonyl was a
7 carcinogen or not because in all -- As I recall, in all
8 of the cases where there were cancer nasal - sinus
9 cancers or something, whatever it was - I think that's
10 right - they also were associated with arsenic. There
11 was an arsenic contaminant that was involved. But they
12 simply couldn't be sure.

13 Nickel carbonyl is not a nontoxic material.
14 Even if it isn't a carcinogen, it was not something that
15 you handled without a great deal of thought and lots of
16 procedures and lots of ventilation and so forth. And
17 the other -- The other process was the one at Institute
18 which was the coal conversion process. And that was the
19 other one that they - that senior management cancelled
20 because they simply couldn't control the hazard; the
21 potential for skin contamination from polycyclic
22 aromatic hydrocarbons was just too great.

23 So, that process was shut - was shutting
24 down when I went to Charleston in '56. I guess that's
25 right. It was almost completely shut down by the latter

QUESTIONS FOR REVIEW AND DISCUSSION

1. While Vice-President of the American Industrial Hygiene Association in 1980, Dr. Ralph Smith made a quote about safety management which is included in this Chapter. It is also the reason for this particular chapter being in this book. What is that quote?
2. The author lists several responsibilities of the *industrial hygienist* to the worker, to the employer/client, to the public, and finally to the profession. Check each one of those specific responsibilities and see if the word *safety* could be substituted for industrial hygiene in the first sentence above and the responsibilities still be applicable. Be prepared to give examples backing up your conclusions.
3. Does the author see health and safety as a staff or line function?

QUESTIONS FOR FURTHER STUDY

1. Find out the organizational relationship of safety and industrial hygiene at the corporate level in each of these organizations: McDonnell-Douglas, the U.S. Navy, and Union Carbide Company. The best answer would be an organizational chart showing the relationships of industrial hygiene and safety.

Chapter 27

THE WORKPLACE OF THE FUTURE

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ABSTRACT

An acceptance of robots in the workplace is accepted in this article with emphasis given on the need for safe interaction with humans, and expansion of the safety management function to include the control and prevention of accidental losses to equipment, property and products.

A more accurate title for this chapter might be "Safety in the Flexible Manufacturing, Computerized, Databased, Robotized, Automated Workplace." However, let's refer to it as the "advanced workplace," which is here now and growing steadily by leaps and bounds.

The chapter will develop three primary themes: first, the safety requirements of this automated workplace for the benefit of these new and costly machines—an almost anthropomorphic assignment. Webster's defines that word as "attributing human shape or characteristics to an animal or god"—the modern world is adding robots to the list.

Second, the combination of humans and robots in interaction poses a new set of safety needs—virgin territory which, however, must not be ignored. If we did ignore it, the result might well be a giant step backward, with results akin to the early days of the industrial revolution when human lives were cheap and no one bothered about the quality of life.

Third, someone must take (or be given) the responsibility (and authority) for these two new tasks; and since it is a natural outgrowth of the safety manager's existing duties, agreement is imperative that he or she is indeed the one to whom they be assigned.

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1 were building a gigantic waste disposal plant in South
2 Charleston. And Carbide was - in cooperation with the
3 City of South Charleston they provided this activated
4 sludge process for the city to use. And for that they
5 got - they had the ability to send stuff into the - into
6 the -- Their effluents went in there instead of into the
7 Kanawha River.

8 Q. And was Mr. Stack - was part of his job and
9 the people that worked for him to develop then
10 industrial hygiene sampling techniques or analytical
11 techniques?

12 A. That and the environmental part. I did --
13 I was the industrial hygiene chemist. I was the one and
14 only. I was the whole staff for doing that kind of
15 work. He had three or four people. I had a technician
16 that worked for me. He had three or four sanitary
17 engineers I guess they were. This was before
18 environmental engineering became so popular.

19 He had two - two graduate engineers that
20 were doing the research work in the activated sludge
21 process that they were working on.

22 Q. We not too long ago took Newt Ketcham's
23 deposition, and I think he was in South Charleston, at
24 least some of this time period as I recall.

25 A. Uh-huh.

1 Q. Did you get a chance to meet Mr. Ketcham
2 there?

3 A. Newt was my boss for a short period of
4 time.

5 Q. How did you find Mr. Ketcham and his
6 abilities as an industrial hygienist?

7 A. Well, he was much -- He was one of the
8 better trained ones in the corporation. He had applied
9 for one of the A.E.C. fellowships and I think went -
10 graduated from Harvard I believe.

11 Q. Yes, sir.

12 A. I think that's right.

13 Q. Yes, sir.

14 A. That would have been 1948 or something like
15 that. So, he would come down as I remember -- Boy, he
16 would come down from Charleston during the war years.
17 And when the A.E.C. started the fellowship programs,
18 they could - he applied and got it. At that time it was
19 the best fellowship program that you could get. It paid
20 all of your expenses and gave you enough money to eat on
21 even, which is pretty unusual.

22 Q. And I understand even provided somewhat of
23 a decent education?

24 A. Well, the University of Harvard is not --
25 It's -- It's top drawer. In those days there was only a

1 half of dozen schools that taught industrial hygiene.

2 Q. Who do you recall - what schools do you
3 recall that taught industrial hygiene in the early
4 '50's?

5 A. The University of Cincinnati, Michigan,
6 Pittsburgh, Harvard. There were six. What were the
7 other two? I don't remember.

8 Q. Hopkins?

9 A. Maybe. I -- The other two I don't recall
10 frankly. Maybe Johns Hopkins was one of them.

11 Q. Had California started their program by
12 then?

13 A. No. No. I mean there was only six up into
14 the mid-'50's or something like that. But Harvard,
15 Pittsburgh, Cincinnati and the University of Michigan
16 were the four primary schools. There were a couple of
17 others, but I just -- If you called them, I probably
18 wouldn't remember at this point.

19 Q. How about The University of Texas at
20 Galveston, did they have a program in those days?

21 A. I have no idea.

22 Q. Now, was your activity at South
23 Charleston - was this at a time when you had an
24 opportunity to learn something about the Union Carbide
25 Corporation, its activities about industrial hygiene; or

1 did that come later?

2 A. Well, yeah, I went - began to go to
3 industrial hygiene - national meetings of the American
4 Industrial Hygiene Association. I began to attend -- We
5 got the industrial hygiene people in the corporation
6 together periodically always at that meeting. But once,
7 maybe twice a year they would bring us all into South
8 Charleston; and we would have a dinner and have a pep
9 talk by the Vice-president of Research and Development
10 and so forth and things like that. It's sort of onward
11 and upward.

12 I was so low on the totem pole that you are
13 asking the wrong person. I can give you my perception
14 of them. But -- And my perception of them was that here
15 is a management that I can learn to respect and I can
16 learn to work with. That together with some manpower
17 and the commitment that they had to the health
18 protection area, we can make - together we can make a
19 real contribution. And I'd like to think that I did
20 that in that 39 - almost 39 years I worked for them.

21 Q. And this would have been the '56, '57, '58
22 time period?

23 A. Yeah. And '56 and '57 is kind of a blur.
24 But, you know, every -- Everybody called everybody by
25 their first name. John Biddle was the director of the

1 development department. And everybody called him "Bid."
2 You go in and refer - and say, "Mr. Biddle, could I" --
3 "Bid." And he just -- There was no
4 formality with them at all. And everything was first
5 name. You found out -- I found out early in my career
6 that senior management are just ordinary people. They
7 put their pants on one leg at a time just like I did.

8 Q. You found them accessible and ---

9 A. (Interrupting) Oh, yes.

10 Q. --- understanding ---

11 A. (Interrupting) Oh, yeah.

12 Q. --- at Carbide?

13 A. Absolutely.

14 Q. About how many people would come to these
15 company group industrial hygiene meetings you told us
16 about when they would be held in South Charleston? Are
17 you talking a handful, five or six; or was it a larger
18 group than that?

19 A. No. The Bushy Run people were -- Let's
20 see. Were they out at Bushy Run then or still at
21 Mellon? The Bushy Run people would come. There was
22 three or four people from that group. The people
23 assigned to do the industrial hygiene work for South
24 Charleston and Institute -- Let's see. It would be 10
25 or 12 people I guess, 15 maybe. I just -- That part of

1 it is such a blur that I can't tell you.

2 Later on, you know, we first met in rooms
3 half the size of this one. And when I -- When I retired
4 in 1991, if you had all the people in health protection,
5 you would have to have an auditorium in order to get
6 them in. In my division alone, my group alone there was
7 69 - 68 or 69 full-time people dedicated to safety and
8 health activities. So ...

9 Q. So, in the ---

10 A. (Interrupting) And that's only the --
11 That's only the industrial gaseous part of the
12 corporation. That did not include the chemicals and
13 plastics operations. I sort of got away from them when
14 I went into the Linde operations.

15 Q. But '55, '56 through '60 or so, you are
16 talking about between one and two dozen people in the
17 corporation?

18 A. Yeah, a dozen, a dozen and a half maybe,
19 something like that. In that order. In that order.

20 Q. And approximately how many employees were
21 there at Union Carbide in that time period as best you
22 recall?

23 A. I don't know.

24 Q. Are we talking about 100,000 people?

25 A. Oh, no. No. The corporation was in those

1 days was not very big. There were 15,000 people in the
2 corporation from Oak Ridge -- In the Oak Ridge
3 operations there was 12 or 15,000 people. There must
4 have been 6 or 7,000 in South Charleston, 3,000 in
5 Institute, 2,500 at Texas City. I guess Seadrift was
6 built about that time. It might have had 6 or 700. I
7 don't really -- I don't recall too much about it.
8 I don't recall too much about it.

9 If you add all those numbers up, you come
10 up with about what the - what the total employment was.
11 What did I say? 15, 22, 25, 26 - may 26, 27,000
12 employees. But again, more than half of them were right
13 there in Oak Ridge. And Paducah had already been opened
14 up. It had already been built, and Carbide was running
15 that for the government, also - Paducah, Kentucky.

16 Q. And for these employees, you had a dozen
17 and a half, two dozen industrial hygiene-type personnel
18 including toxicologists?

19 A. No. There was a good size staff of
20 toxicologists at Bushy Run. There was a laboratory
21 outside Pittsburgh at Export, Pennsylvania. That was
22 started in 1937 I guess by the corporation. It was
23 funded -- It was a fellowship that was funded by the
24 corporation and later became part of the corporation.
25 So, there was -- In those days there must have been 25

1 or 30 people working at that facility.

2 It was the only facility at Carbide that
3 had rooms that were empty when they moved the staff in.
4 I mean they actually had laboratory space that they had
5 nobody to put in. It was incredible.

6 Q. So, let me make sure I'm understanding.
7 You are saying that in the late '50's there were
8 somewhere around 30,000 Union Carbide employees, give or
9 take, the best you can recall. And you had a dozen and
10 a half to two dozen industrial hygiene-type people and
11 25 to 30 toxicology people in the corporation in about
12 that time period.

13 A. Wait. Wait. The Oak Ridge operations, the
14 nuclear division had - all of the plants had dedicated
15 staffs, had industrial hygienists working for them, had
16 industrial hygienists assigned, had people that did the
17 analytical work in the laboratory and so forth. And
18 they're sort of separate from the rest of the
19 corporation because much of the stuff which they talked
20 about, much of the stuff they worked on was classified.
21 And, so, there was only -- There were only a handful of
22 people in the corporation that were cleared in the - in
23 the health protection area to be able to talk to those
24 people.

25 The senior management staff I think were

1 all cleared as I remember and some others. So, Ketcham
2 was -- He was the industrial hygienist for all of the
3 chemicals operations. He was -- He had sort of a dual
4 role. He was the industrial hygienist for South
5 Charleston. And he was sort of an industrial hygiene
6 consultant to the rest of the - of the organization.
7 He's the one that trained the technicians at Texas City
8 and Institute. And, so, Institute I guess had --
9 Institute had an industrial hygienist. When did --
10 Peele, when did Peele start working at Institute, late
11 '50's, early '60's? '59, '60, '61 ...

12 THE WITNESS: Do you recall,

13 Kirk?

14 MR. MARTIN: No, I don't.

15 (By Mr. Hobson)

16 Q. He told us, and I don't remember.

17 A. You are not paying attention.

18 Q. I was. But I've got a real good memory;
19 it's just not very long.

20 A. He was -- He was there. He had -- He had
21 come in because I had talked with the medical director.
22 The medical director had gotten tired of not being able
23 to get in touch with Newt. Newt was traveling all over
24 the country to other facilities, and he really wasn't
25 available when Dr. Sexton needed him.

1 And, so, he called me down there and he
2 said, "Tell me what I need." And I described what I
3 thought he needed. And he interviewed Bob Peele and a
4 couple of others, and Bob was hired. Now, that's got to
5 be about the time that I was getting ready to leave. It
6 must have been - my guess would be '60 or '61, something
7 like that. So -- But that's when I first met -- So,
8 there was a -- There was a staff -- There was an
9 industrial -- And there had been one before. Gee, what
10 was his name? I had forgotten about him. There had
11 been one before, but he couldn't work with the people
12 for some reason or other. I don't recall what the
13 problem was.

14 He was not effective at any rate. And, so,
15 they -- That was when they decided they would hire bona
16 fide industrial hygienists. And Bob has a Masters
17 degree as I recall from somewhere. I don't know where.

18 Q. Two wheres.

19 A. Two wheres. Okay. Anyway, he was -- He
20 fit the bill to a "T." And he had -- He did not do the
21 analytical work. He did some of the air sampling
22 himself. And I think probably the -- Boy, I'm guessing
23 now. I better not say that. There was -- At least
24 there was a works laboratory, and he had the ability to
25 get analyses performed. So, he didn't have to do it all

1 himself.

2 So, there was him and whoever worked in the
3 laboratory. And I don't remember how many people there
4 were. There was a technician at Texas City that was
5 trained by Newt and who I met on a couple of occasions
6 when I had the occasion to go to Texas City. There are
7 quite a few people actually. And then all the
8 analytical work was done by the works laboratory. I
9 don't know that they called it the works laboratory, but
10 it was all done by them.

11 So, there was -- There was quite a goodly
12 number of people involved. If you moved -- If you move
13 the nuclear division to one side and look at the rest of
14 the corporation, there probably was -- Gee, I would have
15 to think about that. I would have to sit down and just
16 start trying to put faces in front of me and try to
17 figure out how many -- There were quite a few. For the
18 time there were quite a few. My guess would have been
19 two dozen.

20 Q. Setting the nuclear division aside?

21 A. Setting the nuclear division aside which
22 had full-time dedicated staffs at all four locations.
23 So, yeah, you know, there were -- There were a couple of
24 dozen people.

25 Q. And that would have been - those couple of

1 dozen people would have servicing maybe 15,000 or so
2 Union Carbide employees after you segregated off the
3 nuclear division?

4 A. Yeah. But you have to remember that there
5 is an awful lot of administrative people in there. You
6 are not talking about 15,000 people potentially exposed
7 to something. You are talking about total employees
8 probably -- In those days an industrial hygienist worked
9 95 percent of his time on 1 percent of the work force
10 literally because that was the percent that we were
11 concerned about. They were the ones that had the
12 potential for exposure.

13 So, you know, and the others got handled as
14 a spin-off of that activity. But you always had a
15 handful of people that you are always concerned about or
16 which you did a little bit more than you did the normal,
17 you know, the standard industrial hygiene -- The routine
18 industrial hygiene program would handle the others, but
19 this took special sampling. It took a special activity
20 in order to be sure that they were not being exposed.

21 So, if you ask me that question again after
22 lunch, maybe I can sit down again and figure out how
23 many people there were. And it will be a guess because
24 I'm -- Things are coming back to me about the early
25 days, but it's still pretty fuzzy. Some of it is very

1 clear, but most of it is very fuzzy.

2 Q. I take it that by this 1956, '61 time
3 period you told me that you were attending some of the
4 American Industrial Hygiene Association meetings.

5 A. Yeah, I think the first meeting I went to
6 was in 1956 or '57 maybe. '57 I guess.

7 Q. Had you had other occasions to find out
8 what was going on among other companies and other
9 industrial hygiene programs before '56 or '57 at your
10 first meeting, or was this really your first time to
11 step out into the ---

12 A. (Interrupting) It was the first time that I
13 really got out into the quote "real world." No, I
14 didn't -- I didn't know very many people in those days.
15 I knew the Carbide people and that was all.

16 Q. Did you have occasion then over this four
17 or five years while you were at South Charleston to form
18 any kind of an impression about how Union Carbide's
19 industrial hygiene activity compared to other
20 corporations that were doing a similar kind of work?

21 A. Not really. Not really. There -- There
22 were companies at that time that had large staffs
23 compared to Carbide; but they had large problems, also.
24 So, no, I think -- If I look back at it I would say what
25 Carbide had was sort of -- They weren't the low. They

1 weren't the high. They were somewhere in the middle as
2 far as manpower people, commitment to the activity was.

3 That's not a very good way to say it. But
4 that's -- They weren't the best. They weren't the
5 worst. Let's put it that way. No, that's even worse
6 than the other way. Mark that out.

7 Q. So, even with a couple of dozen people more
8 or less dedicated to industrial hygiene-type problems
9 for the non-nuclear people in the late '50's or early
10 '60's, you still perceived there were - that Carbide was
11 doing what it needed to do; but it was not the biggest
12 program that there was out there?

13 A. No. That's true. They had -- And they had
14 dedicated medical staffs. They had full-time doctors
15 and nurses and so forth. And I think even Seadrift as
16 small as it was had a medical staff. It was the newest
17 plant at the time I guess. But Dr. Sexton had a very
18 large medical department at Institute. Dr. Henson had a
19 large medical department at South Charleston. He had
20 7,000 people and 14, 15, 16 nurses, something like that;
21 two doctors, maybe three. One I can remember. The
22 other I can't.

23 Q. Did your job while you were at South
24 Charleston bring you in contact with the physicians at
25 the plants?

1 A. Yeah. I met -- I met Roy Joiner from Texas
2 City. I worked with Dick Sexton because of a project
3 that we were - I was involved with was one of the
4 processes at Institute. So, I knew Dick Sexton very
5 well; Ed Henson at South Charleston, Dr. Best at South
6 Charleston. Yeah, I guess I knew all of the -- I knew
7 the medical director at - in New York. In those days it
8 was Tom Nale I guess. I forget who he replaced. But
9 there was Carl Dernehl, who later became I guess the
10 director of toxicology. He was an assistant medical
11 director, associate medical director; whatever they
12 called him.

13 There are two or three other doctors in
14 that New York office that - I can see their faces, but I
15 can't call their names. Well, yeah, I knew the -- I
16 knew the physicians. I felt comfortable in calling the
17 medical staff in New York and saying, "Hey, I don't" --
18 "I'm not comfortable with this compound or that
19 compound. Can you get Bushy Run to do something?" And
20 they would tell me immediately, "Why in the hell don't
21 you call Bushy Run yourself?" And, so, I would end up
22 talking with Henry Smyth at Bushy Run and people like
23 that. Henry was the director, started the laboratory in
24 1937.

25 So, it was that kind of activity. It was

1 sort of -- I guess in those days the -- From my -- From
2 my viewpoint the management was a concerned management.
3 They were doing things that were sort of out front and I
4 think very important.

5 Q. What was your impression of the capability
6 of the physicians when it came to dealing with
7 occupational hazards, chemicals and stresses in the
8 workplace?

9 A. I have no way -- I have no way to evaluate
10 their - their effectiveness as a physician. I can tell
11 you that most of the stuff we know about ethylene oxide
12 and its effects on the skin and what concentrations it
13 takes to burn was a result of Ed Henson's dedication to
14 occupational medicine because he had -- He had the
15 laboratory make up dilute solutions of ethylene oxide,
16 which he then patched on his skin. And he had burns --
17 He burned spots on his skin that was incredible.

18 He found out that it wasn't the
19 concentrated stuff that burned you as badly as it was a
20 water mixture. So, yeah, you know, that's the kind of
21 thing -- Dr. Sexton - I can -- Anecdotally I can tell
22 you about these people. And it demonstrates what their
23 dedication was. And it tells you nothing about how good
24 they were as a physician.

25 Q. Yes, sir. I'm more interested in your

1 perception as to what kind of help they were to you in
2 the occupational health arena and whether or not they
3 seemed to be knowledgeable about their area of practice
4 as you saw it.

5 A. Well, let me see if I can characterize
6 Ed -- Ed -- Let me characterize Henson because I think
7 he characterizes Joiner and Sexton and others. Ed
8 Henson probably couldn't diagnose a case of the measles.
9 But if an employee came in and had early symptoms of
10 aniline poisoning, he would have gotten it like that.

11 So, in terms of the occupational problems
12 that he might run into as a physician, they were all up
13 to snuff on it. You know, I can recall one case in
14 South Charleston where one of the - I think it was a
15 fireman got into a situation where he had been exposed
16 to aniline. And they thought he was having a heart
17 attack. And when they took him to the medical
18 department Ed Henson immediately grabbed the gurney and
19 took him outside and began to wash him down with water.
20 And he said, "He's got aniline on his skin. We've got
21 to get it off." And they -- We damn near stripped him
22 right there on the spot. It wasn't too warm as I recall
23 either.

24 But that -- But that was the kind of
25 insight where I always was comfortable with these

1 doctors. They -- They knew what the effects were of the
2 materials; and I - I didn't, of course. There was no
3 way that I would have guessed that this was aniline
4 poisoning. He looked at me like he was having a heart
5 attack, you know. I mean I had probably seen one or two
6 other heart attacks at that point.

7 Q. Would you recall, Mr. Bolton, where any of
8 these physicians would have gotten their training that
9 you knew in your days at South Charleston that were
10 employees of Union Carbide?

11 A. No.

12 Q. Had some of them been with the company only
13 short periods of time as you appreciate it, or had there
14 been some more long timers I guess?

15 A. All of the doctors that I remember had been
16 with the - they were with the corporation when I got
17 there and retired with the corporation.

18 Q. When you say when you got there, was that
19 when you ---

20 A. (Interrupting) Well, when I started working
21 in 1952, Dr. Nale was the - was the medical director as
22 I recall. Adolph Kammer was from the University of
23 Pittsburgh, the industrial medical group at Pittsburgh
24 and a consultant for the corporation. I met him because
25 he used to come to Oak Ridge periodically with Dr. Nale

1 and Dr. Dernehl. And we would sit around a conference
2 table like this and talk about what the program is. I
3 didn't participate very much in those days. I listened
4 to a lot of conversation. But I had an opportunity to
5 meet people like Adolph Kammer who turned out to be a
6 giant in the field of occupational medicine I guess, for
7 you people who have not heard of Adolph Kammer.

8 Q. How do you spell his last name?

9 A. You know, I don't know. K-a -- It is
10 K-a-m-m-e-r, I believe.

11 MR. BLANKS: Is it Kammer or
12 Kammerer?

13 THE WITNESS: Kammer.

14 MR. BLANKS: Kammer?

15 THE WITNESS: Kammer.

16 A. I think it's K-a-m-m - maybe it's a-e-r or
17 something. It was a funny spelling as I recall. But
18 Adolph had -- Adolph had been offered the -- I later
19 learned he had been offered the medical directorship at
20 Oak Ridge. They wanted him to go to K-25 as I recall
21 and he turned it down. And since they couldn't get him
22 as a full-time employee out of the university, why, they
23 hired him as a consultant.

24 (By Mr. Hobson)

25 Q. Now, you went from South Charleston back to

1 Oak Ridge?

2 A. Uh-huh.

3 Q. And what lead up to that transfer?

4 A. Well, they had an opening at the - at the
5 X-10 plant at the Oak Ridge National Laboratory. Newt
6 Ketcham sort of coordinated all of the hiring for the
7 corporation in this particular area. He didn't -- He
8 didn't do it. He was the one that -- He was the
9 consultant. If somebody felt they needed an industrial
10 hygienist, Newt would go and evaluate the plant to see
11 what they were doing; see if they really needed a
12 full-time industrial hygienist. And that's basically
13 what he did at the Oak Ridge National Laboratory.

14 He went down -- He went through the
15 facility with the medical director, who was Tom
16 Lincoln - Dr. Lincoln. And he -- Tom Lincoln convinced
17 him that he needed a full-time person working in
18 industrial hygiene. There had not been one there
19 since - for three or four years, something like that.

20 And there was a big - big activity in
21 health physics, but almost zero - nobody to do -- They
22 were using - stealing the industrial hygienists from
23 Y-12 and K-25 and anyplace else they could get somebody
24 to come over and look at a problem with them. And, so,
25 that was the reason that I went - ended up going to Oak

1 Ridge.

2 Q. And how long did you stay at Oak Ridge?

3 A. Until 1978.

4 Q. While you were at Oak Ridge on your second
5 hitch, did you ever go back and do any work at other
6 Union Carbide facilities?

7 A. No.

8 Q. So, all of your professional work for Union
9 Carbide after 1961 was at Oak Ridge?

10 A. Well, yeah, sort of.

11 Q. And the field work is what I'm talking
12 about.

13 A. Oh, yeah. No, I didn't -- Even at Oak
14 Ridge I didn't do any - do enough field work to talk
15 about. It's certainly not enough to brag about.
16 Because I had -- I had technicians that could do the
17 work. The laboratory - the analytical chemistry group
18 was doing all of the - all of the analysis. I guess I
19 did do -- I did do some of the early work done on the
20 analysis of lead. I did all of the noise surveys.

21 What I looked at was sort of the
22 conventional industrial hygiene problems at the time;
23 you know, heavy metals, solvents, degreasing agents,
24 things of that type. But most of it was -- If it
25 couldn't be done with an instrument, we simply protected

1 the people by added ventilation or respirators, one of
2 the other.

3 Q. I think you mentioned earlier that you have
4 been to Texas City.

5 A. Yes.

6 Q. On what occasions did you get to Texas
7 City?

8 A. I went to Texas City in - sometime in the
9 '50's. I guess I was down there twice in the '50's to
10 do - to update the noise surveys for the facility. And
11 I went in and did octave band analyses, checked to make
12 sure that the concentrations - the sound pressure levels
13 had not increased because of the age of the equipment
14 and things like that. But that was -- That was -- I
15 spent a week and a half one time and another week
16 another time, but it was strictly for noise. I just --
17 I was just doing noise surveys. That was all. No
18 chemical sampling. I really didn't visit any units per
19 se or any of the operations because there was an ongoing
20 industrial hygiene program at that time.

21 Q. And who was running the ongoing program?

22 A. Well, Newt Ketcham was running it really
23 from Charleston. He was -- He was the one that was
24 orchestrating it. There was an individual named
25 Peagues. Is that right?

1 Q. Yes.

2 A. Piggy. Piggy.

3 Q. His nickname.

4 A. Okay. Piggy was the one that -- He was my
5 escort. He took me to the -- He sort of escorted me to
6 the units where the previous sound surveys had been done
7 and where it had been determined that there might be a
8 noise hazard. And then he would go off and do his job
9 while I updated the noise survey. And that was all I
10 did for that seven or eight days one time and a week a
11 couple of years later I guess it was. Maybe '57 and
12 '59. I have no idea if those numbers - those dates are
13 right.

14 Q. Is it that those two trips to Texas City
15 would have been the only time you went to Texas to do
16 industrial hygiene work for Union Carbide?

17 A. Yeah, I visited the Texas City plant in
18 19 - later in 1970 -- It would have been after I went to
19 New York. So, it would be after '78. So, probably 1979
20 or 1980. As I remember there was a conference in
21 Houston. And because it was close and I was -- I was
22 the -- I was the director of industrial hygiene for the
23 corporation at that point. And because it was close and
24 I hadn't really seen the Texas City plant, I think I
25 went down and just sort of -- I got a windshield tour of

1 the plant. And we went down to Seadrift, and I got a
2 windshield tour of the Seadrift plant. And that was
3 about all, and that was about all we had time for as I
4 remember. But they had full-time staffs at that point.
5 There was no point in my going in and trying to second
6 guess what they were doing. The chemicals operations
7 were always -- They were always I guess self-sufficient
8 is the right word. They had the staff. They had the
9 resources. They had the commitment. And they were
10 doing what I think a reasonable industrial hygienist
11 would say they ought to be doing. I think that's right.
12 I think the way I said that is right.

13 We could have an instant reply on that and
14 I could find out if I said that right.

15 Q. In my notes that I wrote down, you said
16 they had the staff, they had the resources and they had
17 the commitment.

18 A. Right.

19 Q. What do you mean by "commitment"?

20 A. Well, I think -- I think we had the
21 commitment of management that there were some things
22 that were - were very bad for people to be exposed to;
23 and they were determined that they weren't going to be
24 exposed. And this - this attitude that I've described
25 about the corporation started long before 1952 when I

1 started to work for the corporation. It started in 1937
2 and even before that because they had people working
3 on -- They didn't have very many compounds, very many
4 products in those days; but they had people working on
5 the products and they knew what they would do to people
6 and so forth. They knew how toxic they were if you
7 will.

8 But it was 1937 that the New York senior
9 management decided that they needed somebody to do
10 toxicology research. And that's when they brought Henry
11 Smyth in. And Henry developed the laboratory. It was
12 under -- It was called a chemical hygiene fellowship.
13 The deal which he had with the corporation was that they
14 would not tell him what to do; that he would publish
15 what he developed, all the technology studies.

16 You have to know Henry to understand this,
17 how he got away with it. That further they would not
18 meddle in what he was doing. And that's exactly the way
19 the Bushy Run laboratory started. It started out in
20 Pittsburgh at Mellon Institute. It was part of Mellon
21 Institute - Carnegie-Mellon at that time I guess. And
22 it was later moved to bigger facilities out at Export.
23 It would have been the mid-'50's when they moved to
24 Export.

25 And I think most of the - most of the

1 senior management -- And I'm thinking now -- I'm
2 reflecting on Henry Smyth because I wrote the article in
3 the journal, which probably was in the December issue as
4 I remember about Henry. I wrote it. And I can remember
5 some of Henry's reflections from that.

6 And Henry said one time that when he - when
7 he started to work for the corporation, the corporation
8 thought that there would - because he was industry, that
9 no one would accept the results; that it would be
10 tainted with industry and so forth, and that there - no
11 one would be interested. And, in fact, nothing could
12 have been further from the truth. Not only did they -
13 they accepted the findings of the technology laboratory
14 that Carbide funded, but everybody was interested in
15 what they were doing.

16 These range findings studies were - were
17 phenomenal work. He had -- Well, I could go on. I
18 loved Henry Smyth. I loved Henry Smyth literally. I
19 could talk for hours about him because he's such a
20 remarkable individual - was such a remarkable
21 individual.

22 Q. You have been a professional industrial
23 hygienist for - what, 40 years how?

24 A. Well, I guess being a professional
25 industrial hygienist would be from the -- I would date

1 that from the time that I sat for the examination and
2 got board certified. And that would have been 1965,
3 '66, somewhere in there.

4 Q. And you worked as an industrial hygienist
5 many years before that?

6 A. Right. I was -- I went back to Oak Ridge
7 as the director of industrial hygiene for the Oak Ridge
8 National Laboratory in 1961. And I developed the
9 program from scratch. There were some things which they
10 were already doing and had been doing particularly in
11 the lead - lead shop and places like that. But I sort
12 of formalized what they were doing and developed the
13 program, expanded the staff and was able to get the
14 senior management at Oak Ridge to buy in to what we were
15 doing. And I think the staff was 12 or 14 when I left
16 Oak Ridge in '78.

17 Q. Having worked 40 years as an industrial
18 hygienist, when you look back at this staff and
19 resources and management commitment, how do you put
20 management commitment into the mix in what is required
21 to have the kind of program that is necessary to protect
22 people?

23 A. I'm not sure I know what the question is.
24 Try it one more time.

25 Q. What I'm trying to find out -- You told me

1 that the chemicals group, that part of Union Carbide's
2 Texas City operations, that when you evaluated their
3 programs, when you saw them, that they had the staff and
4 the resources and the management commitment that was
5 necessary to do the job.

6 A. Right.

7 Q. And I'm trying to find out what your
8 perception was after 40 years in the field of the
9 necessity of management commitment. What can you do
10 without it?

11 A. I don't think you can do anything without
12 management commitment. The industrial hygiene staff
13 does not protect the work force. The industrial hygiene
14 staff is the one that stands next to management and, if
15 necessary, whispers frequently in their ear that this is
16 what we need to be doing. And it's line management's
17 accountability to see that it's done. It's not staff's.

18 I can't -- I can't force a supervisor in
19 the field to do anything. Now, that's a half truth
20 really, you know. Everything is sort of a half true
21 because I never in my almost 40 years of working with
22 Union Carbide, I never had a line position. I was
23 always staff to - to the corporate - to corporate line.
24 And, yet, I acted like I had line accountability. And
25 maybe that's one of the reasons that I was able to sell

1 the programs that I got the senior management to buy in.

2 My boss at Linde - Jack McLean, who is the
3 best boss I ever worked for, is the hardest boss I ever
4 worked for, told someone one time in my presence, he
5 said -- He said, "The thing that I like about Newell is
6 that he doesn't tell me what I need" - "what I" - "what
7 I want to hear." He says, "He never tells me what I
8 want to hear. He always tells me what I need to hear."
9 And as a result of it, we were always spending more
10 money. And that's true. That's true.

11 We just -- We began to formalize and we
12 began to record, we began to do things that we needed to
13 perhaps do earlier, but which there just wasn't
14 enough -- There wasn't enough time or staff to do it
15 all. And protecting the worker was foremost if - we
16 wrote it down later if we had to, if we had time.

17 That's the commitment that I saw. I saw it
18 from - from my first line supervisor who was determined
19 to do all of the damn sampling that the medical
20 department needed every month at K-25, to my last boss
21 who was President of Union Carbide Industrial Gases that
22 says, "Do" -- "Tell me what I need to hear, and I
23 promise not to shoot the messenger. And I guess that's
24 the best way that I can put it.

25 And the messenger was never shot. I put my

1 job on the line every day throughout my entire career.
2 I wrote in my job description at X-10 when I went back,
3 we formalized it because there had never been one. And
4 I wrote in there that I had the ability and authority to
5 shut the plant down if necessary. And I thought, "That
6 will never last. That will never stay there. Forget
7 that one. Rub that one out."

8 When it went up the line, the director of
9 the laboratory called me and he said, "I would like to
10 speak to you. I would like for you to come to the
11 office for a few minutes."

12 And I said, "okay."

13 And he said -- When I walked in he said,
14 "I just looked at your job description."

15 And I said, "Oh, good. Good. That's nice.
16 I'm glad it got this far."

17 And he said, "I noticed in here that you've
18 said you had the ability to shut the plant down."

19 And I said -- I said, "Floyd, I have to be
20 able if there is an imminent danger for a group of
21 employees or for all of the employees, I have to have
22 the ability to shut the plant down."

23 And he learned back and he looked at me for
24 a good minute, at which point I was really squirming.
25 And he says, "I agree. I agree." But he said, "Be damn

1 sure you are right if you ever shut it down." Now, I
2 never had to shut the plant down, but I did have the
3 authority to do it. That's the only place.

4 And I had -- I had that kind of
5 relationship with the - with the divisions when I was
6 the director of industrial hygiene. They -- No one
7 argued with me. Maybe it's because I was so damn
8 positive about everything, about what we were going to
9 do and how we were going to do it and when we were going
10 to do it and so forth that they just felt it was an
11 unproductive activity to argue with me. But that's the
12 way I always operated.

13 Q. Health and safety programs that protect
14 people cost money?

15 A. Absolutely.

16 Q. And without the money, you really can't do
17 the job that you have to have in place; is that right?

18 A. That's right. I agree.

19 Q. And that's why you have to have
20 management's commitment because management does control
21 the budget?

22 A. I defended my budget when I - from the time
23 I was at - went to New York and even before. Not -- Not
24 to the formal extent. But when I moved to Linde, I
25 defended my budget to the Chairman of the Board of the

1 corporation. And I told him - I said, "This is" --
2 "This is what it's going to cost and this is what you
3 are going to get." And I don't ever remember -- I
4 remember other budgets being cut, but I don't ever
5 remember mine being cut.

6 Q. And that's management commitment?

7 A. To me that's -- Management -- If I go in
8 and tell management that this is what we need to do, I'm
9 always prepared, because I know they are going to say,
10 "What is it going to cost?" That's always the first
11 word out of their mouth before I get started.

12 So, I go in -- I went in prepared. I knew
13 what - what I was telling them they needed to do was
14 going to cost. Whether it was hire 130 contract
15 physicians for the 130 locations that we had in Linde or
16 whatever, I knew exactly where I was as far as the money
17 was concerned.

18 We knew how many air samples we were going
19 to take. We knew how long it took. We knew what it
20 cost to run the analysis. So, you know, if you do that
21 and add the overhead, why, you can come up with a
22 number. You can actually dollarize a program and make
23 the thing -- To me you make it a living entity because
24 now it becomes - it becomes something that moves forward
25 in time in which you get some benefit out of, the

1 employees get the benefit.

2 So, that -- To me, yes, that's management
3 commitment. When I give them a budget and they say,
4 "Yes, I agree with you" and they don't cut it at all,
5 that's commitment, especially when they are cutting --
6 They are cutting travel expenses and everything else for
7 everybody else, but all of a sudden you become a sacred
8 cow. And I guess I was always a sacred cow. At least
9 that's been my experience with working in the
10 corporation.

11 Q. The corporation is Union Carbide?

12 A. The corporation is Union Carbide, yeah.

13 MR. HOBSON: Is this a good place
14 for a break?

15 MR. ELLISTON: You bet.

16

17 (A BRIEF RECESS WAS TAKEN.)

18

19 (By Mr. Hobson)

20 Q. Beginning again after our short break here,
21 sir. When you were doing your work as an industrial
22 hygienist for Union Carbide, did you ever come into
23 contact with any activities that were related to the
24 Walsh-Healey Act? Does that mean anything to you?

25 A. Yeah.

1 Q. Tell us what the Walsh-Healey Act means to
2 you as an industrial hygienist at Carbide.

3 A. Well, it was the -- It was the predecessor
4 of the OSHA act of 1970 I guess. It was the - sort of
5 the law of the land. I guess most of the - most of the
6 work which I did was - was not impacted by that because
7 I was in Oak Ridge; and we didn't -- We did not have to
8 comply with Walsh-Healey. We could have a better
9 program, and it was no problem. But I -- I can't give
10 you any details on Walsh-Healey. I just don't remember.

11 Q. Do you remember what was in the
12 Walsh-Healey Act that had to do with the area of
13 industrial hygiene or would have impacted industrial
14 hygiene at all?

15 A. No.

16 Q. Was Oak Ridge covered by OSHA?

17 A. No.

18 Q. That was a government-owned facility that
19 Union Carbide operated?

20 A. Yes.

21 Q. And because it was part of the Federal
22 Government's activities then, that's why there was no
23 activity by OSHA?

24 A. Well, it was exempted from being under OSHA
25 by the act itself I guess.

1 Q. Now, you said that - and it's my perception
2 that your answer was almost tongue and cheek about you
3 were allowed to have a better program than Walsh-Healey.

4 A. No, it wasn't tongue and cheek. That was
5 an accurate statement.

6 Q. Tell me what ---

7 A. (Interrupting) We were not bound by the
8 OSHA act; and, therefore, we could do what we felt was
9 necessary.

10 Q. Tell me what you mean by that. Why was
11 that not a tongue and cheek remark. Tell me how you
12 intended that.

13 A. Well, you know, if -- In the corporation we
14 comply with the law. No matter what it is, we comply
15 with the law. In many cases, the corporation went
16 beyond what the lawful requirement was, what the legal
17 requirements were. And I can't give you an exact -- I
18 can't give you an example of that. But I know on
19 several occasions we did go well beyond what was
20 required.

21 The -- The industrial hygiene programs
22 within the corporation predate the OSHA act of 1970. We
23 were already deeply involved in industrial hygiene
24 before that time. So -- And not being -- And Oak Ridge
25 not being bound by the federal regulations - by the

1 governmental regulations but dealing with the Department
2 of Energy and so forth, we were always sort of aware of
3 what the regulations said; but we weren't encumbered by
4 those regulations. We were able to do what was
5 necessary. We did not label unless it made sense to
6 label, for example, because labels - too many labels
7 become wall decorations that nobody reads.

8 So, that's sort of what I was talking
9 about. It was -- It was about half tongue and cheek and
10 half - half real. We did go beyond what the regulations
11 would require. In many cases we went beyond what the
12 A.E.C. chapters - excuse me - The Department of Energy
13 chapters required us to do.

14 Q. You practiced industrial hygiene for quite
15 some number of years before there was an Occupational
16 Safety and Health Act; right?

17 A. Right.

18 Q. And you have practiced a good many years
19 after the Occupational Safety and Health Act. Is
20 complying with the Occupational Safety and Health Act
21 regulations enough to have an adequate safety and health
22 program?

23 A. That's a -- That's a hard question to
24 answer. We -- Many of the professionals, myself
25 included, maintained that you can't -- You can't run --

1 You can't be an industrial hygienist if all you know is
2 what the regulations say. And, yet, I guess that's
3 really a half truth.

4 The regulations are supposed to be -
5 theoretically they are designed so that if you follow
6 them, that you will protect the worker. And, yet, there
7 are only how many threshold limit values? 130, 140?
8 So, you have got -- You have to -- That's why I say you
9 can't just follow the regulations. You have to go
10 beyond that.

11 Q. And many of the threshold limit values that
12 were adopted as permissible exposure limits under OSHA
13 are just that; they stand alone as a number in a table,
14 do they not?

15 A. That's right.

16 Q. And would you agree with me that just
17 looking at a number in a table and staying with that
18 number is most of the time not enough to have a good
19 program in the area of industrial hygiene?

20 MR. ELLISTON: Objection to form,
21 vague.

22 (By Mr. Hobson)

23 Q. That means he doesn't think I asked a good
24 question. It's a legal objection that some Judge may
25 get to rule on later. You can answer if you can. But

1 if you don't understand my question, I will repeat it
2 for you or try to redo it.

3 A. I would appreciate it if you would repeat
4 it.

5 Q. What I'm trying to asking you is: If all
6 you have is a number that you are going to measure air
7 concentrations against, that's not enough, is it?
8 Don't you also need to have a program to build around
9 that number that may include biological monitoring? I
10 think you used the term earlier biological bioassay.

11 A. Uh-huh.

12 Q. Don't you need to have programs that record
13 information and follow this information with time?
14 Don't you need to build a program around those numbers
15 and not just rely on a number in a table that you make a
16 comparison against once in a while?

17 A. I guess I really don't know how to answer
18 your question yet. I -- I don't know how to answer it.
19 I'm sorry. Try one more time. Maybe I'm just slow
20 today.

21 Q. No. No. What I'm really after is I want
22 to understand what your philosophy is and was as an
23 industrial hygienist when it comes to taking a
24 regulation such as the Occupational Safety and Health
25 Act or the Walsh-Healey Act, if that's appropriate,

1 where there is a number in a table; and how you use that
2 number in a table as a professional industrial hygienist
3 in working it into a full-blown program. Can you tell
4 me how you do that?

5 A. Well, I think what you -- Let me try this.
6 I think maybe this is where you are coming from. It's
7 not enough just to know that the threshold limit value
8 is 1 part per million or 100 parts per million or 1,000
9 parts per million. You have to know if there is a skin
10 absorption problem, if there are other routes of entry
11 that are more important than the - than the air route
12 and things of that type. So, no, the number by itself
13 doesn't help you set up an industrial hygiene program.

14 Q. And isn't there also professional judgment
15 involved in knowing how often you should go out and make
16 these assessments?

17 A. Yes.

18 Q. How does one determine the frequency of
19 doing monitoring for materials in the workplace?

20 A. I suspect that there are as many sampling
21 strategies as there are industrial hygienists. How
22 would I do it? I'm not sure I can anymore. I have been
23 out of the technology for so long.

24 I'm -- My job was to make it - was to be
25 the facilitator, to provide the resources for the staff

1 to do the work. I -- I don't know that I could design a
2 program today. But I would look at the toxicity. I
3 would look at the routes of exposure. I would look at
4 the quantities that are involved. And based on that, I
5 would go from there.

6 So, a material that's super toxic, you
7 might want to look at that much more frequently:
8 Monthly, quarterly, weekly, daily in some cases.
9 Whereas a material that is relatively nontoxic, you
10 might go in and look and say, "Yes, the ventilation
11 still works" and you don't ever do an air sample
12 again.

13 Q. The higher the possibility or probability
14 of injury, the more you would do?

15 A. Like I said earlier, 99 percent of the
16 industrial hygienist's time is spend on 1 percent of the
17 work force basically.

18 Q. If you were called upon to evaluate an
19 exposure that you had never seen before and you never
20 had an opportunity to do any kind of evaluation of
21 before, would you trust your senses alone in making an
22 evaluation?

23 A. The first step -- The first step would be
24 to trust my senses.

25 Q. What is the second step?

1 A. I would -- I would go through and look and
2 determine whether or not air samples need to be taken,
3 where they need to be taken, where the potential for
4 exposure points are and go from there.

5 Q. I take it that there are a lot of materials
6 in the TLV listings that you have never done an air
7 sample for?

8 A. Probably.

9 Q. If we were to pick one of those for which
10 you have not had experience with and hired you as a
11 consultant today to go do an evaluation of that
12 material, how would you go about doing that? What would
13 you do? What would be your first step? If I walked in
14 today and I said, "Mr. Bolton, I've got this material" -
15 and you looked at it.

16 You said, "Well, I have never dealt with
17 that in my experience." But here is the threshold limit
18 value or the permissible exposure limit. I could find
19 the regulation or the guideline that deals with that. I
20 have got an industrial operation that involves that
21 material, and I want to hire you to set me up a program,
22 evaluate it and tell me whether I've got a problem or
23 not. How would you start?

24 A. Well, I think the first thing I would do is
25 to check with somebody in the medical department or the

1 toxicology group to find out what the material is,
2 where - what the routes of entry are and things of that
3 type. What are you going to be concerned about when you
4 go and look at it? And sort of see, you know, if there
5 is -- Maybe since I was in A.I.H.A., if there is a
6 hygienic guide on it. They usually were a pretty good
7 summary of what the health effects would be, the
8 potential health effects and some information about --
9 Oh, as I recall they've got information on engineering
10 controls all the way to in some cases recommendations
11 for the industrial hygiene sampling analysis procedures,
12 things like that.

13 So, that's sort of the way I would approach
14 it, in a systematic fashion. What am I dealing with?
15 What effects are there? What do I need to look for?
16 And so forth.

17 Q. So, the first thing you would do is gather
18 up the available information that is known about this
19 material in your area of interest and see what you need
20 to do next?

21 A. I don't know that I would do a full-blown
22 literature search on a material like that. But the -
23 the regulation -- If there is a regulation that deals
24 with it, it will have probably as much information as
25 you would need. If it's a hygienic guide, you'd

1 probably have as much information as you would need in
2 there. If it's in the documentation for TLV's, there
3 would be chances are enough information.

4 So, would I do a full-blown - no, I
5 wouldn't do a full-blown literature search.

6 Q. Now, if I could, I would like to take you
7 back to the late '50's and ask you the same questions.
8 Someone comes to you in the late '50's and says, "I
9 would like for you to evaluate this material." And it's
10 not one that you know of. I mean it hasn't come to your
11 attention before. Where do you go in the late '50's;
12 what do you do in the late '50's to take on this
13 assignment?

14 A. Well, I guess the - sort of the bible of
15 the industrial hygienist was Patty, was Industrial
16 Hygiene & Toxicology. I don't remember what edition it
17 was. It may be the second edition or perhaps even the
18 first at that point.

19 There was a wealth of information in those
20 two volumes - first in the first volume and then the
21 second volume came later. I guess now there are three
22 volumes, maybe even four. I haven't kept up with - with
23 Patty in recent years. So, I would have gone there
24 first.

25 There were some standard texts that every

1 industrial hygienist sort of had in his library. The
2 first one that he had was Patty. Patty generally had
3 everything that you needed to know. Not everything, but
4 most things that you needed to know.

5 Q. And, of course, Patty was the text that
6 also at the end of each section had a bibliography.

7 A. Right.

8 Q. So, if you wanted to know more in depth
9 than what was just in the text concerning a subject, you
10 could look at the bibliography and look up the
11 references?

12 A. You could go further. You could go further
13 based on what was in Patty.

14 Q. And what else would you have had available
15 in the late '50's as a resource so you could gather this
16 kind of information?

17 A. Oh, the information that was developed at
18 Bushy Run, the results of all of the range findings
19 studies. There were a series of toxicology data sheets
20 that they came up with. Those would have been
21 available. There are a couple of -- There are a couple
22 of better texts, but I don't honestly remember what they
23 were now. Henderson & Haggard. I don't know. I just
24 don't remember any.

25 Q. Would you remember any of the textbooks

1 that had to do with occupational medicine?

2 A. No, I wouldn't have -- I wouldn't have had
3 occasion to do that.

4 Q. You never came across Hunter's text, Donald
5 Hunter?

6 A. Only in this stack of papers I noticed that
7 Hunter was quoted in one of them. I went back to see
8 what the reference was, and it was -- I think it was
9 Hunter.

10 Q. I think that's a different Hunter. That's
11 Francis Hunter. I was thinking -- The question I was
12 asking you about is Francis Hunter - I'm sorry - Donald
13 Hunter's text in 1955 that dealt with occupational
14 diseases.

15 A. I don't know that I ever saw that.

16 Q. Would you have known of Johnston's textbook
17 in occupational medicine?

18 A. No.

19 Q. Did you have available to you publications
20 from the Industrial Hygiene Foundation in the late
21 '50's?

22 A. Occasionally. Not - not routinely, but
23 occasionally. Carbide was a member as I recall.

24 Q. I take it from time to time you would come
25 across the Industrial Hygiene Foundation "Digests"?

1 A. I can remember reading them a lot of years
2 ago.

3 Q. Any other kinds of resources that you would
4 have had available to you in the late '50's where you
5 could learn information about materials that were of
6 interest to you as an industrial hygienist?

7 A. I think that probably the only other thing
8 that I would have had available would have been the
9 networking that we did with individuals.

10 Q. What do you mean by "networking with
11 individuals"?

12 A. Well, when I went -- Let me give you an
13 example. Maybe that's the best way to respond to that
14 question. When I went back to Oak Ridge, I was so green
15 that I sunburned. I was given a job of establishing an
16 industrial hygiene program. I had never done that in my
17 life, never.

18 I had two to three names of quote,
19 "prominent" industrial hygienists from the A.E.C.
20 facilities, Harry Schulte being one at Los Alamos. And
21 when I sat down and began to try and decide what I was
22 going to do, I would put something on paper and I'd get
23 Harry on the telephone. And I'd say, "Harry, this is
24 what I think I need to do. Am I getting anywhere close
25 to the mark?" And Harry would say yes or no. And if he

1 said no, we would talk about it. And that's the way I
2 developed the program at Oak Ridge National Laboratory.
3 I did it by - by conversations with the informed -
4 people that I considered to be informed industrial
5 hygienists.

6 Q. When you were at Oak Ridge the second visit
7 and setting up your program, you said you had access to
8 the Bushy Run information.

9 A. I had access to the laboratory. I probably
10 could have gotten the information if I needed it.

11 Q. What was at Bushy Run? Tell us what you
12 had in the way of a resource there. I'm not sure we
13 understand -- I don't understand exactly how you
14 utilized this.

15 A. Well, the Bushy Run Research Center was a
16 center that did toxicological studies. And they also
17 had the ability - Henry had developed a quick
18 bibliographic search so that if something -- If
19 something had been studied on something, he probably
20 would know about it.

21 So, if we got a new compound, we would
22 simply call Bushy Run and say, "Hey, what do you know
23 about this? Where do I go and look? What will I find?"
24 and so forth. Henry and his staff - he had a couple of
25 pretty good Ph.D. chemists as I remember that could help

1 us with industrial hygiene sampling. There were several
2 toxicologists - Pozzani, Carpenter. Those were the
3 contacts that I had, and they were the ones that I
4 talked with.

5 So, I really -- I really didn't need copies
6 of the data which they had done. I just needed the
7 ability to call them. And that's what we did. If we
8 got a new compound, we called Bushy Run and said, "What
9 do I do with this?" And then more often than not they'd
10 say, "You are the industrial hygienist. You tell me
11 what you ought to do. This is what it will do to you.
12 Tell me what you ought to do." So, it was kind of a
13 give and take.

14 Q. You say that there was a quick bibliography
15 developed?

16 A. Yeah. Henry had some - I forget what the
17 system was called; but it was the old cards with the
18 holes around it. And he had -- He had developed this
19 system where he could get keep track of practically
20 every industrial chemical that he might come in contact
21 with. He had a phenomenal ability. He could remember
22 things that most people wouldn't even think about
23 remembering, myself included.

24 Q. And how far back in time are we talking
25 about here now concerning this work that Dr. Smyth would

1 have been doing?

2 A. I don't know. I don't know what -- I don't
3 know how deep the knowledge was that he had. I just
4 know that when we had a problem, we called Henry; and he
5 always came up with an answer for us.

6 Q. You say it was Dr. Smyth that started the
7 program in 1937?

8 A. He was the original director of the
9 toxicology laboratory.

10 Q. In 1937?

11 A. Right. And was the director until he
12 retired.

13 Q. And Bushy Run is synonymous with this
14 Mellon activity that you told us about?

15 A. Well, it was Carnegie-Mellon. It was the
16 chemical hygiene fellowship at Carnegie-Mellon Institute
17 originally. And then when it moved out to Export,
18 Pennsylvania into the new facilities, it became the -
19 the -- What did we call it? It was something before
20 Bushy Run Research Center. I don't -- I don't recall.

21 Q. What is your understanding of the reason
22 for beginning this chemical hygiene fellowship that
23 Dr. Smyth ran?

24 A. The senior management of the corporation
25 felt that they needed - they needed someone that would

1 look at the compounds that they were going to be making
2 and selling to determine whether or not it was toxic to
3 people, would have an effect. And, so, this is the
4 reason that the fellowship was funded. That was the
5 driving force.

6 Q. In 1937?

7 A. Yes. Yes.

8 Q. Of course, you came along a number of years
9 later than that. How did your job interact with the
10 chemical hygiene fellowship?

11 A. They were a resource for me.

12 Q. In what way?

13 A. In -- In -- When I was at Oak Ridge, they
14 were a resource in terms of - of calling them and
15 saying, "Hey, I've got a new material. I don't know
16 what it does to you. What have you got in your files
17 and where can I go to read something about it?" And
18 they always invariably came up with something.

19 Q. And at Oak Ridge I take it you weren't
20 trying to develop new products for Union Carbide to
21 sell, were you?

22 A. Oh, no. This is -- This is the nuclear
23 division. This is the nuclear division.

24 Q. But the chemical hygiene fellowship was set
25 up I think you said to do evaluations of new products

1 that Union Carbide was going to be selling?

2 A. Right. Right.

3 Q. So, how is it that you would get
4 information about products that you were going to be
5 using at Oak Ridge if you were not developing stuff to
6 be sold?

7 A. Maybe -- Maybe somebody, maybe some chemist
8 in the laboratory suddenly decided that he wanted to
9 order a case of dimethyl chicken wire, or whatever
10 chemical it happened to be. And all of a sudden now we
11 have got someone who is wanting to use a material. You
12 can look at the compound, and in terms of your own
13 experience usually, you can come up with something that
14 says, "Hey, this is a" -- "This is a molecule that we
15 need to" - "we need to have some more information about.

16 And, you know, it depended a lot on how
17 much they were going to be using and so forth. If
18 someone brought in a 55-gallon drum of dimethyl
19 sulfoxide, for example - and I couldn't even spell it in
20 those days - then we would call Henry and say, "What
21 does the M.S.O. do?" And, you know, "How do I protect
22 against it?" and on and on and on. And that's the way
23 we would have done it. That was the way we utilized the
24 Bushy Run laboratory.

25 Q. So, the chemical hygiene fellowship

1 activity at Bushy Run was not just for products that
2 Union Carbide was going to sell?

3 A. It was for anything. It was for anything.
4 All of their toxicology work -- I can't even say that.
5 Most of their toxicology work related to Carbide
6 products. But Henry had the ability to do whatever
7 Henry wanted to and did.

8 Q. And I take it that in developing
9 information even on the toxicity of products that
10 Carbide was going to sell, you would learn information
11 about materials that you weren't going to sell, just in
12 following up the literature and looking for information
13 in general. Is that accurate, or would you know?

14 A. I -- Probably. I just don't know.

15 Q. Was it your perception that the Bushy Run
16 activities that Dr. Smyth was running was keeping
17 current with what was developing in the area of
18 toxicology?

19 A. Certainly as it related to their operation.
20 I can't answer the question, but I would -- My
21 impression would be yes, that they were.

22 Q. And did they have an ability to follow
23 whatever scientific literature in the area of toxicology
24 was being published?

25 A. I don't know. The card system was the only

1 thing that I know about.

2 Q. And, of course, that was something that
3 Dr. Smyth I think you said developed himself?

4 A. Uh-huh.

5 Q. We have to be able to have an oral answer
6 or we can't ---

7 A. (Interrupting) Yeah. Oh, I'm sorry. Yes.
8 Yes.

9 Q. I take it that you utilized these
10 activities down at what we have been calling Bushy Run
11 for almost all of your career at Carbide while you were
12 involved with industrial hygiene?

13 A. Off and on. I didn't have daily
14 conversations with Bushy Run. I had conversations with
15 Bushy Run when it was necessary.

16 Q. Can you recall ever making an inquiry at
17 Bushy Run in which they were not able to give you some
18 basic starting information that you asked about?

19 A. Not that I recall.

20 Q. So, they were at least up on enough
21 information that they were able to satisfy your
22 inquiries reasonably well as best you can determine?

23 A. Right.

24 Q. Are you able to give us any impression
25 about the quality of the activities at Bushy Run? I

1 don't know if you were in a position to be able to
2 compare it to any other kind of facility of this type or
3 if you've got a general impression about its quality or
4 not.

5 A. My impression - and it's strictly an
6 impression; I have no -- Other than my experience with
7 them - and I have nothing to base this on - but they
8 were top drawer.

9 Q. Would you say they were cutting edge?

10 A. Well, there was one other laboratory and
11 that would have been Haskell laboratory, yes.

12 Q. At Bushy Run or the chemical hygiene
13 fellowship, whatever it was called before that, were
14 they actually doing testing work, toxicity testing
15 work?

16 A. Oh, yeah, on Carbide products or
17 anticipated Carbide products.

18 Q. Did you visit that facility yourself?

19 A. Yes.

20 Q. And they were doing animal toxicology?

21 A. Yes.

22 Q. What kinds of animal toxicology did they
23 have the capability of doing at Bushy Run to your
24 knowledge?

25 A. Mice, rats, rabbits. I don't know if they

1 had monkeys at that time. They have had monkeys on
2 occasion. But mostly mice, rats and rabbits would be my
3 guess.

4 Q. Are we talking about short-term or
5 long-term testing?

6 A. Both. Both.

7 Q. Inhalation-type testing?

8 A. Inhalation, skin testing, eye injury.

9 Q. Gases?

10 A. Gases, dust.

11 Q. And dust?

12 A. Yes.

13 Q. Any idea how far back in time these
14 capabilities existed at Bushy Run that you've just told
15 me about?

16 A. No.

17 Q. What is the earliest that you can put these
18 capabilities at Bushy Run or the chemical hygiene
19 fellowship before that?

20 A. Early - early '60's I guess. I don't think
21 I ever visited the laboratories until '62, '63,
22 somewhere in that time frame. And at that time they had
23 inhalation chambers that were, according to Henry - and
24 nobody dared to doubt or question that statement - but
25 according to Henry were state of the art.

1 Q. I take it that your impression of Dr. Smyth
2 was he was pretty much a state of the art guy?

3 A. Henry -- Henry always was ahead of everyone
4 that he talked to. He was learning something from
5 everyone that he spoke to.

6 Q. And I take it probably also teaching
7 everyone that he spoke to?

8 A. He taught many of us humility among other
9 things.

10 Q. What I would like to do is get some, as
11 best you can, some of the background information that
12 you understood about the use of the chemical hygiene
13 fellowship activities that later became Bushy Run at
14 Union Carbide.

15 Why did you perceive that there was a
16 necessity to do this work at Bushy Run on anticipated
17 products or new products of Union Carbide?

18 A. Me personally?

19 Q. Yes, sir.

20 A. I don't think I ever sent anything to Bushy
21 Run.

22 Q. No. I'm trying to find out what your
23 understanding was of why it was something that Union
24 Carbide wanted to do.

25 A. Oh, you mean the formation of ...

1 Q. Not only the formation but the utilization
2 that you saw while you were at Carbide.

3 A. Gee, I wish I still had that file on Henry
4 because he said it better, more eloquently than I could.
5 The corporation at the time felt the need to do some
6 special studies on materials that they were about to or
7 were beginning to think about producing within the
8 corporation, new products, for example.

9 And that's basically what that laboratory
10 was set up for. And at the time they really felt that
11 the information would be of little or no use to anyone
12 else. As I stated earlier, they felt that because it
13 was funded by a corporation, the private industry, that
14 it would not be credible in the scientific community;
15 that it would only, therefore, be good for the
16 corporation. And history proved that that was not
17 correct; that the scientists did accept it. They did
18 look to Bushy Run as a fountain of knowledge about
19 certain kinds of materials, those certainly that they
20 had studied.

21 Q. But you came along some years after Bushy
22 Run was established. And I take it by the time you got
23 there, it was in deed established. And what I'm after
24 is your perception of why Union Carbide had a continuing
25 need to utilize the Bushy Run activities. What did it

1 do for your work and for Union Carbide as you perceived
2 it?

3 A. I think it was part of the attitude of
4 management to - in their attempt to provide a safe work
5 place, safe in the generic sense. Safe - not only safe
6 from physical injury but physical and chemical agents as
7 well. And it was just -- That was just the mentality.
8 We needed more information in order to do this, and that
9 is what the Bushy Run laboratory was set up to do. It
10 was to fill a gap.

11 There were -- In '37 there was practically
12 nothing being done. I guess the Haskell Laboratory was
13 set up about the same time. Maybe that one started in
14 '36. I don't recall. I wish I had my file, because I
15 had all of the information that Henry, in his own
16 reflections, talked about why the corporation set this
17 up. And it was just that; it was to provide
18 information, to develop protective programs for the
19 employees that were going to be in the units making the
20 material. It was as simple as that.

21 Q. Was it your experience at Union Carbide
22 also to use this information for product labeling
23 information that would be used to pass on this
24 information to the users of these materials?

25 A. Yeah. I think they wrote what I referred

1 to as toxicology data sheets or something. I don't
2 recall exactly. I remember they were green along the
3 top. That's all I remember. And they were an overview
4 of the toxicology of the material. And these were
5 provided to people that bought the product, used the
6 products for whatever reason.

7 Q. And what time period were these
8 green-topped sheets utilized?

9 A. I think the first time I ever remember
10 seeing one would have -- I don't know when they started.
11 I think they started them in the early -- As soon as
12 they made the first investigation, they probably wrote
13 up one. They may not have called it that, but they
14 wrote up one. But I think the first one I saw would
15 have been late '50's. It would have been a material
16 that I was probably working on in my industrial hygiene
17 laboratory at my analytical bench. And I can't begin
18 to tell you what it was.

19 Q. And these same green-topped sheets were
20 sent to Union Carbide customers?

21 A. Yes. Yes, they were available. All you
22 had to do was ask for them in most cases. In many cases
23 they sent them with the - with the product.

24 Q. While this may seem like a very simple
25 question, but would you tell us why that was good

1 practice in your view, if you felt it was a good
2 practice, to send this information on with a product.

3 A. I don't know that I had an opinion in those
4 days. It was sort of "How novel. My, my, how novel."
5 I don't know why. I just don't have any idea. You are
6 asking me to go back in time, and I can't do that.

7 Q. Well, as you look back now, was it a good
8 idea?

9 A. Maybe.

10 Q. Can you see some purposes that ---

11 A. (Interrupting) I -- No, I can't see any
12 reason not to; but at the same time I'm not sure I see
13 any reason to do it. I just -- I can't -- I'm sorry. I
14 can't do that. I can't -- I can't take today's
15 knowledge and say, "Would you have used it differently
16 in 1952?" And the answer is I don't know.

17 Q. Would it be fair to say that there were not
18 a whole lot of industrial activities that were as
19 sophisticated as Union Carbide was when it came to
20 having toxicity information in the 1950's?

21 MR. ELLISTON: Objection to form.
22 Calls for speculation.

23 (By Mr. Hobson)

24 Q. Are you saying you might not know?

25 A. Well, the answer is I don't know.

1 Q. And let me tell you, with every question I
2 ask you, if you don't know, that's - that's a fine
3 answer. I mean ---

4 A. (Interrupting) I may have to use that
5 because that one I don't -- I -- I can go from the
6 knowledge that I have today, but I can't tell you when I
7 got the knowledge. And the answer -- I could answer the
8 question with today's knowledge, but I can't answer it
9 with yesterday's knowledge because I don't know at what
10 point it came into this brain up here.

11 Q. And if I ask you a question, and if you'd
12 just read into it, every one of them starts out "if you
13 know."

14 A. Okay.

15 Q. And if you don't know, that's okay.

16 A. All right.

17 Q. And if you don't remember, too. I mean I'm
18 asking you to go back a number of years. And if you
19 really don't remember, that's certainly satisfactory,
20 too.

21 A. Okay.

22 MR. HOBSON: I think we need to
23 change our tape.

24

25 (A BRIEF RECESS WAS TAKEN.)

1 (By Mr. Hobson)

2 Q. I think you told us that you are the author
3 of the article on Dr. Smyth that appeared in the
4 December American Industrial Hygiene Association
5 Journal?

6 A. Right.

7 Q. What led up to the publication of that
8 article?

9 A. The -- I don't know where the concept
10 developed, but sometime ago the association decided that
11 they would have a series of articles on the pioneers of
12 the profession. And he certainly qualified. He was the
13 executive secretary forever and the President of the
14 association and so forth. And because it was - he
15 worked for Union Carbide most of his working career,
16 they asked me to write it. They knew that I knew Henry.
17 I had worked on a board of directors with Henry, and
18 we were close personal friends. So, I got asked to do
19 it; and I was pleased to do it. That's what led up to
20 it.

21 Q. And I think you indicated earlier you
22 accumulated some information that you used in the
23 writing of your article, did you?

24 A. I had some things, but I had to go back to
25 Bushy Run and get the rest of them.

1 Q. What did you do in that regard? How did
2 you go about assembling this information and what did
3 you find?

4 A. Well, I called Arlene DeFrances. Arlene
5 was -- She was the secretary to Henry when Henry was the
6 director. She had a lot of -- I needed a vitae on
7 Henry. She provided the vitae on Henry. There were --
8 She also gave me a series of articles that Henry had
9 written, his comments when he was given the Mellon
10 Institute metal. He made a presentation called "A Few
11 Words" I believe, which I got copies of.

12 The other awards that Henry got - he gave
13 the Cumming's lecture in '57 or '58. It was an unusual
14 lecture. It was an hour long. It had 30 pages of
15 bibliographic references I think. I don't know the
16 exact number, but there was a -- He really did a review
17 of the subject that he chose to do the Cumming's lecture
18 on. That was Henry. Everything which he did, he did it
19 with vengeance. He threw himself into it.

20 Remembrances by C. P. Carpenter. Carp is
21 in Pittsburgh I guess. I talked with him on the
22 telephone. Arlene gave me his number. Carp had written
23 a couple of articles on Henry. Of course, he had worked
24 for him. He was the first person that Henry hired at
25 Mellon Institute - at Bushy Run fellowship, whatever you

1 want to call it - and became the director when Henry
2 retired.

3 So, you know, Carp had all of the insight
4 that I needed. He put me on to the information that
5 allowed me the ability to go back and sort of
6 reconstruct Henry's professional life and some of his
7 personal life as well.

8 Q. Did Dr. Smyth have a relationship with the
9 University of Pittsburgh, also?

10 A. I think so. I'm not sure. He was -- He
11 was a professor there for a while. And after he
12 retired, I think he did -- The University of Pittsburgh?
13 Yeah, maybe -- Maybe -- I don't know. I don't remember.

14 He taught after he retired from Carbide
15 because he could not do - just sit down and do nothing.
16 So, he was a -- Yeah, I guess it was the University of
17 Pittsburgh at that point. And he had been a professor
18 there earlier I think as well in the '30's.

19 Q. What other kinds of teaching activities
20 would Dr. Smyth have done that you were able to
21 determine based on your research or based on your
22 knowledge for that matter?

23 A. Oh, he taught chemistry to seniors. He
24 taught a little bit of toxicology I think in the
25 undergraduate school. This had to be Pittsburgh. I

1 don't -- I'm sorry. I just really -- It's not very
2 clear. There are pieces of it that come back, and you
3 get flashes of recollections. But I just -- I'm afraid
4 I'm scrambling what I'm telling you, and I don't want to
5 do that. I just have to say I don't know. At this
6 point I don't know.

7 Q. Would this be the kind of information that
8 you might have accumulated in your notes when you were
9 doing your research or Dr. Smyth?

10 A. Yeah, if I still had it.

11 Q. I thought you mentioned earlier your Smyth
12 file, that you wished you had looked at it.

13 A. I did. I wish I had the Smyth file that I
14 developed. I don't have it anymore.

15 Q. I see.

16 A. I don't -- This is what I brought. That is
17 my vitae. When I left Carbide, I left all of my files.

18 Q. So, you did the Smyth file while you were
19 at Carbide?

20 A. It was there. And it probably got trashed
21 because I pulled out stuff for the new director to look
22 at. And I told her that she needed to decide whether or
23 not she wanted to keep this or trash it, recycle. And,
24 so, it's either in Bushy Run or it's been recycled in
25 the paper program.

1 Q. Did Dr. Smyth provide any teaching
2 activities for Union Carbide activities?

3 A. Yeah, I guess -- Henry spoke at corporate
4 industrial hygiene meetings. I just have a vague
5 recollection that not only Henry, but also some of his
6 other staff described to some of the newer hygienists in
7 the corporation, some of the newer people working in
8 health protection what the purpose of the laboratory
9 was, how they did range findings studies and things of
10 that type.

11 But I can't give you -- I can't tell you
12 when or where or anything else.

13 Q. You say you were a personal friend of his.
14 I think you said that.

15 A. Uh-huh.

16 Q. And you also told us earlier about how
17 Dr. Smyth was very protective of his independence from I
18 guess ---

19 A. (Interrupting) From his management. From
20 his management.

21 Q. What was your perception of how or where he
22 fit into Union Carbide's management. I don't want to
23 say who directed him because that may not be appropriate
24 under these circumstances. But how did he fit into
25 Union Carbide's management as you perceived it?

1 A. I don't remember frankly. It seems to me
2 like he reported to a Vice-president. I don't think he
3 reported to the medical director. I think he reported
4 to a Vice-president. It's too fuzzy. I just don't
5 know.

6 Q. You mentioned Dr. Carpenter was the first
7 person he hired at Bushy Run I think or wherever it was
8 in those days.

9 A. (Witness nodding affirmatively)

10 Q. Where is Dr. Carpenter now? Is he still in
11 Pittsburgh you think?

12 A. Yeah, I think somewhere. Carp is getting
13 up there, too. He's 80 - I guess he's 83 or 84 anyway.
14 These are not peers of mine now.

15 Q. Yes, sir.

16 A. I'm considerably younger than these people
17 that we are talking about. Just so we get that record
18 straight.

19 Q. These would be, would it be fair to say,
20 your mentors?

21 A. Henry in every sense of the word was a
22 mentor of mine as were people like Harry Schulte and
23 some other notable hygienists. I feel blessed for
24 having known a person like Henry, for having known Henry
25 personally.

1 Q. As you look back in time now at this
2 relationship you had with Dr. Smyth, when did it begin?
3 How did you first meet Dr. Smyth?

4 A. That's in the article, which I don't have
5 with me. I think the first time I met Henry was at a
6 conference in Atlantic City, which would have been '57 -
7 1957 maybe, or '58. I don't -- I don't recall. I know
8 there had been a big cut back on travel. And everybody
9 was flabbergasted I was there.

10 Again, that was that mentality that I
11 talked about earlier. They cut the travel of the sales
12 people, but they didn't cut the travel of the health
13 professionals. It had to be '57, '58, one of the other.

14 Q. You say it's in the article?

15 A. I think so. I think I have -- The
16 paragraph begins "The first time I met Henry" as I
17 remember. At least I wrote it; it may have gotten cut
18 by the editor, but that's - that's the way I wrote it.

19 Q. This article appeared in the December,
20 1992, American Industrial Hygiene Association Journal?

21 A. I think it -- I was told it was going to be
22 in the December issue. I have not seen the copy because
23 my copy of the journal did not come in. It evidently
24 went to Brookfield, which is where I used to live. So,
25 I have not seen the article.

1 Q. I take it, though, when you wrote the
2 article ---

3 A. (Interrupting) I have to stand up.

4 MR. HOBSON: Let's take a break.

5

6 (A LUNCH RECESS WAS TAKEN.)

7

8 (By Mr. Hobson)

9 Q. Mr. Bolton, we are ready to start again
10 after lunch here, sir. Did you bring some things with
11 you to the deposition today, sir?

12 A. (Tendering) Curriculum Vitae. There are
13 things that -- I don't have any records. I took no
14 papers from Carbide when I retired. As a matter of
15 fact, everything which was in my office was cleaned out
16 and abandoned. And it's probably in Vermont now.

17 But there is two videotapes. This is one
18 that was made in 1979 at a conference at Georgia Tech.
19 This one is one that was made in-house by the Linde
20 division. And it represented a concern that we had
21 about a cylinder that had what appeared to be an
22 engineering flaw in it. And we made this to get the
23 word out that, "Hey, don't put toxic gases in this
24 cylinder" - "in these cylinders and return all of them
25 to us," that kind of thing. So, that -- I don't know

1 why I have that, except that I have a -- This was a
2 conference that was at Texas A & M. I don't remember
3 when it was now. It was about the same time.

4 Q. It sounds like a Ralph Vernon plot to me.

5 A. Yeah, it was. Ralph conned me to coming
6 down there and making a presentation to the -- Well,
7 anyway, the presentation I made to the safety engineers
8 is over on 347 or something like that. This is the only
9 other book that I had, and this is a book which we used
10 beginning in 1989 or something like that when we began
11 to teach our -- We had a cadre of people that we taught
12 to do risk assessments, quantitative risk assessments.
13 And that was -- A couple of chapters in there were
14 germane to that particular training. So, we bought
15 these. And the person - the staff member decided that
16 his boss needed one. So, I have one.

17 Q. Let me see if I can identify some of these
18 for the record. The last document that you have handed
19 me is a text entitled "Guidelines for Chemical Process,
20 Quantitative Risk Analysis from the Center for Chemical
21 Process Safety of the American Institute of Chemical
22 Engineers, 345 East 47th Street, New York, New York
23 10017." And it bears a copyright of 1989. And I was
24 looking for the publisher. Apparently it was published
25 by the American Institute of Chemical Engineers.

1 A. I think that's right, but I'm not sure.

2 Q. I mean that's what it does say on the
3 front. But it appears to be a publication that is
4 available from the American Institute of Chemical
5 Engineers. All right, sir.

6 The other text that you brought,
7 paperbound, "New Directions in Safety." Edited with
8 commentary by Ted Ferry, F-e-r-r-y. Also an indication
9 on the cover of the American Society of Safety
10 Engineers. The preface has a date of January, 1985.

11 A. But it was earlier than that. It had to be
12 '82 or '83 as I recall because they put this together.

13 Q. I have not seen a publication date listed,
14 although it may be in here somewhere.

15 A. It's probably hidden in there.

16 Q. On the back of the text it lists the
17 American Society of Safety Engineers, 850 Busse Highway,
18 B-u-s-s-e, Park Ridge, Illinois 60068. And you say you
19 have one section in here that you presented yourself,
20 Mr. Bolton?

21 A. Yeah. I think it's page -- It starts on
22 347 or something like that. It's over ...

23 Q. Right. "Challenge Of The '80's: The
24 Mystical Safety - Industrial Hygiene Interface."

25 A. Right.

1 Q. If we could, perhaps at the next break, I
2 will ask the Court Reporter if we can get a copy of just
3 that section made from the text.

4 A. Okay.

5 Q. Thank you, sir. Then you have identified
6 two videotapes. Are these the working copies that you
7 maintain yourself?

8 A. They are two copies that I was given.
9 Well, this one -- This one was one from Georgia Tech.
10 And it was on a big three-quarter-inch tape I guess.
11 And I asked the company to put it on half-inch VHS so I
12 could keep it. It's just a memento; that's all.

13 Q. Are these tapes that you'd like to have
14 back, or ---

15 A. (Interrupting) Oh, yeah.

16 Q. --- did you bring these for me?

17 A. Oh, no. No. That's the only ones I have.

18 Q. Could we ask you to at our expense make a
19 copy of these for us?

20 A. Sure.

21 Q. If they are your originals, I had just as
22 soon you give us the copies.

23 A. Well, they are not -- They are not
24 originals. They are original to me.

25 Q. Right.

1 A. No, not really. There probably was
2 another -- I would be guessing. I don't know how many
3 others there were. There were several others.

4 Q. Was it 1 or 2 or 20 or 30 or 50 or 100?

5 A. It certainly wasn't 50 or 100. But I don't
6 honestly know. Maybe -- Probably my best guess is 12 or
7 15. I really have no way to check the accuracy of that
8 statement.

9 Q. And about how many employees would the
10 certified industrial hygienist, both corporate and in
11 the facility levels, be providing services for? How big
12 was Union Carbide then?

13 A. That was '78; right?

14 Q. Yes, sir.

15 A. It must have been -- It would be little
16 more than a guess. My guess is maybe 45,000 worldwide,
17 20,000 domestic, or something - something in that order.
18 I don't honestly know. That was -- That was before the
19 businesses were divested that consumer products -- And
20 they took a lot of people with them. So, I just -- I
21 don't know. I can't give you a good answer.

22 Q. When you became the corporate director of
23 industrial hygiene, what kinds of businesses or
24 divisions of Union Carbide's businesses were there that
25 you were responsible for? How can we talk about the

1 which one it is. 6357 or something like that, aluminum,
2 was subject to grain boundary creep cracking, which is a
3 metallurgical term that means that the crack develops
4 because of an impurity and continues to develop.

5 And our investigation showed that this
6 cylinder would continue to crack until it failed. It
7 did not fail catastrophically. It simply leaked the
8 contents. It was a small hairline fracture that
9 appeared in the - in the cylinder.

10 And as a result, we immediately pulled out
11 the 6350, whatever it was, aluminum cylinders out of
12 toxic gas service. We continued to use that cylinder to
13 put inert gases in, but we would not put toxic gases in.
14 We were the only company in industry that did that.

15 They continued to use them even though we
16 made this tape available to everyone. And it cost us
17 because many of our customers would not accept the gases
18 that we were making in anything but aluminum. And we
19 didn't have -- The 6061 alloy had not been approved for
20 aluminum cylinder manufacture yet, and it was the only
21 other one; and it was not subject to grain boundary
22 creep cracking. It was because of a manganese
23 contamination as I remember. And we simply pulled it
24 off of the market. We developed a stainless steel
25 cylinder. And you can image, it was much, much more

1 expensive than the aluminum cylinder was - to replace
2 the aluminum cylinder in the toxic gas service. We are
3 putting things like arsine and phosphine, diborane and
4 things like that in these cylinders to transport to
5 customers, particularly in the electronic chip industry.
6 So, that's what this tape is all about.

7 Q. But your competitors continued to use the
8 same aluminum cylinders?

9 A. As far as I know not a single one of them
10 did what we did. We put a bounty on the - on the
11 cylinders that were out there.

12 Q. To get them back?

13 A. To try to get them back. We told the
14 customer if they found them and would send them to us,
15 we would send them a nice, new, crisp 100 bill. We
16 never got all of the cylinders back. We were able to
17 account for all but I think 36 or 37. We figured they
18 were in a landfill somewhere.

19 So -- But that was -- That was an example -
20 it's another example of a company's concern about people
21 potentially being exposed.

22 Q. Did anyone actually get harmed because of
23 any of these potential leaks?

24 A. We don't know. You know, companies aren't
25 in a mood to give you information that might indicate

1 that they are running an operation that is unsafe. They
2 may have -- As far as -- They could have cases on us
3 right now, and we don't really know.

4 Q. But Union Carbide never had any?

5 A. Union Carbide did not.

6 Q. And you acted out of an abundance of
7 precaution rather than wait for somebody to get hurt?

8 A. Oh, absolutely. Absolutely.

9 Q. And I take it you found that to be the
10 prudent thing to do?

11 A. To me it's always been the prudent thing.
12 You err on the side of safety, not the other way around.

13 Q. You don't have to wait to see the bodies
14 before you take action?

15 A. No.

16 MR. ELLISTON: Objection to the
17 form, argumentative, leading.

18 (By Mr. Hobson)

19 Q. I certainly didn't mean to argue with you,
20 Mr. Bolton. I hope you didn't take it that way, sir.

21 Your Curriculum Vitae that you handed me, I
22 take it that this is an accurate reflection of your work
23 history over the years, is it not?

24 A. It's the most recent one, and it's the only
25 one that I have.

1 Q. And I see that it includes a list of
2 publications of yours.

3 A. Right.

4 Q. Would this be all of your publications that
5 are in the scientific literature as far as you are
6 aware?

7 A. I didn't look at it. I suspect that it
8 does. But -- No, I don't think so. I think there is
9 probably a couple of others. But I can't tell you what
10 the names of them were. This -- This -- These
11 publications only go up to '73 or '74.

12 I made a presentation at the Industrial
13 Hygiene Conference in '86 or '87 on managing risk as I
14 remember. That's not exactly the title, but it was
15 subsequently published in the journal. And there is
16 probably a couple of others that talk about managing
17 safety in the '80's or managing safety in the '90's or,
18 you know, something like that. So, they are not all
19 here.

20 Q. Through the last date of the latest one
21 listed there, would all of the earlier publications of
22 yours be in the list as far as you can determine?

23 A. Yeah. It appears that everything -- I
24 can't remember anything earlier than '73. There is the
25 NSF work. There is lead in whole blood. That's --

1 That's early. This is early. Yeah. Yeah, I think this
2 is probably everything up to 1978. There may be two or
3 three after 1978.

4 I don't mind you keeping that, but that's
5 the only copy I have. If you want to make a copy, I
6 would -- Go ahead and tag it if you want to, but make me
7 a copy and give me a copy back.

8 Q. All right, sir. That's fine.

9 A. It seems like every time I turn around
10 somebody wants a vitae for some reason or another.

11 Q. We have a numbering system that we have
12 been using and it incorporates your date of birth. We
13 have marked your Curriculum Vitae as Plaintiff's Exhibit
14 280227, capital BOL, capital, NEW, capital E. And just
15 for our purposes, could you tell me if in fact we've
16 gotten that number on your C.V. (Tendering)

17 A. (Reviewing) Yeah, 20 -- 2/27/28. It was
18 the 28th year, 2nd month, 27th day?

19 Q. Yes, sir.

20 A. You do it backwards?

21 Q. Right. You went to Union Carbide's
22 corporate group according to your C.V. in January of
23 '78, to become the Corporate Director of Industrial
24 Hygiene?

25 A. I went up as the assistant director of

1 industrial hygiene early in -- I went up in January.
2 And in late '78 I think I was promoted to Director of
3 Industrial Hygiene for the corporation. I don't
4 remember the exact dates. They are probably not there.
5 But it was October or November, something like that.

6 Q. How did your duties change when you became
7 either the associate director or director as opposed to
8 what you were doing at Oak Ridge?

9 A. Well, if anything, it distanced me more
10 from the - from the technical parts of industrial
11 hygiene than I had ever been. Because suddenly I'm part
12 of - I'm part of the management structure in such a way
13 that I'm not actually doing the work. I'm not really
14 even supervising directly the work, even though I had
15 several people that reported directly to me, certified
16 industrial hygienists and so forth.

17 They were professional enough that they
18 knew what their jobs were, and I didn't really have to
19 do it. It was not my job to do the work. But it was my
20 job to make the climate, the environment to provide the
21 funds; be sure that the budget was large enough for them
22 to do their job. It was -- I was the enabler I guess is
23 the best way I can put it.

24 Q. You were the management interface?

25 A. Right.

1 Q. How big was the industrial hygiene program
2 at Union Carbide Corporation when you became the
3 director?

4 A. Let's see. There was one, two, three,
5 four, five, six, seven. I think there were seven
6 certified - eight certified industrial hygienists and
7 myself. Now, that's the corporate group. That's the
8 group that really doesn't do the work necessarily but
9 coordinates to be sure that the appropriate things are
10 done.

11 Q. So, then, out in the operating divisions
12 there would be other certified industrial hygienists and
13 their staff who were actually implementing programs and
14 running the day-to-day activities in the facilities?

15 A. They may not -- Every location may not have
16 had an - had a certified industrial hygienist. The
17 location had whatever was appropriate for its size and
18 for the - for the difficulty of the protection program
19 and so forth.

20 Q. Other than the eight certified industrial
21 hygienists at the corporate group that you were
22 responsible for, can you give me your best estimate of
23 how many other certified industrial hygienists were in
24 Union Carbide's employ when you became the director in
25 the late '70's?

1 A. No, not really. There probably was
2 another -- I would be guessing. I don't know how many
3 others there were. There were several others.

4 Q. Was it 1 or 2 or 20 or 30 or 50 or 100?

5 A. It certainly wasn't 50 or 100. But I don't
6 honestly know. Maybe -- Probably my best guess is 12 or
7 15. I really have no way to check the accuracy of that
8 statement.

9 Q. And about how many employees would the
10 certified industrial hygienist, both corporate and in
11 the facility levels, be providing services for? How big
12 was Union Carbide then?

13 A. That was '78; right?

14 Q. Yes, sir.

15 A. It must have been -- It would be little
16 more than a guess. My guess is maybe 45,000 worldwide,
17 20,000 domestic, or something - something in that order.
18 I don't honestly know. That was -- That was before the
19 businesses were divested that consumer products -- And
20 they took a lot of people with them. So, I just -- I
21 don't know. I can't give you a good answer.

22 Q. When you became the corporate director of
23 industrial hygiene, what kinds of businesses or
24 divisions of Union Carbide's businesses were there that
25 you were responsible for? How can we talk about the

1 organization of the corporation so I will be able to
2 communicate with you?

3 A. Well, there were -- The divisions were
4 assigned -- Each of the hygienists were assigned certain
5 divisions. And it was their job to - to either do the
6 work in some cases, and in the smaller locations the
7 hygienist ended up doing the job. In the larger
8 locations you would have on-site people. And their
9 responsibility was to be sure that what they were doing
10 was appropriate.

11 The -- I had no one assigned for the
12 chemicals and plastics operations because all of the
13 chemicals and plastics plants were sufficiently large,
14 that they had - they had industrial hygiene staffs at
15 this point as far as I can remember. I can't -- I can't
16 give you names or anything like that. But they were all
17 fairly large plants.

18 The hygienists that worked - that reported
19 to me were assigned divisions such as the battery
20 division, home and automotive, films packaging. Nuclear
21 also had their own industrial hygienists. So, they were
22 not -- They were not covered. And they were operating
23 under a different set of standards than the rest of the
24 corporation was under the D.O.E.

25 Linde was another one of the operating

1 divisions. There was a whole bunch of other divisions,
2 and I can't -- They were divested around that time. The
3 Sterling Forest activity, I can't recall what division
4 that was. I'm sure that I have left out a couple of
5 very large divisions; that if they knew I had left them
6 out, they would be upset with me. I just -- At this
7 point I don't recall. I don't recall the others.

8 Q. What was Sterling Forest?

9 A. Sterling Forest at one time was part of the
10 nuclear operation. But then they separated it again
11 into -- They called it medical -- They called it -- It
12 was a different division, Sterling Forest was. And they
13 were in the business of making medical devices for
14 hospitals and so forth, providing radioisotopes and
15 things like that. I was trying to remember what the
16 melter was that they - that they used. I don't recall
17 whether it was strontium or -- Something like that was
18 used in one of the special medical tests. But then that
19 whole facility was shut down shortly after that. It was
20 somewhere around the '80's I guess, the early '80's -
21 1980, 1981.

22 Q. You mentioned there was a battery division?

23 A. Battery.

24 Q. What was that comprised of?

25 A. They made Eveready batteries. The cat with

1 nine lives. They had every size battery you can imagine
2 from microbatteries to batteries that only lasted 35
3 seconds.

4 Q. And how many different manufacturing
5 facilities did Eveready have or the battery division?

6 A. I don't recall. There were -- There were
7 several. Half a dozen anyway. That number could be off
8 by a factor of two.

9 Q. Now, home and auto?

10 A. Home and automotive. It was just what the
11 name implies. It was Glad Wrap, the Prestone
12 Antifreeze, car care products and things of that type.
13 Certainly Glad was the biggest - biggest home product
14 that we made.

15 Q. How did, if you know, the chemicals and
16 plastics where materials were manufactured I guess for -
17 it was -- It seems to me that you got people making
18 chemicals and plastics, and Prestone Antifreeze being a
19 chemical, that those two kind of fit together somehow.

20 A. They did, in fact, fit together. The
21 glycol - ethylene glycol that was manufactured by C & P
22 was sold to home and automotive to mix with the metallic
23 min and so forth to make the antifreeze - the Prestone
24 Antifreeze, and the other antifreeze, too. We made
25 other antifreezes. I don't recall any of the names;

1 but, you know, we probably made one for Sears and some
2 of the other quick ones. And the only difference being
3 the composition of the inhibitors that were put in.

4 Q. You would private label other company's
5 antifreeze ---

6 A. (Interrupting) Right.

7 Q. --- for them is what you are saying?

8 A. Right. They told us what they wanted in
9 the way of the additive. We put in, according to their
10 additive, and just simply mixed it with the glycol.

11 Q. Was there an industrial hygienist who was
12 assigned home and auto?

13 A. Yes.

14 Q. And who was that?

15 A. Please don't ask me that. I don't -- I
16 can't tell you. I don't know. Home and automotive. I
17 don't know.

18 Q. All right, sir.

19 A. We -- They -- We scrambled the assignments
20 every now and then. And I just don't remember who had
21 what at this point in time.

22 Q. By scrambling, you mean give people cross
23 training so they would know more about the products?

24 A. So that they would be able to fill in.
25 Each hygienist as I remember had a back-up assignment.

1 So that if you were assigned the home and automotive,
2 you probably had films packaging as a secondary
3 assignment. Not to do the work, but to be aware of what
4 the principal hygienist was doing so that if he got sick
5 or incapacitated or whatever - for whatever reason
6 couldn't do it, he could go and fill in for him on a
7 short-term basis. And that's why I can't remember the
8 names, who was assigned to what.

9 Q. You mentioned films packaging. What kind
10 of products did films packaging involve?

11 A. If you ate hot dogs, the chances are that
12 they were cooked in our sausage casing because we had a
13 very large share of the hot dog casing market. Food
14 casings, that's what -- Films packaging was food casings
15 made by the -- I forget the process. But anyway, it
16 was -- It was a one-time, throw-away packaging that the
17 meat was actually cooked in.

18 Q. And you wouldn't eat the casing?

19 A. Oh, no.

20 Q. You would take that off before you would
21 eat it; right?

22 A. No. You could not. It was a cotton - made
23 from cotton fiber. But it had been converted to
24 something very close to plastic I guess. But it was
25 cooked in it. And then the casing was stripped off

1 before it was ever put in the packages to be sold in the
2 supermarkets.

3 Q. Linde - can you tell us a little bit about
4 what Linde was, please?

5 A. Linde is a division that has always been
6 associated with air separation facilities. We'd run big
7 air separation plants to separate the atmosphere,
8 oxygen, nitrogen. The argon we'd refine out of the oil
9 wells and so forth. The rare gases are collected, and
10 they are subsequently refined even further.

11 So, if you wanted to be superman, you would
12 have to get the krypton from us. I mean it was that --
13 We did everything -- Everything -- Every gas that was in
14 the air, we separated it and it was saved because the
15 rare gases were very, very important to us. They were
16 very expensive. They were expensive to make, expensive
17 to bottle and expensive to purify. And we'd provide
18 oxygen to the hospitals, either in liquid form or
19 pressurized systems, whatever.

20 We had a series of acetylene plants. We
21 made acetylene, bottled acetylene, both chemically -
22 chemical acetylene as well as generated acetylenes,
23 acetylene that was made from calcium carbide, for
24 example.

25 Chemical acetylene was stripped out of the

1 process streams at places like Taft, Louisiana. We
2 bottled acetylene and sent back the rest of it and
3 simply paid them for what we took out. We had 12 or 14
4 specialty gas locations, all very small. Keasbey, New
5 Jersey is the largest one. It's like 70 employees.
6 Typically the plants in Linde were all very small. It
7 would have been unusual for an industrial hygiene to be
8 on site.

9 An air separation plant that separates 300
10 tons of oxygen a day might have as many as 30 people
11 working it period. The Mims plant, for example, it
12 provides all of the oxygen and gases for the Cape
13 Canaveral - or Cape Kennedy, if you prefer. It's a very
14 large air separation plant, but it only has 27 or 28
15 employees.

16 So, that's -- Most of the Linde operations
17 were very small. Most of the hygienists spent most of
18 their time on the specialty gas plants because that's
19 where, if we were going to get into trouble, we would
20 get into trouble. There were very rigid policies and
21 procedures that had to be followed.

22 Q. Did I understand you to say earlier in the
23 deposition that you at one time worked for the Linde
24 group itself?

25 A. Yes. Well, these names -- You almost need

1 a road map because the names change as you go into it.
2 When I moved to the Linde Division in 1982, it was in
3 fact the Linde Division. That's what it was called.
4 Shortly after that they made it -- They made -- It must
5 have been '85 or something like that, maybe '84, it was
6 changed to the Union Carbide Industrial Gases Group.

7 The corporation was split into - into
8 really two entities that you could identify. And Linde
9 was in that - was one of them; and the chemicals and
10 plastics was the other. It went then from Union Carbide
11 Industrial Gases Group to Union Carbide Industrial
12 Gases, Inc., which subsequently in 1991 I think became
13 Praxair. Praxair is a free-standing corporation traded
14 on the New York Stock Exchange. So that you sort of get
15 a feeling - Linde -- Linde is the old German Linde
16 company that was started by Von Linde 100 years ago.

17 So, that sort of gives you a feeling --
18 When I talk about Linde, it's still the Linde Division
19 domestically even though it's called Praxair because
20 that's such a recognizable name.

21 Q. So, now I'm looking here at your C.V. and
22 trying to fit this into my mind. From '78 through '82
23 you did industrial hygiene work for all of Union Carbide
24 Corporation, every one of these divisions?

25 A. I provided the advice and service; right.

1 Q. And then from '82 to '91 you were more
2 focused; you went to the world-wide operations Union
3 Carbide Industrial Gases Group?

4 A. Right.

5 Q. So, after '82 you really didn't have
6 interface with the chemicals and plastics and
7 battery?

8 A. Not really. No formal - no formal
9 interface. We didn't ignore each other.

10 Q. Right.

11 A. But there was no formal interface.

12 Q. Your day-to-day job activities were
13 confined to the Union Carbide Industrial Gases Group?

14 A. Right.

15 Q. Mr. Bolton, I would like to -- Just so you
16 will know, I'm going to change direction a little bit
17 here. I wanted to ask you some questions about
18 asbestos. When can you remember in your training as
19 an industrial hygienist that you began to learn any
20 of the potential health hazards associated with
21 asbestos?

22 A. Well, there was always an asbestosis
23 potential. We knew that in the - I guess in the early
24 '50's and perhaps even before that. I don't -- I don't
25 recall because I came in in '52. It was a concern. It

1 was not a major concern, but it was a concern. Probably
2 not until the - perhaps the late '60's, maybe even -
3 maybe even a little bit later than that. It could have
4 been in the early '70's that it really came to the
5 forefront when -- I was trying to remember when Selikoff
6 published all of his articles. I don't honestly
7 remember at this point.

8 Q. Were you aware of some of the concerns
9 of asbestos being a carcinogen even before Dr. Selikoff
10 published his work and gave his presentations?

11 A. No.

12 Q. What products as far as you are aware did
13 Union Carbide manufacture that either were or contained
14 asbestos?

15 A. I don't know. We have -- We had a -- We
16 had an asbestos mine in California. But I don't
17 honestly know which one it was. It may have been
18 chrysotile or crocidolite or -- I don't know. I just
19 don't remember.

20 Q. Was this mine in California part of one of
21 these other divisions you told me about?

22 A. Metals and mining division. Thank you. I
23 knew I had forgotten one.

24 MR. BLANKS: Just a minor one.

25 THE WITNESS: Yes, a small one.

1 A. All of the uranium mines out in the west
2 and everything else.

3 (By Mr. Hobson)

4 Q. Did you, when you were working as the
5 corporate director of industrial hygiene from '78 to
6 '82, have under your responsibility the metals and
7 mining division?

8 A. They had a staff in Grand Junction. I'm
9 not sure I can call the names of the people. There were
10 several there. They had a health physics group
11 because they were mining uranium. And some of the
12 tailings were - had fairly significant quantities of
13 radium and so forth, which is always associated with
14 uranium.

15 I don't remember the names of those people.
16 There was three or four people or five, something like
17 that. And then they had -- The asbestos mining
18 operation was only done in the Summertime because in the
19 wintertime it was in the mountains and it was under
20 three feet of snow. So, you didn't -- You just didn't
21 mine it in the wintertime.

22 It was about 90 miles as I remember from
23 King City, California. The King City plant processed
24 the ore that was mined out of the ground and brought by
25 truck. So, it was trucked in from wherever the mine

1 was. I was never at the mine. I was at the King City
2 plant. The King City plant was a very small operation
3 peoplewise. It only had I want to say 25 or 30 people.
4 That number may be off a little bit, but it's not off
5 much. It was -- Peoplewise it was a very small plant.
6 It was such -- It was such a small plant that the person
7 who did the industrial hygiene work knew precisely who
8 was still smoking. And they were the ones that he went
9 every day and beat on and said, "You are not supposed to
10 smoke. You have got to quit that foolishness right
11 now." And they had mounted smoke - anti-smoke campaigns
12 and everything; the whole nine yards.

13 So, he knew everybody by their first name
14 and they all knew him. And the smokers ran from him
15 when he got close because they didn't want to listen to
16 another lecture.

17 I think that's the only time I was ever
18 there was that one time. That would have been 1981 or
19 maybe 1982, something like that.

20 Q. When you say the industrial hygienist for
21 metals and mining was in Grand Junction, is that
22 Colorado?

23 A. Colorado, yeah. There was a -- There was a
24 hygienist on my staff that did the coordinating - Paul
25 McDaniel, I believe. I think that's right. Maybe it

1 was one of the others. I -- I don't remember. I don't
2 remember.

3 So, he was the one that provided any added
4 technical support that the people located in Grand
5 Junction had to have.

6 Q. Was the King City plant that you visited,
7 was that a dedicated facility for just this asbestos
8 mine; or did they do other things there?

9 A. No, they only -- They only purified the
10 asbestos.

11 Q. Do you know what uses this asbestos
12 material was put to after - in its use as a product?

13 A. I think at that point in time there were
14 still some - some pure asbestos that was being used for
15 research purposes. But I think the bulk of it was
16 probably going into -- Oh, it was being bound in brake
17 linings and tile and things like that. I guess I don't
18 remember what it was being sold for. I just don't
19 remember.

20 I know it -- I know at one time it was
21 going into the tile and the brake linings.

22 Q. Would you know any of the history of the
23 mine like when it was started or when Union Carbide
24 obtained it or anything like that?

25 A. No.

1 Q. Are you aware of any other Union Carbide
2 products that either were or contained asbestos while
3 you were employed?

4 A. No, I think that's the only one.

5 Q. Did you use any asbestos materials in the -
6 what you've been calling the Linde Division as far as in
7 packaging of products or gases?

8 A. Yeah. Some of the older -- Some of the
9 older insulation is asbestos, of course. It's all
10 identified. It's all tagged. It's been color-coded so
11 that you know when you take it out, you are supposed to
12 do some certain things.

13 Q. You are talking about there in your piping
14 and your equipment?

15 A. Well, yeah. You have got ultra-low
16 temperatures. And in order to get there, you've got to
17 really insulate. You have to use almost super
18 insulation in order to get down to the minus
19 temperatures that we are talking about in liquefying
20 liquid nitrogen and oxygen and so forth.

21 Q. And it's my recollection somewhere in the
22 back of my mind that at one time asbestos was used in
23 acetylene cylinders somewhat.

24 A. Yes.

25 Q. How is that?

1 A. I don't know. The -- That part of the
2 operation was sold - had already been sold before I went
3 to Linde in '82. I don't even remember who bought it.
4 It was -- It was the plant at Speedway.

5 Q. It was the what?

6 A. Speedway, Indiana. And that's right across
7 from the Indianapolis 500 race track. That's why it's
8 called Speedway. They were loaded with - with asbestos.
9 And the asbestos fiber was what held the - the
10 solvent -- Acetone is a -- Acetylene is a very
11 unforgiving type of chemical. It's very reactive. In
12 order to put it into bottles and cylinders, you have to
13 dissolve it in something. So, it was dissolved in
14 either acetone or DMF or something like that in order to
15 keep it from going berserk and polymerizing. So, they
16 were -- You are right. They were used in the cylinders.
17 I had forgotten that.

18 Q. And is that an operation that you ever had
19 any professional involvement with?

20 A. I never saw the operation.

21 Q. The asbestos is not part of the cylinder.
22 It's something that is put in the cylinder along with
23 the solvent and the ---

24 A. (Interrupting) Right. The cylinder -- I
25 forget. It was put in as a slurry as I recall. And I'm

1 really guessing now. And then it was baked - the
2 cylinders were baked out, and the water was driven off
3 with heat. And that's what formed the super support
4 that contained the solvent that you used to dissolve the
5 acetylene.

6 Q. Would there have been a particular Union
7 Carbide industrial hygienist that you would look to to
8 give more information or detailed information about that
9 activity?

10 A. Yeah. But I don't know who it was. I
11 don't remember who it was at this point.

12 Q. Would it have been somebody from the Linde
13 group?

14 A. Probably not. Although it might - it might
15 have. It might have. I'm sorry. I just -- I don't
16 know. I don't know. I don't recall.

17 Q. If it wouldn't have been someone in the
18 Linde group, which other group might it have been?

19 A. It would have been the corporate group that
20 I had. Not necessarily -- It wasn't me obviously
21 because I was -- I think that business had already been
22 divested when I went to the corporation. It seems to me
23 like it was. And I'm sorry, it's just been too long. I
24 don't remember. But it probably was -- It probably was
25 somebody from the corporate industrial hygiene group.

1 If I had to guess, that's what I would guess.

2 Q. Can you think of any other products of
3 Union Carbide's in the past that had - either were or
4 contained asbestos?

5 A. I can't -- I can't remember any.

6 Q. We have some testimony somewhere that some
7 antifreezes contained asbestos. Would you know anything
8 about that?

9 A. No. No. That's news to me if that's the
10 case.

11 Q. What about radiator stop leaks; would you
12 know if they have ever contained asbestos?

13 A. No.

14 Q. Would you know if that's an application of
15 asbestos or would that too be ---

16 A. (Interrupting) Not at all. Not at all. I
17 have no knowledge about that at all.

18 Q. There is a product that I have known I
19 guess by a trade name called Bakelite.

20 A. Uh-huh.

21 Q. Or Bakelite. Do you recognize that
22 product?

23 A. But I don't think that had asbestos in it.
24 That was a -- That was a resin. That was a plastic
25 resin.

1 Q. A phenolic as I recall.

2 A. Phenolic. Thank you. I couldn't remember
3 the word.

4 Q. Which division would have handled the
5 Bakelite material?

6 A. The Bakelite Division.

7 Q. Another one we didn't list?

8 A. Well, no, the Bakelite Division went away.
9 Bakelite goes way, way back. So, you know, that's going
10 to be in the early '50's or something like that. Carbon
11 Products was another division that - stuff that the
12 Bakelite Division was doing eventually ended up -
13 whatever was the residual - ended up in the Carbon
14 Products Division.

15 Q. You wouldn't know one way or the other if
16 Bakelite ever had asbestos in it?

17 A. I just don't know. I just don't know.

18 Q. Any other products that you might think of
19 that either were asbestos or contained asbestos that
20 were Union Carbide's now that we have had a few more
21 moments?

22 A. Not that I recall. I may be missing
23 something, but I just don't remember.

24 Q. Did the welding products company - I don't
25 know if that was Linde or whatever ---

1 A. (Interrupting) That was Linde.

2 Q. Did they make stick welding rods or sell
3 stick welding rods?

4 A. I don't think we ever made stick rods. I
5 don't know. I don't remember whether we made stick rods
6 or not.

7 Q. Would you know one way or the other whether
8 stick rods ever contained asbestos in their coatings?

9 A. No.

10 Q. Going back a little bit if I could, the
11 King City plant that you told me you visited in about
12 '81 or '82, could you describe that operation for us as
13 best you recall if there is anything left in your mind's
14 eye about that visit.

15 A. The one thing I remember is that everything
16 was wet. The floors were wet. That whole process --
17 The whole process was wet. It was done under very
18 carefully controlled conditions. There was a lot of
19 ventilation. And I can't -- I can't give you details
20 about the ventilation, but there was a lot of
21 ventilation involved, especially at the point when the
22 asbestos had been cleaned up of all of the residual
23 trash that was in it from being mined, the dirt and so
24 forth to the point where it was dry. At that point
25 there was -- It was almost a glove-box operation as I

1 remember.

2 Q. And by "glove-box operation" ---

3 A. (Interrupting) I mean it was so tight that
4 not even a particle or a fiber could get out of that
5 operation. It was rigidly controlled. I remember that.
6 That's all I remember.

7 Q. You say that you remember everything being
8 wet.

9 A. Well, the whole process was wet. And the
10 way that they kept the problem - the potential problem
11 of asbestos exposure down was by doing it in a wet
12 process. The asbestos from the mines was brought out
13 and almost put in a lagoon kind of thing. It was put in
14 a - at an earthen mound. And it was put down in there.
15 And it was always -- I don't ever remember them not
16 being wet frankly. The asbestos as it was delivered was
17 almost washed out of the truck with a fire hose as I
18 recall.

19 So, everything was maintained wet. And it
20 was kept in that state until they ended up at the
21 bagging operation, which as I said was -- As I remember
22 it was almost a glove-box operation where no -- There
23 was absolutely no way for any contact with people from
24 the dust from this operation.

25 Q. So, by handling the material wet, it wasn't

1 that it just was a wet operation; you intentionally made
2 it wet as a dust control ---

3 A. (Interrupting) The process was designed to
4 be wet. And as a result, you know, there was always --
5 It seemed like the floor was always wet as I recall.

6 Q. Did you have a chance to learn whether or
7 not there was any kind of a medical monitoring program
8 for the folks there at the King City plant?

9 A. Yeah, I alluded to it earlier when I said
10 that the - the person in charge of the industrial
11 hygiene program for the plant knew who smoked and who
12 didn't and who quit and when they had quit and how long
13 they had been stopped and so forth.

14 They had a very, very carefully
15 orchestrated medical program. I don't remember the
16 details of it. But it had all the features that one
17 would anticipate for an asbestos - potential asbestos
18 problem.

19 Q. I take it that the reason the ---

20 A. (Interrupting) They had routine periodic
21 examinations. I think the asbestos people were probably
22 on a 12-month cycle regardless of their age. Most
23 people in the corporation, depending on what they were
24 working with, were at an age -- If you were less than
25 25, you got a physical, a complete hands-on doctor's

1 physical examination once every three years as I
2 remember or four maybe. If you were more than 39, you
3 got one every two years. And if you were 55 and older,
4 you got one every 12 months, whether you needed it or
5 not kind of thing.

6 But these people as I remember were --
7 There was a clinic that did all of the work at King
8 City - in King City, California that we -- The men were
9 sent up there. They did chest films and whatever -
10 whatever the doctors do in terms of medical
11 surveillance. I don't remember what the other details
12 were. But they probably did pulmonary function studies
13 would be my guess, plus - plus the X ray. They probably
14 did some other things. I don't know what it would have
15 been.

16 Q. I take it the interest in who smoked and
17 when they stopped and encouraging those who did smoke to
18 stop was because of the recognition of synergism between
19 asbestos and smoking?

20 MR. ELLISTON: Objection to form;
21 leading.

22 (By Mr. Hobson)

23 Q. I'm sorry. I thought I was permitted to
24 ask a leading question, Mr. Bolton. But anyway, if you
25 could give me an answer, I would appreciate it.

1 A. Tell me the question again.

2 Q. Yes, sir. My question was: I take it that
3 the interest that you told us about in keeping up with
4 who smoked and who stopped and when they stopped or
5 encouraging those who smoked to stop was because of the
6 concerns of synergism between asbestos exposure and
7 cigarette smoking?

8 MR. ELLISTON: The same
9 objection; leading.

10 A. I don't honestly know. I would -- I could
11 give you a qualified yes, but I would hasten to add that
12 I don't know whether that was - that connection was made
13 before the - before the radon exposure and coincidental
14 cigarette smoking was made by Saccamono. Saccamono was
15 a physician out in Grand Junction, Colorado who did all
16 of the medical studies. He ran a Radon daughters study
17 in the mining operations.

18 And it was at that point that everybody
19 began to realize that, hey, you know, there is something
20 to this business of cigarette smoking being part of the
21 causative agent because you -- He could -- He could see
22 that there was no cancer in nonsmoking miners. I
23 believe he's the one that made the -- I don't know which
24 one of those came first. I'm sorry. I'm guessing now.
25 I don't want to do that. That's not fair to me, and

1 it's not fair to you.

2 (By Mr. Hobson)

3 Q. The King City plant, when you would make
4 your visit - when you made your visit there, did you
5 find that they were doing air sampling for asbestos at
6 that facility?

7 A. Oh, yeah.

8 Q. Now, at the facility you told us that it
9 was always kept wet up until the final product I guess
10 was being ---

11 A. (Interrupting) Until it went through the
12 dryer and ended up being very dry.

13 Q. And even there, there were intensive
14 controls in place to capture any fibers?

15 A. Uh-huh.

16 Q. Why is it then that there would be this
17 extensive monitoring program at the plant?

18 A. I don't recall what they monitored. I
19 think -- I think one of -- Well, if I had been the
20 person involved in this, I would have done the
21 monitoring whether the ventilation was there or not
22 because this was -- At the point in time when I was
23 there, remember this is 1981 or '82, the business of
24 coincidental cigarette smoking, the synergism as you
25 called it, was already known.

1 And I would do a monitoring program even
2 though I was monitoring the ventilation system. In
3 other words, I would put the belt on and the suspenders,
4 too. And I think they did, too. I think that's what
5 they did just to be sure that the system was working in
6 fact the way it was designed. And they got -- I don't
7 remember the exact fiber counts, but the fiber counts
8 were very, very low.

9 Q. So, you are saying even though the process
10 was kept wet as long as you could and even though you
11 had extensive ventilation when you handled the product
12 after it was made dry and even though you monitored
13 those control techniques, you would take one more step
14 and measure the air anyway to make sure there were no
15 unacceptable fiber levels in the air?

16 A. Well, and recognize, too, what we were
17 looking at may or may not have been asbestos. We --
18 This system that - the detection system for asbestos is
19 so bad that you are counting something that has -- It's
20 described as having a three-to-one aspect ratio.

21 So, while the dust counts were very low,
22 the fiber counts were always very low. I think they
23 were simply doing them just to - just for a comfort
24 level; no other reason.

25 Q. You mentioned the medical monitoring

1 program there at the King City plant. Then I think you
2 told me a little bit about Union Carbide's program in
3 general. I think the difference was annual versus every
4 three or four years.

5 A. Well, I think the -- What I was trying to
6 say was that there was a medical program that we
7 followed - that the corporation followed that was
8 designed and endorsed - designed by the medical director
9 and endorsed by the management of the corporation.

10 But at King City, all the bets were off
11 there. This was not something that you played around
12 with. You wanted to be sure that you knew precisely
13 what the state of health was for every individual in
14 that plant. And I got -- I digressed a little bit
15 without really meaning to, because the whole corporate
16 medical program was in place. Everyone was getting
17 physicals that wanted them in those days, you know.

18 And those people that didn't want them in
19 some cases got them simply because it was a legal
20 requirement that they have them. So, there was a
21 medical program for King City. It had been probably --
22 My guess is that it was probably written by the
23 corporate medical director or someone on his staff, and
24 it was a negotiated contract with that small clinic in
25 King City. I don't remember the clinic's name.

1 Q. Would you know for how long into the future
2 these medical monitoring activities for the King City
3 plant workers would be intended?

4 A. I don't know.

5 Q. Is it something that you feel as an
6 industrial hygienist would be stopped at the time of the
7 end of their employment, or is this something that
8 should be done for a lifetime; or would you know?

9 A. I think it would -- I can't give you a yes
10 or no answer to that. It would depend on -- If we had
11 individuals that we knew had been exposed to asbestos,
12 we might want to continue to follow them at our own
13 expense.

14 If we had data which showed clearly they
15 were not, they were never in an area or in a work
16 assignment that they would have gotten asbestos
17 exposure, we probably would not. I don't honestly know.
18 I don't honestly know.

19 Q. The medical monitoring program, the general
20 one for all of Union Carbide, not just dealing with the
21 King City plants, but the general one that Union Carbide
22 had, based on your experience how far back in time can
23 you take us that that program existed?

24 A. Well, the program was dynamic. You know,
25 it changed as we came forward in time and it got more

1 sophisticated. Perhaps we got better equipment. But I
2 worked for the corporation for 39 years. I think I had
3 35 or 36 physicals. And I don't think I was the
4 exception. I may have been, but I have no reason to
5 think that I was the only one that was getting that kind
6 of attention.

7 It wasn't until actually later as we -- As
8 we began to get medical surveillance requirements - and
9 I'm talking about an issue that I really probably should
10 say that's not my field; not my area - but the medical
11 director was a close, personal friend and we had lots of
12 conversations about it. As we -- As we got more
13 sophisticated, we began to look at - try to look at
14 those people that were at some considerable risk,
15 considerable as compared to the person that is working
16 at the typewriter or in the office somewhere and never
17 gets out kind of thing. But to try to put the emphasis
18 on those people that were at risk.

19 And, so, the program naturally evolved. I
20 suspect that one reason I got so many physicals is
21 because I was in and out of almost every operation at
22 one time or another. And while it wasn't -- I don't
23 think it was by design. I think it just happened that
24 way. We began to look at medical surveillance programs
25 that would beef-up our understanding of what exposures

1 were doing to our people. And I can't -- I can't give
2 you an example of that.

3 But, for example, you might - you might
4 do -- You would do more for a lead burner, for example,
5 than you would for a person who is a purchasing agent.
6 You might still put him in the system, and once he gets
7 to be 39 or 40, why, you do an every-other-year physical
8 on him, for example. And you might in the meantime do a
9 multiphasic screening. But it -- The medical program
10 has been around -- It's been around for so long, I don't
11 ever remember it not being there frankly.

12 Q. You told us earlier that Dr. Smyth was one
13 of your mentors, and maybe even put it more strongly
14 than that. Who else would you say throughout your
15 career would have been one of your mentors?

16 A. I don't know. I would have to think about
17 that one for a long time because there are so many
18 people that had an impact on my life, both
19 professionally and otherwise, that I would almost be
20 afraid of leaving out one that is very important.

21 Q. Let me change the question a little bit
22 so ---

23 A. (Interrupting) If you would direct it a
24 little more ...

25 Q. Would you give me some of the people that,

1 recognizing that you won't be able to get them all, that
2 you recognized who either were or have been Union
3 Carbide employees that you see as being leaders in the
4 field, whether it was occupational medicine, industrial
5 hygiene, toxicology; the people that come to your mind
6 as we sit here today without a list that you can direct
7 us to that you thought were people that were true
8 professionals in their fields.

9 A. Well, there are so many of them that are
10 gone at this point. John Zapp at du Pont. V. K. Rowe
11 at Dow. I think V. K. is still alive, but I'm not sure.
12 He's got to be 80 something, way up there.

13 Q. I was really asking more about Union
14 Carbide people, but if you have got others in mind,
15 that's okay, too.

16 A. Well, the only Carbide person that I would
17 mention would be Dr. Tom Lincoln. Lincoln was not only
18 my boss, he was my friend; and he was my mentor. He
19 encouraged me to do things professionally that would not
20 only advance my own professional career, but would
21 ultimately be helpful to the corporation as well.

22 You know, he always said, "You may not" --
23 "We may not be able to pay you very much money, but at
24 least you can get some satisfaction out of being
25 involved in the American Industrial Hygiene Association

1 and things like that."

2 So, yeah, I would mention Tom Lincoln.
3 C. P. Carpenter who was the subsequent director of Bushy
4 Run Research Center after Henry Smyth. Most of the
5 other -- I -- I have lots of people in the corporation
6 that I don't consider mentors in the sense that I do
7 those that I've named. But most of the people that I
8 have not named, the V. K. Rows and the John Zapps were
9 people outside the corporation; people that allowed me
10 to call them on the telephone and talk to them when I
11 had something that I didn't quite understand; or if I
12 wasn't convinced that the program that I had set up was
13 not exactly what it ought to be, these were the people
14 that I called. Harry Schulte at Los Alamos, New Mexico.
15 Ed Hyatt at Los Alamos. Ed is -- Ed is one of those --
16 He's "Mr. Respirator." You know Ed I'm sure.

17 At one time -- One time the manufacturers
18 wouldn't - wouldn't put a respirator on the market until
19 they cleared it through Los Alamos and Ed Hyatt. I mean
20 he had -- That was the kind of reputation that he had.
21 Who else? My -- My -- The President of my division,
22 Linde - Jack McLean, whom most people despised; but I
23 thought he was a super individual.

24 He was the hardest, toughest boss that I
25 ever had, but he was quick to compliment when a

1 compliment was there. He used to drive me crazy because
2 he would take something that I had written for him at
3 his instruction, and in four minutes he would improve it
4 so much that I could just hit him. I could just hit
5 him. And you know -- I mean he -- That's -- He was just
6 a dynamic individual.

7 He was ahead of you. When you started
8 telling him what you were going to do, he'd say, "No,
9 get on with it. I think I know where you are going."
10 Are you going to do such and such? And he says, "You've
11 got it. Go on and do it now." You know, I mean -- That
12 was the -- That was the response that I had from Jack
13 McLean. A real super individual.

14 I don't know anybody else that I would
15 mention. Oh, there are lots. I have belonged to a
16 round table, an industrial hygiene round table. And
17 practically every one of those people I would put in
18 this category: John Pendergrass, Bill Bradley, Ed
19 Baier, Clyde Berry. I'm just trying to go around -- I'm
20 thinking about the meeting and going around the room
21 and seeing the faces there. There are 20 or 30 other
22 people that I would put in that same category. But I
23 can't think -- Their names don't come to me right this
24 minute. Al Cudworth from Liberty Mutual, for example,
25 was a role model for a lot of us. He was one of the few

1 hygienists that made Vice-president. Not a - being no
2 easy task by itself.

3 Q. Is Mr. Cudworth still there?

4 A. Oh, yeah. He lives down in Florida
5 somewhere.

6 Q. Do you know Merrill Isenbud?

7 A. I know -- I know who he is. I know the
8 name, but I don't -- I don't know him personally. I
9 think I met him one time. "Mr. Beryllium"?

10 Q. That's the man.

11 A. Yes. That's right. Was it Brush Beryllium
12 or Beryllium Corporation of American? I could never get
13 them straight to tell you the truth. No. I knew who he
14 was. I knew of him. I think I met him one time. And
15 that's ---

16 Q. (Interrupting) I thought you might have
17 known him better through this Atomic Energy Commission
18 work.

19 A. No. He was -- He was at an echelon that I
20 didn't frequent very often.

21 Q. Over the years, Mr. Bolton, have you had a
22 chance to work with any of the trade associations or
23 with any of the industry consensus groups in either
24 committee activities or hazardous materials or
25 proceedings, that sort of thing?

1 A. The only one that comes to mind is the
2 Compressed Gas Association, which I did -- I was -- As a
3 Director of Safety, Health and Environmental Affairs for
4 Linde, I was automatically a Director on the Board of
5 Directors.

6 Q. Were there any of the committees that you
7 sat on on the Compressed Gas Association?

8 A. No, there were no technical committees that
9 I sat on. Most of these were special committees of the
10 board to look at what we want to be when we grow up, you
11 know. What is the association going to be in the year
12 2000 and things of that type. Mostly long-range
13 planning activities.

14 Q. My recollection is that the Compressed Gas
15 Association had pamphlets that dealt with materials like
16 ammonia and ---

17 A. (Interrupting) Oh, yeah. And the Board of
18 Directors by bylaw requirement had to approve and pass
19 each and every one of those and put the stamp of
20 approval on them.

21 So, we -- The Board of Directors' meetings
22 were spent - a lot of time was spent going through
23 pamphlets, making sure that everything was exactly the
24 way it should be.

25 Q. Can you recall any of those pamphlets that

1 dealt with some kind of a chemical hazard that you might
2 have been particularly active in?

3 A. No, not really. It probably wouldn't have
4 been me. The technical committees were all -- Everyone
5 that was members of the technical committee would have
6 been people on my staff and people out in the division
7 itself: The engineering staff at Conawonga, for
8 example. They are the ones that would have been
9 involved in the technical activity, if not me directly.

10 And when I went to the board meetings, I
11 was the message carrier. I told the boss how to vote.
12 But it was based on what our technical - our technical
13 people told me. If the document was okay, we passed it.
14 If it wasn't okay, we told them we - we won't sign on
15 unless this paragraph is modified or that paragraph is
16 modified. So, that was kind of the role that I played
17 on that Board of Directors.

18 Q. You never had any memberships on any of the
19 ANSI committees?

20 A. Not that I recall.

21 Q. Or the Manufacturing Chemists Association
22 or CMA?

23 A. I don't know that I -- I have been to CMA
24 several times. I'm not sure I was ever on -- Yeah, I
25 guess I was on their - on the industrial hygiene

1 committee for ethylene oxide maybe. I don't know
2 whether that's right or not. Again, you are going
3 back -- You are going back quite a ways for me. I just
4 don't recall.

5 Q. Was Union Carbide a supplier of ethylene
6 oxide for medical sterilizers?

7 A. Linde was, yes.

8 Q. When you left Union Carbide was ethylene
9 oxide recognized as a potential human carcinogen?

10 A. Oh, yeah. Yeah. Earlier than that even.
11 You did say potential?

12 Q. Yes, sir.

13 A. Okay. Yeah. Right. But I don't
14 remember -- I don't recall exactly when all of those
15 hearings were; but whenever the hearings were held in
16 Washington is when it all came to the foreground.

17 Q. And that would have been the time period of
18 your involvement with CMA and ethylene oxide as you
19 recall?

20 A. Right. I think that's the only committee I
21 was ever on.

22 Q. Would you know of any activities of Union
23 Carbide with the American Petroleum Institute?

24 A. No.

25 Q. Were you generally familiar with some of

1 the publications of the American Petroleum Institute
2 that dealt with health and safety?

3 A. No.

4 Q. Any other committees now that come to mind
5 that you might have been involved with after we have
6 talked about it for a few minutes?

7 A. No, there is not any that I remember right
8 off.

9 Q. I see that for a short time period, '72 to
10 '74, you list in your C.V. that you were an adjunct
11 professor ---

12 A. (Interrupting) Tennessee Tech.

13 Q. Tennessee Tech. That's what TTU stands
14 for?

15 A. Uh-huh.

16 Q. What did you teach then as you recall?

17 A. I taught a -- I developed and taught a
18 course in industrial hygiene, an overview because the --
19 The civil engineering department had contacted me and
20 said, "Hey, why don't you" -- "Why don't you come over
21 and develop a class and give my civil engineers,
22 sanitary engineers an option other than what they are
23 looking at right now." And, so, that's what -- I did
24 that.

25 And I was also - although I never -- I was

1 an adjunct professor at the University of Tennessee in
2 that program, also; but I never -- I never had time to
3 go over and teach or anything. I just -- They wanted to
4 continue the relationship. I had some of their students
5 come out and work with me. They had a work - academic
6 work program. So, I had some of their students work at
7 my - the facility in Oak Ridge. And they actually got
8 college credit for working for us.

9 Q. Would you recall any of the available texts
10 that you could have used in '72 to '74 when you taught
11 there at Tennessee Tech?

12 A. No. I wrote the -- I wrote the program.

13 Q. Did you create a syllabus or something for
14 the students to use?

15 A. I created an expanded outline. I would not
16 grace it with the syllabus term. But it was an expanded
17 outline that covered everything from recognition,
18 evaluation and control to some engineering controls, a
19 little smattering of things that every civil engineer
20 ought to know about certain fairly well-known chemicals
21 and things of that type.

22 Q. I take it you certainty would have covered
23 the pneumoconioses by '72 to '74?

24 A. I covered it, but I did not -- I did not
25 cover it very well I have to tell you. Remember, this

1 was an overview. We -- I think we may have spent all of
2 20 minutes talking about the pneumoconioses.

3 Q. We sent you a packet of papers that are -
4 at least some of them are fairly bulky, and I would ask
5 you if you have had a chance to take a look at them.
6 And I know that you've had some cataract surgery. I
7 hope that wasn't too big of an ---

8 A. (Interrupting) No, I went through them. I
9 don't want to sit for an examination on them right now.
10 But, yes, I did read all the information that you sent
11 me.

12 Q. The first one there I see on the top is
13 what we've been calling in the course of this deposition
14 as the Bonsib report.

15 A. This one took -- This one only took me
16 about five and a half hours to wade through this one.

17 Q. It's somewhat lengthy. That's the 1937
18 report from Standard Oil of New Jersey, I believe. Had
19 you ever seen that before?

20 A. No. But it -- I have to tell you
21 parenthetically that it does not surprise me because
22 Standard of New Jersey was always very thorough in
23 everything they did. So, this report doesn't surprise
24 me at all. And it -- It is -- It's the kind of detail
25 that I think hygienists have a tendency to get wrapped

1 up in. And I have no criticism of the report. It was
2 just tough sledding to get through it, very tough.

3 Q. I don't mean to imply that you were around
4 in 1937 doing this work.

5 A. No.

6 Q. But based on your experience now as you
7 read the Bonsib report, could you give me your
8 impression of it as far as the apparent competence of
9 Mr. Bonsib in doing his work.

10 MR. ELLISTON: Objection to the
11 form. Calls for speculation; also
12 calls for him to testify to the state
13 of mind or the expertise of a third
14 person at a time when he was not
15 involved.

16 (By Mr. Hobson)

17 Q. You can still answer it if you would like.

18 A. It's -- I think it's a - it's a fairly
19 thorough report. There are things that I don't
20 understand in it. For example, I don't quite -- I don't
21 know how he did the dust sampling. I think it's -- I
22 think it's strange to look at dust counts that have
23 1,344,832 when most hygienists don't report beyond the
24 1.2 million particles per cubic foot.

25 So, you know, I don't know how he did the

1 work. He talked about the methods of counting dust that
2 he used. He used the konimeter, which is a handy little
3 device. It's almost idiot proof as a matter of fact.
4 It requires almost no training. If you can read the
5 directions and follow the directions, you can do dust
6 sampling, dust counting with the konimeter. I did it;
7 so, therefore, it must be.

8 He spent a lot of time with developing a
9 lot of information that I would not have had the
10 tolerance to do very frankly. I mean I would have
11 looked at one or two of the activities that he was doing
12 and I would say, "I have the answer. I don't need to
13 continue with this."

14 How long did it take him to do that? There
15 was no -- There is nothing in there which implied -- But
16 yet this has got to be over several years. This can't
17 have been done in 12 months. This has got to be a long,
18 long study; either that or he had a lot of people
19 helping, one or the other.

20 Q. Regrettably Mr. Bonsib has passed away, and
21 we've found ---

22 A. (Interrupting) And nobody can answer it.
23 You can't get the answer. Well, I -- It's a -- It's a
24 very tedious report. Fairly thorough as far as I can
25 tell with reading the -- But the quality of the research

1 or anything like that, you know -- I know all the
2 respirators that he talked about. They are familiar to
3 me. There are a lot of terms in here that I don't
4 understand because they seem to be the jargon of the
5 petroleum companies, the petroleum industry. And
6 that -- And my dictionary I also left to the
7 corporation. So, I couldn't look up the words. So, I
8 don't know what some of the terms are. But what else
9 can I say?

10 Q. Did you recognize any of the names at the
11 end that he at least gives - appears to give some
12 partial credit to for being resource people.

13 A. It's at the back; right?

14 Q. Yes, sir. It's the last or the next to
15 last page.

16 A. Well, who in industrial hygiene doesn't
17 know who Bill Yant was. I knew the name Leonard
18 Greenberg. I did not know him. I never met him. I met
19 Dr. Sayers one time at one of the industrial hygiene
20 meetings. I think it was in Detroit.

21 And you say why would you remember that?
22 My wife -- My wife and his wife were on a tour together.
23 And they went over into Canada as I remember. And this
24 little old lady who was 80 years old is sitting next to
25 my wife who is 45 years old or something like that. And

1 she said, "Do you have your money that you are going to
2 spend in Canada?"

3 And Martha says, "Yes."

4 And she says, "I have my \$20 that I'm going
5 to spend."

6 And Martha thought, "Gee whiz, isn't that
7 too bad. She can't spend the \$20." And she came back
8 later and told me who she had sat on the bus with and I
9 almost fainted. She was sitting next to Dr. Sayers'
10 wife and thinking that she can spend the \$20.
11 Incredible, absolutely incredible. I'm sorry. I -- I
12 just happened to think of that.

13 But anyway, that's -- That's the way I
14 know -- That's the way I know Dr. Sayers. I did not
15 know Daniel Harrington. I don't know Lanza, Barlow.
16 Blakeslee rings a bell, but I can't -- I can't honestly
17 say that I know him.

18 And the medical director, I did not know
19 "Deno" or "Denny," whatever his name is. He was a new
20 one to me. I guess the one that I knew was Bob Eckardt.

21 Q. Yes.

22 A. But that was before Bob. Bob was
23 probably a staff physician.

24 Q. Well, in 1937 - we won't do that to
25 Dr. Eckardt. He might not have been a staff physician.

1 A. He might not have been quite that old.

2 Q. That's right. Would you have known a
3 physician at Standard of New Jersey named McIver Woody -
4 Dr. Woody?

5 A. No.

6 Q. Can you recall any of the people who were
7 in the Exxon - what we know as the Exxon organization
8 today that you particularly dealt with?

9 A. The only -- They only two people that I
10 recall would be Dick Brief, who is an industrial
11 hygienist and Bob Eckardt, who was the medical director
12 forever. And maybe not quite forever, but he was
13 medical director for a long, long time. And he was a
14 very intelligent individual. Those are the only two
15 that come to mind.

16 Q. Do you recall Dr. Eckardt's book
17 Industrial Carcinogens that he published?

18 A. I can remember one of the books that he
19 wrote. I recall -- I recall the quote somewhere in
20 there, maybe it's in the preface, where he said, "It
21 seems axiomatic that if a person is going to protect
22 himself, he must be informed of the hazard to which he's
23 being exposed" or something like that. Is that the same
24 book?

25 Q. I believe it is. It was a smallish red

1 book?

2 A. I'm sorry?

3 Q. A rather smallish red book, a red text, a
4 red-colored text?

5 A. You have strained my memory to remember
6 that quote in there. I remember reading that because it
7 struck me. You know, here we are telling people what
8 they are exposed to so they can protect themselves. And
9 sure enough, that's exactly what you ought to be doing.

10 Q. The next item that I sent you was this 1948
11 API Toxicological Review for benzene. Do you ever
12 recall having seen that before?

13 A. No.

14 MR. ELLISTON: Excuse me,
15 Herschel.

16 MR. HOBSON: Yeah.

17 MR. ELLISTON: Since you are
18 about to switch subjects, can we take
19 a break. We've been going about an
20 hour and a half.

21 MR. HOBSON: Sure.

22

23 (A BRIEF RECESS WAS TAKEN.)

24

25

1 (By Mr. Hobson)

2 Q. We will begin after our break here,
3 Mr. Bolton, if we might, sir.

4 A. Okay.

5 Q. Before we broke, I was asking you about the
6 American Petroleum Institute Toxicological Review's
7 document for benzene dated September, 1948. And I think
8 you said that you don't recall seeing that before, or
9 maybe I didn't get an answer.

10 A. I don't think I ever saw it.

11 Q. There is ---

12 A. (Interrupting) At least I don't know that I
13 did.

14 Q. There are names on the front of the
15 publication. And, of course, one of them is Professor
16 Drinker at Harvard. And we talked briefly about
17 Harvard's program earlier when we talked about
18 Mr. Ketcham. Did you know Professor Drinker?

19 A. I know of him. I don't know him
20 personally.

21 Q. The other name on there is a Dr. Marshall
22 Clinton. Do you see that right at the bottom of the
23 box?

24 A. Yeah. I don't know him at all. I don't
25 think I do. It doesn't ring a bell.

1 Q. I believe that he was a physician that at
2 one time was associated with a predecessor company to
3 what we would now call Mobil in Buffalo, New York. Does
4 that help you at all?

5 MR. MARTIN: Let me object.

6 It assumes facts not in evidence.

7 A. No, it still doesn't help.

8 (By Mr. Hobson)

9 Q. Did you know or have you learned before
10 this litigation and when I sent you this document that
11 there was a series of these Toxicological Reviews from
12 any era or any subject put out by the American Petroleum
13 Institute?

14 A. No.

15 Q. The next document that I sent you would be
16 what, sir?

17 A. This is ...

18 Q. A Clyde Berry ---

19 A. (Interrupting) A Clyde Berry memo, yeah.

20 Q. Clyde Berry is one of the names that you
21 mentioned not too long ago before we took a break as
22 someone I think you know?

23 A. Yes, I know Clyde.

24 Q. Did you know that Dr. Berry had been an
25 employee of Standard Oil Company of New Jersey?

1 A. If I did, I don't remember it.

2 Q. Well, I will represent to you that this was
3 during that time period that he was an employee of
4 Standard Oil of New Jersey. And I believe he told us
5 that he was reporting to Dr. McIver Woody.

6 A. Dr. Woody, yeah.

7 Q. Have you seen this document of Dr. Berry's
8 before?

9 A. Before yesterday or whenever you sent it to
10 me?

11 Q. Before I sent it to you.

12 A. No.

13 Q. Did you know of Dr. Hueper who is mentioned
14 here in Dr. Berry's memo?

15 A. I know the name, but that's about all. You
16 know, you run across it in a bibliography here and there
17 and yonder. But, no, I'm not familiar with Dr. Hueper.

18 Q. The next document is one written by
19 Dr. Charles Hind. It's a Shell Development Company
20 memorandum, is it not?

21 A. Yes.

22 Q. And that's dated in 1950 sometime I
23 believe.

24 A. Yeah, April 28th.

25 Q. Did you know Dr. Charles Hind?

1 A. No, I did not.

2 Q. And I take it you have never seen this memo
3 before?

4 A. No.

5 Q. The next item that I sent you is an
6 editorial from the Journal of the American Medical
7 Association dated in I think it's September of 1944.

8 A. November.

9 Q. November. I'm sorry.

10 A. November, 1944.

11 Q. I take it you know of the Journal of the
12 American Medical Association.

13 A. JAMA, yes.

14 Q. I don't know that you would have been
15 reading it in 1944.

16 A. I doubt it. I doubt if I was reading it in
17 '54 to tell you the truth. No, I have never -- I had
18 never seen this either.

19 Q. The reason that I sent these to you in
20 advance was to let you have an opportunity to read them
21 so it wouldn't take quite so much of our time hopefully
22 here today. Starting with the Journal of the American
23 Medical Association's editorial there on Environmental
24 Cancer, did you see the part there where they listed the
25 occupational or industrial carcinogens toward the bottom

1 of the first paragraph?

2 A. I'm sure I did. I read it, but I don't
3 remember it. Well, the second group, the third group,
4 the fourth group, yeah.

5 Q. It's the one where the mention of asbestos
6 and benzene and some others are listed in a row.

7 A. I remember reading that, but I don't see it
8 now. Oh, that's another paragraph. "Are the agents
9 known or suspected to cause occupational cancer?"

10 Q. Yes, sir.

11 A. Yes, I see that.

12 Q. Does this listing that's put forth here in
13 1944, is that different from a listing that you would
14 have recognized in 1956 when you got into industrial
15 hygiene?

16 MR. ELLISTON: Objection to the
17 form of the question. It calls for
18 this witness to speculate to medical
19 matters. Further it calls for him to
20 testify from a hearsay document that
21 he has previously testified that he's
22 not familiar with.

23 (By Mr. Hobson)

24 Q. You may still answer if you can,
25 Mr. Bolton.

1 A. I don't know. I don't know.

2 Q. Would you know if the Journal of the
3 American Medical Association is something that was
4 available at Union Carbide?

5 A. I have no firsthand knowledge. At this
6 time frame?

7 Q. Well, first of all, I was wondering when
8 you first began there if that's the kind of article that
9 you would have been able to get access to when you began
10 your interest in industrial hygiene.

11 A. I -- I didn't know the JAMA existed when I
12 started working for Carbide and probably did not know of
13 its existence until well into the '50's. Well, it may
14 be even in the early '60's.

15 Q. I take it as a chemistry student you would
16 have been learning about publications such as chemical
17 abstracts, would you not?

18 A. Well, I would have -- No, not even that
19 when I started working at K-25 because I did procedures
20 that were established. I didn't do methods development
21 work. I followed a cook book and did exactly what they
22 told me, whether it was carbon and nickel or uranium and
23 solution or chloride and solution or what. There were
24 established procedures, and there was no reason for me
25 to go to the library and look up anything.

1 Q. I understand. I would have thought,
2 though, you would have been taught in your chemistry
3 undergraduate curriculum about chemical abstracts and
4 how to use them.

5 A. Oh, I knew -- I knew about chemical
6 abstracts, sure. Sure.

7 Q. And I take it chemical abstracts is
8 something that Union Carbide was subscribing to?

9 A. I don't know that they were. I can't
10 answer that question directly.

11 Q. In looking at the memorandum that
12 Dr. Berry prepared in 1948 I believe it was - it's the
13 next one, sir - Dr. Berry reports on this lecture given
14 by Dr. Hueper. Did you look at the items listed that
15 Dr. Berry reports from Dr. Hueper's lecture that
16 followed the ten items I believe it is?

17 A. Uh-huh.

18 Q. As you sit here now and you look back,
19 based on your approximately 40 years of work as an
20 industrial hygienist, do you find the ten items that are
21 set out there, do they have any historical significance
22 to you?

23 MR. ELLISTON: Objection to the
24 form of the question. It's vague.

25 A. I don't know. I don't think so.

1 (By Mr. Hobson)

2 Q. If you will look at Item No. 5. You see
3 there on the second page Item No. 5?

4 A. Uh-huh.

5 Q. And I think the first one there is 5A that
6 talks about where you aim at the complete elimination of
7 exposure if you are dealing with a carcinogen. I'm
8 paraphrasing now.

9 A. I don't ---

10 MR. ELLISTON: (Interrupting)
11 Excuse me. There is not a question
12 pending. I object to any response
13 without a question pending.

14 MR. HOBSON: I think the question
15 was does he see where it talks about
16 that, subject to the fact that I was
17 paraphrasing.

18 A. But I don't see anything about carcinogens
19 in that. It doesn't mention carcinogens. It says
20 "offending agent."

21 (By Mr. Hobson)

22 Q. And, of course, I think the talk deals with
23 environmental carcinogens, does it not?

24 A. Occupational cancer.

25 Q. Like I said, I was trying to paraphrase.

1 I'm not trying to trick you, Mr. Bolton.

2 A. Okay, I understand.

3 Q. In dealing with environmental carcinogens
4 or occupational carcinogens, do you find what is set
5 forth there under No. 5 to be sound practice when you
6 became a professional industrial hygienist?

7 A. Probably. Those -- That A, B, C, D, E, F?
8 Is that what we are talking about?

9 Q. Yes, sir, under Paragraph 5.

10 A. I'm not sure that you could ever do A. I
11 don't know that you can have complete elimination of
12 exposure unless you just do away with the material that
13 you are talking about.

14 Q. Yes, sir. I think that A says that you aim
15 at a complete elimination.

16 A. Well, I might -- I might not have written
17 that if I had been Clyde Berry. I don't know. I don't
18 think I would have written that. I think I would have
19 talked about reducing exposure to the lowest feasible
20 level or something like that. Minimize the exposure -
21 sure. Talk about ventilation; protective equipment, of
22 course.

23 I don't think I would have done F. I
24 don't -- F to me would not be helpful frankly. F says,
25 "For certain operations in industry, the exposure may be

1 minimized by the use of teams trained to perform their
2 duties with a minimum exposure and provided with special
3 safeguards." And to me all that does is expose
4 everybody to the same hazard.

5 Q. That wouldn't be in your mind in keeping
6 with identifying special groups of workers within a
7 facility to do asbestos abatement under today's
8 techniques?

9 A. Well, I think the medical department
10 typically would - would screen people. If there was a
11 medical reason not to let them work with it, I think
12 they would - they would hopefully be able to ferret that
13 out. Asthmatics, people with reduced pulmonary
14 function, vital capacity and so forth, those kinds of
15 people, I would think that they would screen those out
16 just automatically. I don't know.

17 Q. To me F talks about instead of having say a
18 maintenance force where everyone has the potential for
19 exposure in dealing with a material like we would with
20 asbestos today, you would identify certain people who
21 would be the ones called upon to do asbestos work; and
22 those individuals then would receive special training,
23 special equipment and would handle any job where the
24 potential for exposure exists. Is that not the way you
25 read F?

1 A. That's ---

2 MR. ELLISTON: (Interrupting)

3 Excuse me. Objection to the form,
4 leading.

5 A. That's not what I would have interpreted
6 that to mean. Maybe I just didn't read it close enough,
7 but it's not the way I would have interpreted it, not at
8 all.

9 (By Mr. Hobson)

10 Q. What about No. 6; would you have recognized
11 No. 6 to be appropriate for environmental carcinogens
12 once you obtained your professional status?

13 A. I think that's a medical judgment. And I'm
14 not a physician. And I don't think that I could -- I
15 don't think I could comment on that.

16 Q. Is it your experience that Union Carbide
17 did have such a program that is covered by No. 6?

18 A. I -- I don't know. I would -- I would give
19 you a qualified yes. But I don't -- But I don't
20 honestly know that - that they would follow them; if
21 they happened to leave the company and go work somewhere
22 else that they would continue to follow them from the
23 early days. Today they might. I don't know whether
24 they do or not. They might continue to follow
25 employees - ex-employees.

1 Q. If a person stayed with the company but
2 changed jobs within the company, would you think the
3 medical program that Union Carbide had would follow
4 those kinds of individual?

5 A. I'm sure they would. Their medical record
6 follows them wherever they go. Like I said, the only
7 thing I can do is tell you what happened to me. My
8 medical record went from K-25 to Y-12 to South
9 Charleston to X-10 to New York to Danbury. And it
10 followed me every place.

11 Q. If a worker at Union Carbide would have
12 been put in a special medical monitoring program that
13 would be for targeting chronic exposure where you are
14 looking for a latent period of many years such as
15 described here in No. 6 ---

16 A. (Interrupting) Long-range health effects?

17 Q. Yes, sir.

18 A. Okay. If they had been in a -- If they had
19 been in a program for long-range health effects, they
20 probably would still be in it.

21 Q. Even though their job would have changed
22 and caused ---

23 A. (Interrupting) May not even be exposed
24 anymore, but I suspect that their -- I don't know this
25 again. I'm speculating. I don't know this, but I

1 suspect that the physician that does the follow-up exams
2 would know, hey, this guy at one time was exposed to
3 whatever and was on a special medical surveillance
4 program. And, so, he would pay particular attention to
5 the systems that might be affected by that material.

6 Q. The Items A through F under No. 5 in Clyde
7 Berry's memorandum, did you find the essence of these
8 programs, with the exceptions that you have told us
9 about, the wording that you would not have chosen, to be
10 in place at Oak Ridge when you got there in '56?

11 A. '52.

12 Q. I'm sorry. '52.

13 A. Yeah, by in large. By in large. I think
14 there were special medical exams for uranium workers and
15 other special groups. The lead burners was a group. I
16 have -- I think the answer is yes.

17 Q. Mr. Bolton, if I could, I would like to ask
18 you to bear with me for a rather boring task in going
19 through a list of names and see if you might recognize
20 any of these people.

21 A. Okay.

22 Q. I believe that these people are Union
23 Carbide people from sometime in the past, but I don't
24 know that to be true in every case. Would you have
25 known or known of Richard C. Baker?

1 A. Dick Baker, yes.

2 Q. How would you have known him, sir?

3 A. He was in charge of the health physics
4 program at Paducah, I believe.

5 Q. And what did Paducah have to do with Union
6 Carbide?

7 A. It was the fourth facility in the nuclear
8 division. There were three facilities in Oak Ridge and
9 one in Paducah. Paducah was the one that was the last
10 plant that was built. It was built in the mid-'50's I
11 guess after the other three had already been built in
12 the early '40's, mid-'40's.

13 Q. And for what time period would you be aware
14 that Mr. Baker was at Paducah?

15 A. Certainly the time I was in -- You know, I
16 don't know. I don't know whether Dick was at - was
17 still at Paducah when I came back to Oak Ridge. No, it
18 has to be after I came back to Oak Ridge in '61. I
19 don't have any idea how long he was there.

20 Q. Would you know if Mr. Baker is still
21 living?

22 A. No.

23 Q. Eugene G. Brown.

24 A. E. G. Brown, yes, I would know him. Gene
25 worked for me in - in New York.

1 Q. And what time period would that be, please?

2 A. 1978 to 1982 when I came up.

3 Q. And what was Mr. Brown's title?

4 A. He was corporate industrial hygienist.

5 Q. Is Mr. Brown still living would you know?

6 A. I didn't get a Christmas card from him, but
7 I may not be on his list anymore. I don't know.

8 Q. He's not ---

9 A. (Interrupting) I didn't get a present from
10 him either. No, I just -- I have not seen Gene since
11 Gene retired in - I don't know - 1980 maybe. And I have
12 not seen him. I know he had a severe medical problem
13 shortly after he retired, but I have not seen him since
14 then.

15 Q. Do you know what region of the country he
16 retired to?

17 A. Somewhere in Indiana I think, just across
18 the line from Paducah.

19 Q. Thomas J. Burnett.

20 A. T. J. H. Burnett. We called him alphabet
21 Burnett. Yes, I did know -- I did know Tom.

22 Q. How was it that you knew Mr. Burnett?

23 A. Tom was a health physicist at the Oak Ridge
24 National Laboratory during -- Actually -- I know he
25 was -- I knew Tom from 19 - I think 1956. I know I knew

1 him after I came back in 1961 because he was in the
2 health physics division. I think Tom died if I'm not
3 mistaken. I don't remember exactly.

4 Q. And he was a health physicist?

5 A. Yes.

6 Q. Robert W. Cope, C-o-p-e.

7 A. Bob Cope. Yes, I know Bob.

8 Q. And how is it that you know Mr. Cope?

9 A. Bob was a hygienist at South Charleston and
10 came to work for me in New York as the assistant
11 director of industrial hygiene in 1980 I guess. He took
12 my place when I transferred to Linde in '82.

13 Q. Would you know if Mr. Cope is still with
14 Union Carbide?

15 A. No, he retired -- He retired in the early
16 '80's. He retired in '85 or '86, something like that.

17 Q. Would you know where he retired to?

18 A. He went to California. I don't know
19 whether he's still there or not. I don't think he is.
20 I think he's -- I don't know. I -- Somewhere I think I
21 had heard he went back to Charleston - to the Charleston
22 area; but I don't honestly know.

23 Q. We know that Dr. A. G. Cranch was an early
24 medical director at Union Carbide or medical officer of
25 Union Carbide I believe. Would you have known

1 Dr. Cranch?

2 A. I did not. He's the one that preceded
3 Dr. Nale I believe.

4 Q. I think that's right.

5 A. No, I did not know him. He was -- He was
6 gone before I ever started working out there.

7 Q. Would you have known John N. Dermitt,
8 D-e-r-m-i-t?

9 A. Yes.

10 Q. And how would you have known Mr. Dermitt?

11 A. Jack was the industrial hygienist at --
12 Jack took my place as the industrial hygiene chemist
13 when I left Charleston to go back to Oak Ridge, I think.

14 Q. Would you know if Mr. Dermitt is still
15 living?

16 A. I think so, yes.

17 Q. Where was the last time you knew his
18 location?

19 A. I don't know whether he was at Texas City
20 or Seadrift. He -- I know he had moved from Charleston
21 but I don't honestly -- I don't know. I haven't seen
22 Jack in a couple of years I guess. I don't think I saw
23 him in Boston.

24 Q. Dr. Thomas Hellman, H-e-l-l-m-a-n, a Ph.D.
25 Would you have known him?

1 A. It doesn't ring a bell.

2 Q. Would you have known Hubert F. Higdon,
3 H-i-g-d-o-n?

4 A. Yes, Herb Higdon.

5 Q. And how would you have known Mr. Higdon?

6 A. He was the -- He was the person assigned
7 the industrial hygiene responsibility at the Oak Ridge
8 Gaseous Diffusion Plant in 19 - the mid-'60's maybe,
9 mid-'60's, early '60's, somewhere in that - somewhere in
10 the '60's time frame. I don't know how long he stayed.
11 He had been reassigned when I moved to New York. So, I
12 don't know. I don't know where he is.

13 Q. Was he reassigned outside the nuclear
14 division?

15 A. No, he was given a different assignment at
16 K-25; and I don't know what that assignment was.

17 Q. Would you know if Mr. Higdon is still
18 living?

19 A. The last time I heard he was. I don't
20 know.

21 Q. You mentioned Leo J. LaFrance. Is
22 Dr. LaFrance ---

23 A. (Interrupting) Mister.

24 Q. Mr. LaFrance. And tell us again if you
25 would, sir, how it is you knew Mr. LaFrance or what his

1 job was.

2 A. Leo was my boss when I moved from K-25 to
3 Y-12 in 1955. He was the industrial hygienist. He had
4 come to the plant and worked as a toxicologist
5 basically.

6 Q. Can you tell us what Mr. LaFrance's
7 background was?

8 A. As I recall he worked -- Eastman Kodak ran
9 the Y-12 plant during the early days up until '48 or
10 something like that. And Leo had been at the Rochester
11 labs I think working in their toxicology - in Eastman
12 Kodak's toxicology laboratory.

13 He -- They put him -- They gave him an
14 assignment - gave him a deferment from the "Big War" as
15 Archie Bunker says; and he ended up working at Oak Ridge
16 the - the whole time. He ended up being the industrial
17 hygienist and eventually went to New York and retired
18 from Carbide at - when they were still at 270 Park
19 Avenue.

20 Q. Is Mr. LaFrance still living?

21 A. I think so. I don't honestly know. He
22 lived in the penitentiary -- No. No, he didn't live in
23 the penitentiary. Sing Sing - Ossining. He lived in
24 the Ossining area on the Hudson River.

25 Q. He was up the river without a paddle?

1 A. He retired in 1980 as I recall I think.

2 Q. Do you have any understanding or
3 recollection of where he had come from before taking
4 that position in 1952?

5 A. No, none at all.

6 Q. When to your understanding did Carbide
7 begin to or cease to buy asbestos insulation for use in
8 its plants?

9 A. I have -- I honestly have no idea.

10 Q. Do you have ---

11 A. (Interrupting) When -- I guess in Oak Ridge
12 in the early '70's we were beginning to look at - we
13 were using alternatives; but I don't remember what they
14 were at this point. Too long. I'm sorry.

15 Q. Well, was there a policy implemented after
16 you went to New York to stop any further purchase of
17 asbestos insulation for use in Carbide facilities?

18 A. I don't -- I don't honestly know. I don't
19 remember.

20 Q. What kind of substitute insulations do you
21 remember considering or using at Oak Ridge in the early
22 '70's?

23 A. It was a black material. I don't recall
24 what it was called. It was -- I know when you sawed it,
25 you got the sulfide odor as I remember. I don't know

1 A. The last time I knew he was anywhere, he
2 was in Chappaqua, New York because that's where I lived.

3 Q. James F. Morehead, Jr.; would you have
4 known Mr. Morehead?

5 A. Yes.

6 Q. And how is it that you would have know
7 Mr. Morehead, please?

8 A. Jim Morehead was the industrial hygienist
9 for the Y-12 plant when I went back to Oak Ridge in
10 1961. Jim died of a heart attack in 1970 -- I don't
11 know. I know he died of a heart attack. I don't recall
12 when it was frankly. Time just sort of gets to be a
13 blur after a while.

14 Q. As far as you can recall, was Mr. Morehead
15 always at the Oak Ridge operations?

16 A. He was always in Y-12. He went to work for
17 Tennessee Eastman when it was Tennessee Eastman, and --
18 Yes.

19 Q. And I think you have told us about
20 Dr. Nale, T. W. Nale.

21 A. Yes.

22 Q. He came after Dr. Cranch as you recall?

23 A. Uh-huh.

24 Q. Can you tell us anything about Dr. Nale's
25 background?

1 A. Only that he was a physician.

2 Q. You don't know where he would have
3 practiced before he came to Carbide if anywhere?

4 A. No, I have no idea.

5 Q. Did you know Dr. Nale himself?

6 A. Yes. Yes.

7 Q. Can you tell me approximately the time
8 period that Dr. Nale would have been with Carbide?

9 A. I went to New York in '78. I think Tom was
10 still working then. I think he retired -- He retired
11 about the time we went up there as I recall. We -- I
12 went up there as I recall - it had to be late '77 or
13 something like that. And he had been the medical
14 director for a long time. I want to say at least 15
15 years, maybe longer than that. I just -- I don't know.
16 I don't remember.

17 Q. Do you recognize the name Joe Earl Neff -
18 N-e-f-f.

19 A. Joe Neff, yes.

20 Q. How do you know Mr. Neff?

21 A. Joe is -- Did Joe die of cancer?

22 Q. I don't know Mr. Neff.

23 A. He was at Charleston. He was the -- He was
24 the group leader. I met Joe after I left Charleston.
25 He was the group leader in charge of the methods

1 development work until fairly recently. I think he's
2 retired now. I'm not sure. I'm not sure.

3 Q. Would you know to what area he retired to,
4 what area of the country?

5 A. His family is all right there in
6 Charleston. I suspect that that's where he is. But Joe
7 came into the field of industrial hygiene much later
8 than I did. I think he's -- My guess is he's probably
9 10 or 12 years younger than I am.

10 Q. Would you have known G. O. Nelson,
11 N-e-l-s-o-n?

12 A. That name rings a bell, but I can't do
13 anything with it.

14 Q. One of the records we found says that
15 Mr. Nelson was working on 'an ASA committee in 1953 for
16 Carbide. Does that help any?

17 A. What are his initials?

18 Q. G. O.

19 A. G. O. I'm sorry. It doesn't do anything.
20 It sounded familiar, but I -- Nelson is not an uncommon
21 name. I just don't know.

22 Q. Would you have known John C. Schonberg,
23 S-c-h-o-n-b-e-r-g?

24 A. Schonberg.

25 Q. Schonberg.

1 A. The "ragin cajun" from Louisiana, yes.

2 Q. How is it that you would know

3 Mr. Schonberg?

4 A. Cressend was an industrial hygienist for
5 the Taft plant in the mid-'70's I guess. The first time
6 I met him was - was in Charleston. It had to be
7 somewhere around '74 or '75.

8 Q. And do you know how long he stayed with
9 Union Carbide?

10 A. I think he still works for the corporation.
11 I don't know that for sure, but I think he does. He's
12 not an industrial hygienist any longer. He's doing
13 something else.

14 Q. Would you know Charles W. Turok -
15 T-u-r-o-k?

16 A. Turok, Chuck Turok, yes. Chuck was the
17 industrial hygienist at Paducah. He did the industrial
18 hygiene work. Dick Baker did the health physics work.

19 Q. And was Mr. - I'm sorry.

20 A. Turok.

21 Q. Turok - did he retire from Carbide?

22 A. I think so. I haven't heard from Chuck in
23 forever; since I left Oak Ridge in '78.

24 Q. As far as you know he stayed in the nuclear
25 division?

1 A. Yeah. He would be a Martin Marietta
2 employee at this point. No, he can't be. He was older
3 than I was. He's got to be retired.

4 Q. Would you have known Arlin - and I think
5 it's Voress, V-o-r-e-s-s?

6 A. Yes, I would. A. G. Voress.

7 Q. How would you have known him?

8 A. He was my boss in New York.

9 Q. What was his title?

10 A. Vice-president of occupational health.

11 Q. Can you tell us Mr. Voress' background
12 asbestos you understood it?

13 A. Arlin -- Arlin came out of sales. He was
14 one of those super salesman and he needed -- No. He --
15 He became -- I almost have to -- I almost have to back
16 up because I can't -- In order to get it straight in my
17 mind I have to reconstruct what happened and why it
18 happened.

19 He was the SHARE manager for C & P. He was
20 vice-president for safety, health and matters relating
21 to the environment, hence the acronym SHARE, S-H-A-R-E.
22 He became -- When they did some minor reorganizations -
23 I forget when it was now. It's got to be 1980 - '80 or
24 '81, something like that. They did away with this -
25 that particular super-structure within C & P and brought

1 most of those people into the corporation.

2 And he became, instead of the
3 vice-president for safety, health and matters relating
4 to the environment, he became the vice-president for
5 occupational health. Occupational health had under it
6 industrial hygiene and some other activities.

7 The medical director was not part of that
8 direct report, but he was -- He was on the team. There
9 was a team that did all of the work. So, that's how I
10 knew Arlin. Arlin is retired from the corporation and
11 lives somewhere in Florida, I think.

12 Q. Did Mr. Voress get some safety and health
13 training along the way to get him from sales into this
14 position of SHARE responsibility or whatever it was?

15 A. I don't think so. I think Arlin had the
16 knack for getting the job done. Whatever job you
17 assigned him, he got it done. And he somehow managed to
18 glean whatever information he needed in order to do his
19 job.

20 You know, it's the old story how much - how
21 much technology do you need to be a manager? And I'm
22 not going to answer that. So, the answer to your
23 question is I don't think he had any formal training;
24 but he had lots of conversations with lots of people.
25 And he always learned more than you did.

1 Q. Would it be accurate to say that
2 Mr. Voress was your advocate in management?

3 A. Oh, absolutely; yeah.

4 Q. If not the professional advocate, he was at
5 least your voice to get the job implemented?

6 A. I worked for him. I reported to him.

7 Q. It sounds like it was a satisfactory
8 arrangement to you?

9 A. I liked Arlin very much. He was a -- He
10 was a nice person. He was a people person. He
11 obviously had to be if he had been in sales, you know.
12 He liked to be with people. He liked to talk with
13 people.

14 Q. Would you put him in the category of - let
15 me see; what did we call it earlier this morning -
16 committed management?

17 A. Oh, yeah. Oh, yeah, absolutely.

18 Q. So, he was on the side of health and
19 safety?

20 A. Right.

21 Q. Would have known of a Mr. Fred Williams?

22 A. Yes.

23 Q. How was it that you knew Mr. Williams?

24 A. Fred was the supervisor that did all of
25 the - that supervised all of the analytical work for the

1 industrial hygiene department at Y-12 plant. When I
2 left -- And nobody could ever understand this. But when
3 I left Charleston in 1961 to go back to Oak Ridge, Fred
4 left Charleston - left Oak Ridge in '61 to go to
5 Institute. I think it was Institute.

6 You say why would -- Why would they move
7 you back and him up here; give him your job down there
8 and you up here? But that's not the way things worked.

9 Q. Excess money in the moving account maybe?

10 A. I guess.

11 Q. I take it you had no explanation for it
12 either?

13 A. I didn't want the job that he was being
14 given frankly. I wanted the one I was going to.

15 Q. I have a couple of names that I believe
16 were people who did some work with the Manufacturing
17 Chemists Association which I think we now call the
18 Chemical Manufacturers Association. Robin Hertz,
19 H-e-r-t-z; would you have known that name?

20 A. No, that doesn't ring a bell.

21 Q. Kenneth D. Johnson?

22 A. No, I don't think. I don't think so.

23 Q. Mr. Bolton, again, I'm going to kind of
24 change directions with you. So, I will tell you up
25 front.

1 When you look back on your career in doing
2 industrial hygiene work that you have done over the
3 years, can you recall that you specifically have done
4 field work that involved gathering samples for asbestos?

5 A. Yeah, I probably took a handful.

6 Q. If we go back in time to the earliest time
7 that you did some asbestos monitoring, what technique
8 were you using, the earliest technique that you
9 remember?

10 A. The konimeter.

11 Q. And would you describe for us how the
12 konimeter worked that you were familiar with.

13 A. It's a -- It's a little device that has a
14 measured volume chamber. And you quickly open - pull a
15 plunger, and it speeds it through - speeds the air
16 through an orifice and impinges it on a plate. And, so,
17 you get a discrete - you get a discrete section on this
18 plate. And you can take -- This is one of those where
19 you can take a dozen samples and it takes you two days
20 to count them all.

21 But it had a little squeeze bulb on it.
22 And you filled the chamber with - drew air from the
23 atmosphere that you were trying to sample into the
24 chamber. It was stabilized with -- There was a filter
25 paper in it as I remember, a piece of blotter paper that

1 you moistened with water so that it would be a fairly
2 humid atmosphere and would cause the particles to
3 impinge.

4 As I remember, what we did was we put some
5 kind of - not vaseline, but a fairly dust-free grease on
6 it; a very thin coating. And then you can set this
7 instrument up, and you can actually look at the fields
8 that you are going to be counting because it had an
9 indexing thing on it. And as you went around, you
10 could -- I think you had 12 positions or something like
11 that. That may not be the exact number. It might have
12 been only ten. But you can index it. You can actually
13 look through the microscope. It has a little 200 power
14 microscope that you fit on it.

15 And you can actually look at the field area
16 that you are going to count later on after you take the
17 sample. And what you are doing is you are doing
18 background counting. It makes sure that you didn't
19 introduce something onto the glass plate before you do
20 the sampling.

21 And you can do this. You walk around. You
22 can take samples in very unusual places. It doesn't
23 take long to do it. It's fairly rapid. It's
24 probably -- I don't know what the accuracy is. It's
25 probably plus or minus 30 percent would be my guess.

1 job was.

2 A. Leo was my boss when I moved from K-25 to
3 Y-12 in 1955. He was the industrial hygienist. He had
4 come to the plant and worked as a toxicologist
5 basically.

6 Q. Can you tell us what Mr. LaFrance's
7 background was?

8 A. As I recall he worked -- Eastman Kodak ran
9 the Y-12 plant during the early days up until '48 or
10 something like that. And Leo had been at the Rochester
11 labs I think working in their toxicology - in Eastman
12 Kodak's toxicology laboratory.

13 He -- They put him -- They gave him an
14 assignment - gave him a deferment from the "Big War" as
15 Archie Bunker says; and he ended up working at Oak Ridge
16 the - the whole time. He ended up being the industrial
17 hygienist and eventually went to New York and retired
18 from Carbide at - when they were still at 270 Park
19 Avenue.

20 Q. Is Mr. LaFrance still living?

21 A. I think so. I don't honestly know. He
22 lived in the penitentiary -- No. No, he didn't live in
23 the penitentiary. Sing Sing - Ossining. He lived in
24 the Ossining area on the Hudson River.

25 Q. He was up the river without a paddle?

1 A. Yeah, he probably was.

2 Q. I think that's what that came from, wasn't
3 it?

4 A. I think he's still alive. He became an -
5 or a professional photographer and has made more money
6 than he ever made working for Carbide.

7 Q. Dr. Kenneth S. Lane, L-a-n-e; would you
8 have known him?

9 A. Ken Lane was an assistant medical
10 director - associate medical director, whatever, for the
11 corporation. He had -- I think Ken was -- He was the
12 assistant medical director at Y-12 I believe - it's
13 either Y-12 or Paducah - and was taken to New York as
14 one of the assistant or associate medical directors in
15 the - I want to say early '70's. I'm not sure about the
16 timing. But he was an assistant medical director at one
17 of the nuclear division facilities and went to New York.

18 Q. And would you know if Dr. Lane is still
19 living?

20 A. No, I have not -- I have not heard anything
21 about Ken since he retired. He lived -- I'm
22 anticipating -- I shouldn't anticipate your next
23 question. Go ahead.

24 Q. I was going to ask where do you think he
25 retired to.

1 A. The last time I knew he was anywhere, he
2 was in Chappaqua, New York because that's where I lived.

3 Q. James F. Morehead, Jr.; would you have
4 known Mr. Morehead?

5 A. Yes.

6 Q. And how is it that you would have know
7 Mr. Morehead, please?

8 A. Jim Morehead was the industrial hygienist
9 for the Y-12 plant when I went back to Oak Ridge in
10 1961. Jim died of a heart attack in 1970 -- I don't
11 know. I know he died of a heart attack. I don't recall
12 when it was frankly. Time just sort of gets to be a
13 blur after a while.

14 Q. As far as you can recall, was Mr. Morehead
15 always at the Oak Ridge operations?

16 A. He was always in Y-12. He went to work for
17 Tennessee Eastman when it was Tennessee Eastman, and --
18 Yes.

19 Q. And I think you have told us about
20 Dr. Nale, T. W. Nale.

21 A. Yes.

22 Q. He came after Dr. Cranch as you recall?

23 A. Uh-huh.

24 Q. Can you tell us anything about Dr. Nale's
25 background?

1 A. Only that he was a physician.

2 Q. You don't know where he would have
3 practiced before he came to Carbide if anywhere?

4 A. No, I have no idea.

5 Q. Did you know Dr. Nale himself?

6 A. Yes. Yes.

7 Q. Can you tell me approximately the time
8 period that Dr. Nale would have been with Carbide?

9 A. I went to New York in '78. I think Tom was
10 still working then. I think he retired -- He retired
11 about the time we went up there as I recall. We -- I
12 went up there as I recall - it had to be late '77 or
13 something like that. And he had been the medical
14 director for a long time. I want to say at least 15
15 years, maybe longer than that. I just -- I don't know.
16 I don't remember.

17 Q. Do you recognize the name Joe Earl Neff -
18 N-e-f-f.

19 A. Joe Neff, yes.

20 Q. How do you know Mr. Neff?

21 A. Joe is -- Did Joe die of cancer?

22 Q. I don't know Mr. Neff.

23 A. He was at Charleston. He was the -- He was
24 the group leader. I met Joe after I left Charleston.
25 He was the group leader in charge of the methods

1 development work until fairly recently. I think he's
2 retired now. I'm not sure. I'm not sure.

3 Q. Would you know to what area he retired to,
4 what area of the country?

5 A. His family is all right there in
6 Charleston. I suspect that that's where he is. But Joe
7 came into the field of industrial hygiene much later
8 than I did. I think he's -- My guess is he's probably
9 10 or 12 years younger than I am.

10 Q. Would you have known G. O. Nelson,
11 N-e-l-s-o-n?

12 A. That name rings a bell, but I can't do
13 anything with it.

14 Q. One of the records we found says that
15 Mr. Nelson was working on 'an ASA committee in 1953 for
16 Carbide. Does that help any?

17 A. What are his initials?

18 Q. G. O.

19 A. G. O. I'm sorry. It doesn't do anything.
20 It sounded familiar, but I -- Nelson is not an uncommon
21 name. I just don't know.

22 Q. Would you have known John C. Schonberg,
23 S-c-h-o-n-b-e-r-g?

24 A. Schonberg.

25 Q. Schonberg.

1 A. The "ragin cajun" from Louisiana, yes.

2 Q. How is it that you would know

3 Mr. Schonberg?

4 A. Cressend was an industrial hygienist for
5 the Taft plant in the mid-'70's I guess. The first time
6 I met him was - was in Charleston. It had to be
7 somewhere around '74 or '75.

8 Q. And do you know how long he stayed with
9 Union Carbide?

10 A. I think he still works for the corporation.
11 I don't know that for sure, but I think he does. He's
12 not an industrial hygienist any longer. He's doing
13 something else.

14 Q. Would you know Charles W. Turok -
15 T-u-r-o-k?

16 A. Turok, Chuck Turok, yes. Chuck was the
17 industrial hygienist at Paducah. He did the industrial
18 hygiene work. Dick Baker did the health physics work.

19 Q. And was Mr. - I'm sorry.

20 A. Turok.

21 Q. Turok - did he retire from Carbide?

22 A. I think so. I haven't heard from Chuck in
23 forever; since I left Oak Ridge in '78.

24 Q. As far as you know he stayed in the nuclear
25 division?

1 A. Yeah. He would be a Martin Marietta
2 employee at this point. No, he can't be. He was older
3 than I was. He's got to be retired.

4 Q. Would you have known Arlin - and I think
5 it's Voress, V-o-r-e-s-s?

6 A. Yes, I would. A. G. Voress.

7 Q. How would you have known him?

8 A. He was my boss in New York.

9 Q. What was his title?

10 A. Vice-president of occupational health.

11 Q. Can you tell us Mr. Voress' background
12 asbestos you understood it?

13 A. Arlin -- Arlin came out of sales. He was
14 one of those super salesman and he needed -- No. He --
15 He became -- I almost have to -- I almost have to back
16 up because I can't -- In order to get it straight in my
17 mind I have to reconstruct what happened and why it
18 happened.

19 He was the SHARE manager for C & P. He was
20 vice-president for safety, health and matters relating
21 to the environment, hence the acronym SHARE, S-H-A-R-E.
22 He became -- When they did some minor reorganizations -
23 I forget when it was now. It's got to be 1980 - '80 or
24 '81, something like that. They did away with this -
25 that particular super-structure within C & P and brought

1 most of those people into the corporation.

2 And he became, instead of the
3 vice-president for safety, health and matters relating
4 to the environment, he became the vice-president for
5 occupational health. Occupational health had under it
6 industrial hygiene and some other activities.

7 The medical director was not part of that
8 direct report, but he was -- He was on the team. There
9 was a team that did all of the work. So, that's how I
10 knew Arlin. Arlin is retired from the corporation and
11 lives somewhere in Florida, I think.

12 Q. Did Mr. Voress get some safety and health
13 training along the way to get him from sales into this
14 position of SHARE responsibility or whatever it was?

15 A. I don't think so. I think Arlin had the
16 knack for getting the job done. Whatever job you
17 assigned him, he got it done. And he somehow managed to
18 glean whatever information he needed in order to do his
19 job.

20 You know, it's the old story how much - how
21 much technology do you need to be a manager? And I'm
22 not going to answer that. So, the answer to your
23 question is I don't think he had any formal training;
24 but he had lots of conversations with lots of people.
25 And he always learned more than you did.

1 Q. Would it be accurate to say that
2 Mr. Voress was your advocate in management?

3 A. Oh, absolutely; yeah.

4 Q. If not the professional advocate, he was at
5 least your voice to get the job implemented?

6 A. I worked for him. I reported to him.

7 Q. It sounds like it was a satisfactory
8 arrangement to you?

9 A. I liked Arlin very much. He was a -- He
10 was a nice person. He was a people person. He
11 obviously had to be if he had been in sales, you know.
12 He liked to be with people. He liked to talk with
13 people.

14 Q. Would you put him in the category of - let
15 me see; what did we call it earlier this morning -
16 committed management?

17 A. Oh, yeah. Oh, yeah, absolutely.

18 Q. So, he was on the side of health and
19 safety?

20 A. Right.

21 Q. Would have known of a Mr. Fred Williams?

22 A. Yes.

23 Q. How was it that you knew Mr. Williams?

24 A. Fred was the supervisor that did all of
25 the - that supervised all of the analytical work for the

1 industrial hygiene department at Y-12 plant. When I
2 left -- And nobody could ever understand this. But when
3 I left Charleston in 1961 to go back to Oak Ridge, Fred
4 left Charleston - left Oak Ridge in '61 to go to
5 Institute. I think it was Institute.

6 You say why would -- Why would they move
7 you back and him up here; give him your job down there
8 and you up here? But that's not the way things worked.

9 Q. Excess money in the moving account maybe?

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17 Chemists Association which I think we now call the
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24 change directions with you. So, I will tell you up
25 front.

1 When you look back on your career in doing
2 industrial hygiene work that you have done over the
3 years, can you recall that you specifically have done
4 field work that involved gathering samples for asbestos?

5 A. Yeah, I probably took a handful.

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7 that you did some asbestos monitoring, what technique
8 were you using, the earliest technique that you
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12 konimeter worked that you were familiar with.

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22 And you filled the chamber with - drew air from the
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16 that you are going to count later on after you take the
17 sample. And what you are doing is you are doing
18 background counting. It makes sure that you didn't
19 introduce something onto the glass plate before you do
20 the sampling.

21 And you can do this. You walk around. You
22 can take samples in very unusual places. It doesn't
23 take long to do it. It's fairly rapid. It's
24 probably -- I don't know what the accuracy is. It's
25 probably plus or minus 30 percent would be my guess.

1 It gives you -- It gives you a quick answer. It allows
2 you to make a judgment as to whether or not you need to
3 do something.

4 And this would -- This would work on
5 asbestos or it would work on nickel dust or anything -
6 anything which you could impinge on that slide.

7 Q. Can you remember the time period that you
8 would have been using the konimeter for asbestos
9 monitoring?

10 A. I think I did a little bit -- I think I did
11 maybe a half a dozen samples at K-25 in the - in the
12 late - in the early '50's. It would have been '54
13 maybe, something like that, maybe early '55. And then I
14 did again, not very many, a half a dozen samples when I
15 went back to Oak Ridge in '61. It was -- As I remember
16 it was an academic interest to the medical director.
17 What kind of concentrations are we getting when our
18 utility mechanics are repairing asbestos on the poles?

19 So, I remember that one better than I do
20 the earlier one. Those particular samples - I think
21 there was four or five, maybe six - I don't remember
22 exactly - but the dust counts were in the order of
23 300,000 - 300,000 particles per cubic foot, something of
24 that sort.

25 And when we looked at it and did the

1 calculation, it was - even if it were asbestos -- Even
2 if it were mostly asbestos, it would have not been any
3 higher than the eighty-five fifteen or whatever the
4 devil it was. So, we did not -- We didn't figure that
5 there was a problem when they were up on this
6 scaffolding. And it was -- We put the industrial
7 hygienists at more of a risk of falling off than we did
8 protecting the worker. And mostly because we were
9 putting -- We were putting Custom Comfos on them anyway.
10 I think they were Custom Comfos at that time. They --
11 It has to be. It has to be a Custom Comfo. It can't be
12 just the Comfo.

13 So, they were -- They were wearing
14 respiratory protection. So, it didn't really make that
15 much difference.

16 Q. You say asbestos on the pole. What did you
17 mean by that?

18 A. Well, most of the -- Most of the asbestos
19 was used in insulating steam pipes. We had a large
20 steam plant. And that steam plant provided heat for
21 every building in the X-10 complex. It didn't make any
22 power. All the steam went to heating the building.

23 And periodically they would have to go out
24 and, you know -- Somebody - a crane would hit it or
25 just normal weathering would cause it to deteriorate a

1 little bit. They would have to go out and repair a
2 piece of insulation. And, of course, this plant was
3 built in '43, '44, '45. So, you know, it was all
4 asbestos. There were no substitutes for it at that
5 time.

6 Q. The work that was being done then was not
7 the removal of insulation but just the patching of what
8 was already there?

9 A. Right. Right. Just repair. Just repair.
10 Usually it was a small job, short job. It didn't take
11 very long.

12 Q. And even though it was a small job and
13 exposures were running as you best recall approximately
14 300,000 fibers per cubic foot - I'm sorry - particles
15 per cubic foot, you still required the men to wear
16 Custom Comfo respirators?

17 A. I didn't require them. I suggested that
18 they might want to.

19 Q. Why would you even suggest it?

20 A. Well, it doesn't make any sense to exposure
21 yourself to a material that causes quote "asbestosis"
22 unquote if you don't have to. So, I suggested that they
23 wear them. And I don't know of a situation where they
24 refused frankly.

25 Q. You call these Custom Comfos. That's a

1 trade name of ---

2 A. (Interrupting) Yeah. It's made by Mine
3 Safety Appliances Company.

4 Q. A dual-cartridge respirator?

5 A. Yeah. It looked like a big chipmunk with
6 nuts in your cheeks when you've got it on.

7 Q. Can you recall any of the operations at Oak
8 Ridge in this same time period when you were doing this
9 sampling that would have required asbestos insulation
10 removal?

11 A. Not really. The -- It would have been
12 later. It would have been later. It would have been in
13 the late '60's - '69, '70, '71 time frame, something
14 like that. A lot of the new buildings were just being
15 built. And, so, there was -- There was very little
16 demolition work going on.

17 Most of the early destruction, the stuff
18 that they tore down, they were so fearful of an alpha
19 particle, that this thing was almost handled in a
20 glove-box type of operation. So, you know, the
21 radioactivity potential was driving everything at that
22 point. So, they were -- They were tearing it down, but
23 everything was put in plastic bags and was hauled off to
24 the dump where they controlled the material very well.

25 They measured it for radioactivity. So, it

1 wasn't until the late '70's - early - late '60's, early
2 '70's that we began to do some demolition, modify some
3 of the buildings, remove boilers and so forth. At that
4 point everything was being - was done wet. We'd wet
5 everything down before we started.

6 And I think -- I think even they were - we
7 recommended that they wear their respirators. They may
8 not have. I wasn't there all the time. But certainly
9 they wore them while I was there, while I was watching
10 them because I had a lot of respect of the work force at
11 the laboratory.

12 Q. You said that in about the 1961 time period
13 that the big concern was alpha particles?

14 A. Radioactivity, you know. Everything was in
15 a regulated zone. And the whole plant was a regulated
16 zone. Once you walked in the front gate, you were in
17 practically a regulated zone. And all of the
18 radioactivity was so carefully controlled. And since
19 the health physicist could not get inside this equipment
20 to smear it to determine whether or not it was
21 radioactive, they knew that it was and handled it
22 accordingly.

23 Q. And you mentioned almost a glove-bag
24 technology.

25 A. Well, they -- Not glove-box technology.

1 That was earlier. But it was handled as if it were
2 radioactive. It was all very carefully removed. It was
3 put in plastic bags. The plastic bags were sealed. It
4 was carried very carefully and put on the truck. It
5 wasn't thrown over someone's shoulder and pitched on the
6 truck kind of thing.

7 Q. And what time period again is this now
8 that ---

9 A. (Interrupting) It's got to be the late
10 '60's, early '70's as we began -- No. No. I'm sorry.
11 That would have been all along. It's in the late '60's
12 and early '70's that we began to wet everything down
13 because we figured that it was more important to control
14 the dust of asbestos in this case than it was to worry
15 about some contamination. If we got radioactive
16 contamination on the floor, we could clean it up. But
17 we did not want the material to become airborne.

18 So, I remember, it was a big cuss fight
19 with the health physicists because they didn't want to
20 wet anything. We didn't want to touch anything that
21 hadn't been hosed down pretty good.

22 Q. But this technology that you were telling
23 us about for controlling potential exposures to the
24 alpha particles, that activity went earlier than the
25 late '60's for asbestos?

1 A. Oh, it went for anything. Any time you
2 removed anything from a building, it had to be put in a
3 bag. It had to be quote "green tagged" as we called it
4 or it had to have a radiation tag on it. Green tagged
5 meant that it was free and clear of any radioactivity.
6 It had no alpha, beta, gamma radiation whatsoever. So,
7 you know, that's just the way they handled it. There
8 was such a tight inventory on radioactivity that
9 everything was handled this way.

10 Q. How far back in time did those techniques
11 get applied?

12 A. Well, it was -- They were doing it when I
13 got there in '61. And I don't have any reason to
14 believe it hadn't been that way for some time.

15 Q. And I take it when something was put in
16 these bags, they either knew to put a green tag on it or
17 a red tag or ---

18 A. (Interrupting) Well, a green tag meant it
19 was safe; that it didn't have any radioactivity on it.
20 And most things you could do that with. But when you
21 started demolition work, there was no way you could get
22 into every nook and cranny. And, so, everything was
23 handled as if it were radioactive. And for that reason,
24 you ended up putting everything that was brought out of
25 the building -- If it was too big to put in a plastic

1 bag, it was covered with plastic and taped. If it was
2 small enough to be put in the plastic bag and taped
3 shut, it was put in a plastic bag and carried and put on
4 a truck. It was as simple as that.

5 Now, obviously they didn't pick up big
6 boilers and things like that; but boilers were - were
7 covered with plastic and lifted very carefully onto the
8 truck. If they couldn't get it -- If they couldn't
9 quote "green tag" it unquote, which meant it had no
10 radioactivity anywhere, then it was handled as if it
11 were.

12 Q. And that was because of the concern of the
13 hazards from the radioactivity?

14 A. Radioactivity, not for anything else. It
15 was the radioactivity.

16 Q. What was the concern about the
17 radioactivity at that time, unless there is some top
18 secret thing I'm not supposed to know about?

19 A. Well, the laboratory -- The laboratory was
20 involved in the extension of the war effort, but in the
21 peaceful uses of atomic energy. And, so, much of the
22 work there was not classified. Some of it was, but most
23 of it was not.

24 And they were making medical isotopes.
25 Certain of the medical isotopes were only available

1 through Oak Ridge. They had been made at the graphite
2 reactor, the old graphite reactor; or they had been -
3 been made through one of the big reactors, one of the
4 other reactors that we had going. We had several
5 swimming pool reactors; the old graphite reactor where
6 the radiated samples made it radioactive. Iodine, for
7 example, made it radioactive. And then it was - was
8 cleaned up, purified and assayed very carefully and sent
9 out as a pharmaceutical, radio pharmaceutical. There
10 was tremendous shipments of these things out.

11 Q. So, I take it that your concerns even in
12 the early '60's then from the radiation standpoint, you
13 knew that there was a hazard of developing cancer from
14 overexposure to radioactive materials?

15 A. Well, you know, at that point we knew that
16 many forms of radiation did produce cancer.
17 Ultraviolet, for example - sunlight causes skin cancer.
18 Yes, we knew -- We knew most of this. Plutonium causes
19 cancer and so forth. Some of the others did, too.

20 Q. You said that you remembered in the early
21 '50's using the konimeter for about half a dozen samples
22 or so. Can you remember what that occasion was?

23 A. That was K-25. It was almost the same kind
24 of operation that I was talking about in the - in the
25 '60's when I went back to X-10. It was almost the

1 identical operation. It was an insulator putting
2 insulation on a pipe somewhere.

3 And it was one of these where the doctor
4 thought, "Wouldn't it be nice if we knew what the
5 concentration; what the dust count was?" And I -- In
6 those days I saluted and said, "Sure would, boss.
7 Whatever you want, I will go get it." So, I went and
8 got the samples. And he's the one that made the
9 judgment.

10 Q. Is this the kind of a survey that would
11 lead to a written report?

12 A. Yeah, the results were reported. You know,
13 it would be short and sweet. On a certain day six
14 asbestos samples - six samples were taken for asbestos
15 dust in building so and so and so and so. The
16 operator's name was. And then it would report in a
17 table - the following table. You know, it would be
18 that kind of report. Could you find it? Good luck.
19 That's a long time ago.

20 Q. Would it have been a classified document?

21 A. It depends. It could have been. It could
22 have been. It depends on what area it was in.

23 Q. And this K-25 building could be one of
24 those areas?

25 A. In the gaseous diffusion plant, which I

1 call K-25, it could have been. Most of it was
2 classified as a matter of fact.

3 Q. And the area in the 1960's - you said about
4 '61 when you took this second group of samples, would
5 that have been classified?

6 A. It was probably on a telephone pole. You
7 know, I mean all of the pipe was suspended above the -
8 above ground. And, yeah, I -- I don't remember writing
9 a report. I probably did, but I don't remember writing
10 one. I can't believe Tom Lincoln would let me get away
11 with not writing a report.

12 Q. Was it the general practice at the time
13 that you worked there at Oak Ridge to recommend to
14 insulations to wear respirators when they were handling
15 asbestos-containing products?

16 A. Generally, yeah. I think that's -- I think
17 that's a fair statement.

18 Q. Does that go back to what you told us
19 earlier that you could see no reason not to if you are
20 dealing with a material that contained asbestos?

21 A. Well, you know, the asbestos - asbestosis
22 was not a pleasant disease to have. It was a
23 debilitating disease. And, therefore, if you could
24 prevent it by some respiratory use, why, then that's
25 what you ought to be doing. And that's basically what I

1 did. I just recommended that they wear respirators.

2 Q. Were there any other dust controlling
3 activities that you know of that the insulators would
4 have had available to them in this 1950's, 1960's time
5 period at Oak Ridge?

6 A. Well, almost all of the shops -- If they --
7 If they did -- If they did the fabrication in the shops
8 and took it into the field to install, in '61 most all
9 the shops as I remember had local exhaust ventilation,
10 had spot ventilation pickup. I know the welding areas
11 did. I -- I -- I don't know that every one of them were
12 done that way.

13 Q. Can you think of any other times,
14 Mr. Bolton, that you did any monitoring yourself for
15 asbestos other than these two instances you told us
16 where you used the konimeter?

17 A. No, not at all.

18 Q. Did you receive any special training or
19 anything to use the konimeter?

20 A. No. It was a very simple device to use.

21 Q. So, you basically just picked it up; and it
22 had instructions with it?

23 A. Read the instructions and you ought to be
24 able to do it. And I think most people could.

25 Q. The use of midget impingers and light field

1 microscopic counting of asbestos, is that something you
2 ever did?

3 A. Yes, we did it; but we had a terrible
4 problem with it because we had so much vibration that
5 we - that the particles never really settled in the
6 whipple disk. You would -- You would set it up, do the
7 midget impinger, go through the whole nine yards; and
8 then you'd sit there and your eyes would quiver almost
9 from watching these particles do this.

10 And you have to remember that that whole
11 place was energy. It sucked energy like - like a sponge
12 takes water. It really -- And, so, the ground, you
13 could -- You could -- We could not mount the microscope
14 in such a way that we could eliminate the vibrations.
15 We did some dust counts with the whipple disk. But it
16 was -- I have to tell you, it was pretty iffy, the
17 results were.

18 And the konimeter was -- You didn't have
19 that problem because you - you had stuck that particle
20 to the glass and you could see it. It didn't sit there
21 and quiver while you were trying to count them.

22 Q. At Oak Ridge, Mr. Bolton, while you were
23 there, do you know of anyone else who was doing any dust
24 studies?

25 A. They might have been doing some at the

1 other two plants, but I have no way of knowing that.

2 Q. You don't recall visiting with any of the
3 other industrial hygienists about the fact that they did
4 some dust sampling or did an evaluation for asbestos?

5 A. No, not really.

6 Q. Were there other dusts that would have been
7 of interest to an industrial hygienist besides asbestos
8 at Oak Ridge in this time period of the '50's and early
9 '60's?

10 A. Yeah, there was a little bit of
11 sandblasting going on, not very much because most of the
12 metal was cleaned with acid - was acid etched. And I
13 mean it was literally bathed - was given a bath in
14 concentrated acid, depending on what the material was.

15 Yeah, there was a small amount of
16 sandblasting done. I don't know whether they had a
17 sandblasting operation at Y-12 or K-25. I don't ever
18 recall seeing it. We had one at the laboratory because
19 we took -- We did a handful of samples just to satisfy
20 ourselves that the - that the sandblasting equipment,
21 the hood, the protective equipment was working.

22 And when we determined that it was working,
23 then we just made sure it was maintained. My group
24 maintained the - the equipment like that. So, we knew
25 when he got one that it was right. It was going to work

1 right.

2 Q. So, you would actually do sampling inside
3 the hood?

4 A. Yes. That was -- That was inside the hood.
5 There was no point in sampling outside the hood. All
6 you would do is sandblast the bottom of the impinger.
7 But, yeah, we took -- We took personal air samples
8 inside the hood with midget impingers. And later on we
9 did it with millipore. I don't remember when millipore
10 came out, but it was -- When was that, '60? Late '60's,
11 early '70's perhaps.

12 Q. That's my recollection.

13 A. Yeah. And we didn't find -- We didn't find
14 any concentrations of any consequence.

15 Q. Do you remember what kind of respirators
16 you were using for that application?

17 A. I don't know whether it was the Bullard.
18 It was probably the Bullard, but it could have been --
19 There were a couple of others that were -- They all
20 looked the same. They looked like they were made in the
21 same plant, just different names put on them - or pretty
22 close. I don't know. It probably was a Bullard. It
23 could have been a Pulmosan - or if you prefer, Pulmosan.
24 I don't know.

25 Q. When you went to Charleston - and looking

1 back in my notes here, was that '56 to '61, at least
2 from your resume?

3 A. Right.

4 Q. Do you remember anyone doing any dust
5 sampling during that time period?

6 A. No. Would have had no reason to. I was
7 working basically in the laboratory on methods
8 development work; and that's all.

9 Q. You really didn't get out in the plants and
10 deal with ---

11 A. (Interrupting) Only as I said earlier, I
12 did a couple of sound surveys at Texas City. I did a
13 little bit of work at Institute on one of the bioassay
14 methods that I developed for one of the insecticides.
15 And that was about -- It had to be something along those
16 lines.

17 Q. The other industrial hygienists who were
18 around at Union Carbide in the '56 to '61 time period
19 would have been Mr. Ketcham?

20 A. Uh-huh.

21 Q. Anybody else around the Charleston area?

22 A. Yeah, there was -- There was one at - as I
23 said this morning - there was one at Institute. I can't
24 call his name. There was one at South Charleston that I
25 think was named Burt Murray. '56 to '61. Peele didn't

1 start work until after - after I went back to Oak Ridge.
2 That's probably the only ones. That's the only ones
3 that I recall.

4 Q. You can't recall seeing any dust sampling
5 done or learning of any dust sampling that any of these
6 other industrial hygienists might have been doing
7 during ---

8 A. (Interrupting) Oh, I think Bob was doing
9 dust sampling; but he was sampling for Sevin dust and
10 things like that. I don't -- I don't ever recall -- He
11 probably did some studies. I don't remember. I'm sure
12 he did. I just don't -- They just won't come back. I
13 recall the Sevin because I was the one that developed
14 the bioassay to do sevin by-products in the urine. And
15 we were trying to figure out what to do about that one.
16 But I don't recall.

17 Q. Can you recall any discussions with
18 Mr. Ketcham about doing dust sampling for asbestos?

19 A. No.

20 MR. ELLISTON: Herschel, could we
21 take a quick break?

22 MR. HOBSON: Sure. I will pass
23 the witness.

24

25 (A BRIEF RECESS WAS TAKEN.)

1 EXAMINATION BY MR. BLANKS:

2 Q. Mr. Bolton, I'm going to take over for a
3 little while and ask you a few questions. I wonder if
4 you've had times in the past when you have had to give
5 testimony like this or in a trial for any reason?

6 A. One time.

7 Q. Was that while you were a Union Carbide
8 employee?

9 A. Yes.

10 Q. Just generally, what was the subject about
11 which you testified?

12 A. Respiratory equipment, sandblasting. Oh,
13 that's the report that I remember. I -- I read -- In
14 that testimony I read one of Peele's reports about --
15 No, it wasn't sand. It wasn't silica.

16 Q. Kaylo?

17 A. Yeah, it was asbestos. It was a special
18 study he did at Institute. When was that - 50's?
19 '60's, the late - middle '60's.

20 Q. Yes, sir.

21 A. Late '60's.

22 Q. That came up in your testimony?

23 A. Yeah.

24 Q. Or did it just strike you at the moment and
25 you just remembered it?

1 A. Oh, no. The lawyer for the company showed
2 me that. I read the report, and he asked a series of
3 questions. You were there.

4 Q. No.

5 A. You were there. That was the case down in
6 Texas. I reread that -- That's the testimony that I
7 reread that I just suddenly blanked out.

8 Q. So to speak.

9 A. John gave me that testimony. Yeah; that's
10 right. You had -- You were the lawyer of record.

11 Q. Well, I must have not done a very good job?

12 A. Well, you probably didn't -- Well, I'm not
13 a notable person. You probably wouldn't remember me.

14 Q. Well, that's not fair now. I'm feeling
15 badly about that. So, this was a Texas City case?

16 A. Yeah, I think so. It was in Beaumont. The
17 case was in Beaumont as I remember.

18 Q. And it was Art Stamm from Baker & Botts
19 that was ---

20 A. (Interrupting) Right.

21 Q. It's just like old home week, Mr. Bolton.

22 A. That's right.

23 Q. So, that's the only other time that you
24 have given deposition testimony?

25 A. That's the only time. This is the second

1 time I have ever done this kind of thing.

2 Q. Well, in that case I don't need to ask you
3 about what you thought or what you said now.

4 MR. HOBSON: Mr. Bolton used to
5 wear a mustache.

6 (By Mr. Blanks)

7 Q. No. Did you used to wear a mustache?

8 A. You will find it on this video.

9 Q. I apologize for not -- It's been a long
10 time. Sir, we will move right along from there.

11 Did you at any time in the past give any
12 kind of testimony at any governmental hearings or
13 regulatory bodies while you were with Carbide?

14 A. No.

15 Q. We visited about your contact with the
16 Manufacturing Chemists Association briefly. And while
17 you were answering some other questions, you mentioned
18 your participation in the A.I.H.A., the American
19 Industrial Hygiene Association. And I gather you were
20 active in that from - what, early on in your career?

21 A. Well, the major activity would have been
22 from the point when I went on the Board of Directors in
23 '74. It's in that -- It's in that thing there.

24 Q. But you began to go to meetings shortly
25 after you began doing industrial hygiene work I suppose?

1 A. Right.

2 Q. And the company was generous enough to pay
3 for you to travel to the national meetings and I suppose
4 regional meetings?

5 A. Some regional meetings, not all of them.

6 Q. Those that were in the vicinity?

7 A. Yeah.

8 Q. And in going to these meetings you had a
9 chance to get acquainted with a lot of industrial
10 hygienists from other companies?

11 A. Uh-huh.

12 Q. Many of whom you mentioned to us earlier.
13 Did you also have an opportunity to attend industrial
14 hygiene foundation meetings in Pittsburgh or wherever
15 they had them?

16 A. I don't think I ever attended a foundation
17 meeting. I would have to think about it for a long
18 time, but I don't think I was ever at a foundation
19 meeting.

20 Q. Do you know any persons at Carbide who were
21 attendees at those meetings or more actively involved
22 with the foundation?

23 A. Well, I think -- I think one of the -- One
24 of the New York people was on the Board of Directors. I
25 don't recall who it was. But Carbide supported the

1 foundation.

2 Q. They may have been one of the original
3 founders?

4 A. I think they were one of the founders.
5 I -- I -- I would be guessing if I told you that for a
6 fact. But Ketcham went to the foundation meetings
7 maybe. He's the only one I can think of.

8 Q. But you did, however, have their materials
9 available as a resource to you in your work as
10 industrial hygienists I gather?

11 A. Yes.

12 Q. Did any of your after hours' work so to
13 speak, your professional work that wasn't at the plant,
14 involve input to any American Congress of Governmental
15 Industrial Hygiene committees or groups?

16 A. No.

17 Q. Do you know anybody at Carbide that had any
18 dealings with them that you are aware of?

19 A. No, they wouldn't.

20 Q. How did you come to know Mr. Rowe?

21 A. V. K. Rowe?

22 Q. Yes, sir.

23 A. I think Verald - he interviewed me in 1956
24 I think. That was when I first met him, and I was
25 contemplating leaving the corporation.

1 Q. No, say it's not so.

2 A. And I think -- And I think he was the one
3 that interviewed me. Harold -- I don't remember.
4 Harold something or other.

5 Q. Harold Hoyle?

6 A. Hoyle, yeah. He was the industrial
7 hygienist, and I talked with him. There was another
8 one: Ralph Langner. That name just popped up. He was
9 there, and I think I interviewed with Ralph, also.
10 And that's where I first met him.

11 Q. And then having met him, I infer that you
12 probably encountered Mr. Rowe from time to time at
13 professional association meetings in the years to
14 follow?

15 A. Oh, yeah.

16 Q. Likewise Mr. Hoyle?

17 A. Well, not so much him as Ralph Langner.
18 Ralph was -- Harry was almost invisible, but Ralph was
19 at meetings and V. K. was at meetings.

20 Q. You had to go out and use monitoring
21 equipment to find Mr. Hoyle?

22 A. I don't know.

23 Q. Now, you were -- Before I asked you about
24 Mr. Rowe, I think you were going to tell us that it
25 wouldn't have been possible for Carbide hygienists to

1 have had any interplay or actions with the A.C.G.I.H.
2 Why were you going to say that, sir?

3 A. Because the -- In order to participate in
4 A.C.G.I.H. activities, you have to work for the
5 government - a government, a state government, the
6 Federal Government or a university. University people
7 are permitted associate memberships. But private
8 corporations are not permitted. Employees of private
9 corporations are not permitted to join A.C.G.I.H.

10 Q. And I wondered during the years that you
11 had managerial level industrial hygiene duties, were
12 there any times when the A.C.G.I.H. or its committee on
13 threshold limits elicited information from you or your
14 company about particular toxic materials.

15 A. Not - not directly. They -- No, not
16 directly.

17 Q. Do you recall having any exposure to the
18 National Safety Council while you were a Carbide
19 employee?

20 A. I was -- I went to one meeting one time.

21 Q. One of the National Congresses?

22 A. Yeah, in Chicago.

23 Q. Carbide I gather then was a member of the
24 National Safety Council?

25 A. I imagine. I don't -- I don't know

1 firsthand. I can't tell you that.

2 Q. You were not a speaker at the meeting; just
3 an attendee?

4 A. No, I don't -- Now, I don't think I ever
5 spoke - with the exception of this A.S.S.E. Region IV --
6 Did I make a presentation at that one meeting that I
7 went to? May I see that C.V.?

8 Q. Certainly, sir. (Tendering)

9 A. (Reviewing) No, it's not on here. I
10 thought maybe that presentation might have been on here
11 and it would tell me where it was. I don't think -- I
12 don't think I ever -- I don't think I ever made a
13 presentation at the National Safety Congress.

14 Q. Would you tell me briefly again what kind
15 of committees you were on with the MCA or the CMA.

16 A. I was never on a committee directly with
17 CMA. CGA, yes, Compressed Gas Association.

18 Q. Yes, sir.

19 A. But not CMA. CMA was handled by the
20 corporate people.

21 Q. Well, then, could you tell me what, if
22 anything, you had to do with the MCA, the Manufacturing
23 Chemists Association?

24 A. Oh, I was -- I'm sorry. I know what you
25 are asking about now. I was on the Industrial Hygiene

1 Committee for the ethylene oxide task force.

2 Q. Was that the only one, the only time?

3 A. As far as I know. I don't recall any other
4 one.

5 Q. Could you help me to understand a little
6 bit about how the MCA carried on its activities. I mean
7 I gathered that there were companies that were chemical
8 manufacturing companies generally that belonged to this
9 association; true?

10 A. Yeah. Carbide belongs to the Chemical
11 Manufacturers Association, as does a lot of other large
12 companies. And they have official representatives and
13 they assign official representatives from the company to
14 be members of certain groups and so forth. But I
15 don't -- I was never on one of those that I remember.

16 Q. Do you recall that they had annual
17 meetings?

18 A. Oh, yes, they do as a matter of fact.

19 Q. The association?

20 A. CMA, yes.

21 Q. And from time to time you would attend an
22 annual meeting?

23 A. I attended one. And that was the one in
24 1990 I think just before I retired.

25 Q. And the CMA like its predecessor the MCA --

1 I guess that was the same organization, just a different
2 name; right?

3 A. That is what I understand, yes.

4 Q. That set up committees with different
5 responsibilities; true?

6 A. I think so.

7 Q. Do you recall learning that there was any
8 kind of a medical committee, something of that sort?

9 A. No. There was a medical committee on
10 ethylene oxide. I don't -- I don't -- I don't honestly
11 know enough about the organizational structure of CMA to
12 talk about it intelligently.

13 Q. Well, that's the same problem I have.

14 A. I really don't. I don't -- I know they
15 have staff members. And those staff members are
16 assigned to run certain projects that the Board of
17 Directors approved. So, that's the way the CGA worked,
18 also. And I just -- I don't know how CMA works.

19 Q. They had at least a committee called the
20 industrial hygiene committee for ethylene oxide you told
21 us.

22 A. Right.

23 Q. That suggests to me that there were likely
24 other industrial hygiene committees for specific
25 materials?

1 A. There probably were.

2 Q. Do you know if there was simply an
3 industrial hygiene committee that had more general
4 concerns?

5 A. As such per se?

6 Q. Yes, sir.

7 A. Not to my knowledge. I don't know.

8 Q. Your committee, the one on ethylene oxide,
9 did it have meetings and keep minutes of the meetings?

10 A. Yes. We -- I don't remember how often we
11 met, once a quarter or something or other. Yes, we met.
12 We didn't meet frequently. We met about once a quarter
13 as I recall. I don't know that we met monthly at all.

14 Q. Do you remember getting or seeing copies of
15 minutes of the meetings or some sort of ---

16 A. (Interrupting) Oh, yeah. I'm sure that --
17 There was always -- Any time there was a -- Any time
18 there was a meeting anyplace, there was a staff member
19 taking notes. There was always minutes. They might
20 have been very short and succinct, but I think generally
21 there were always minutes.

22 Q. Do you recall if any of these got
23 circulated to you after the meetings? Would that have
24 been the routine?

25 A. Yeah, I think I remember -- I can remember

1 seeing minutes of our particular meeting, yeah. Yeah.

2 Q. Did you ever go to their headquarters in
3 Washington?

4 A. Yes.

5 Q. What did you find there? Was it a place
6 with a large staff?

7 A. Just a big office building. It looks like
8 all the rest of them do in Washington.

9 Q. Occupied a floor or more?

10 A. Yeah. I don't know how many floors they
11 occupied. The building is several stories high, five or
12 six or seven. Now, they moved. They are in different
13 quarters now. I don't -- I don't know. We -- I was on
14 the 1st floor and the 4th floor as I recall because
15 that's where the conference room was that -- We either
16 used the 1st floor conference room or the 4th floor.

17 Q. Do you recall that they had a technical
18 library at the ---

19 A. (Interrupting) I'm sure they did. I'm sure
20 they did.

21 Q. You didn't have any reason to go to it or
22 use it I suppose?

23 A. No.

24 Q. Speaking of libraries, what kind of
25 libraries did you have for technical use at the Carbide

1 facilities where you worked?

2 A. We had a standard library that had
3 practically all the publications that you could imagine.
4 A big, technical library as you might expect at Oak
5 Ridge National Laboratory.

6 Q. Did you also find a large technical library
7 at the Charleston plant?

8 A. Yeah. I don't know that I ever used it,
9 but I think there was one. I don't believe I was ever
10 in the laboratory.

11 Q. In the library?

12 A. In the library. I'm sorry.

13 Q. And what was available to you in the New
14 York headquarters?

15 A. There was -- Again, there was a fairly
16 sizeable library.

17 Q. I suppose the company subscribed to many,
18 perhaps most of the professional journals that would
19 concern a chemical company?

20 A. Uh-huh.

21 Q. And including hygiene and
22 occupational-medicine-related journals?

23 A. Right.

24 Q. The doctors you worked with, whom you spoke
25 so highly, had the benefit of these different medical

1 journals that would have been of interest to them?

2 A. Yeah, I'm sure most of them got most of the
3 medical journals anyway.

4 Q. Probably Carbide even paid for the
5 subscriptions I suppose?

6 A. I would imagine.

7 Q. The company wasn't stingy about providing
8 these kind of technical resources to its professional
9 staff?

10 A. Not to my knowledge. It was never -- It
11 was never a problem. If somebody needed a book, they
12 just simply wrote a purchase order and bought it. If
13 you needed to subscribe to a journal, you did the same
14 thing and it ended up on your expense account.

15 Q. Were there any other professional
16 associations that you belonged to that we have not
17 discussed earlier today that would be pertinent to your
18 industrial hygiene work?

19 A. Well, I don't know that they are pertinent
20 to the work. I was the President of the American
21 Academy of Industrial Hygiene. I was the Chairman of
22 the American Board of Industrial Hygiene, which is the
23 body that certifies industrial hygienists.

24 Q. The academy?

25 A. No, the American Board of Industrial

1 Hygiene.

2 Q. How does the Academy of Industrial
3 Hygienists differ from the association?

4 A. From A.I.H.A.?

5 Q. Yes, sir.

6 A. In order to be a member of the academy you
7 have to be board certified by the American Board of
8 Industrial Hygiene.

9 Q. Whereas to belong to the A.I.H.A. you don't
10 have to be certified?

11 A. Anyone with a demonstrated - that has a
12 demonstrated interest in the field of industrial
13 hygiene, there is a membership that you can get.

14 Q. I see. You mean they would let me in?

15 A. Probably.

16 Q. Did you ever encounter and make the
17 acquaintance of Jim Hammond from Standard Oil, Exxon?

18 A. Yes, I knew Jim. I know Jim.

19 Q. Yes, he's still about to be known
20 fortunately. Do you recall when and how you made his
21 acquaintance?

22 A. He's like most of the other people that I
23 know in the association. He just -- Jim was just there.
24 He worked for the oil company when I first met him. I
25 don't -- I don't know. I just -- I have no recollection

1 of when and where I met him.

2 Q. Just as far back as you can remember from
3 your professional activities?

4 A. It would have had to have been after '57,
5 something like that. My guess would have been it would
6 have been in the early '60's perhaps.

7 Q. Had you an occasion to ever attend any of
8 the Gulf Coast industrial hygiene section meetings down
9 in the Houston area?

10 A. I don't -- I don't think I was ever down
11 there when they met. I don't think that was one of
12 the - one of the ones that I visited when I was
13 President of the A.I.H.A. either. But I don't honestly
14 remember. It's possible, but I don't know.

15 Q. We talked about the journals that were
16 available to you at Carbide and so forth. Besides
17 having them there, I suppose it's safe to say that you
18 took advantage of the periodicals in your field and
19 tried to stay abreast of the published material in
20 industrial hygiene?

21 A. I read the Journal of the American
22 Industrial Hygiene Association, and that was the only
23 thing really that I read every month that it came out.
24 I read that one. And there were a handful of others
25 that I would scan the abstract on. I'm trying to

1 remember what one of them might be as an example. I
2 don't remember an example. But there were several that
3 came in. And you would look at the title page. It's
4 got all the things on it. And you'd look at it. And if
5 you have any interest in it, it -- If the compound
6 strikes your fancy or if it rings a bell or if the
7 process that they are talking about it something that
8 you are concerned about, all of a sudden, why, you will
9 stop and go over and read that part. But you don't --
10 You didn't -- There was no way we could read everything
11 that came over the desk.

12 Q. What kind of equipment for industrial
13 hygiene work - let's say what kind of laboratory, for
14 instance, did you find down in Texas City when you first
15 visited that facility? Did they have an industrial
16 hygiene lab there?

17 A. You know, I don't know. I don't remember.
18 I worked out of the medical department.

19 Q. Who was running that at the time you went
20 there?

21 A. Roy Joiner. There was one, but I swear I
22 couldn't describe it for you.

23 Q. I'm just curious what involvement, if any,
24 you had with any of the sandblasting work or studies
25 concerning that down in the Texas City plant.

1 A. None.

2 Q. Do you have any recollection that would go
3 beyond what you earlier said about Mr. Peele's Kaylo
4 dust study that you recalled when we were talking about
5 your earlier testimony?

6 A. No, I don't remember any.

7 Q. Is that something that he would have
8 brought to your attention or to you and the other
9 industrial hygienists at Carbide around the time that he
10 did the study?

11 A. Perhaps. Maybe, but I don't recall ever
12 having seen it. You know, you can't recall every
13 conversation that you have had. He may have mentioned
14 it in passing at one of our encounters and I wouldn't
15 remember that.

16 Q. Yes, sir. Do you recall what kind of air
17 sampling capability they had at Texas City back at the
18 time you were down there on your first visit?

19 A. No, I didn't look at it. I was on a
20 special project. I was to do the noise surveys and get
21 that finished and get back home to my very small
22 children. That was my wife's instruction. You don't
23 cross her. I tried very hard not to cross her. She
24 said be home Saturday night, I was home Saturday night.

25 Q. And the Seadrift plant, do you recall when

1 that was put on line roughly?

2 A. No, not really. I was only at Seadrift one
3 time as I recall. And as I said, that was the
4 windshield tour. We didn't have time to really look at
5 any of the units.

6 Q. Did I understand that was after you had
7 gone to New York to the corporate office?

8 A. Yes. Yes. As a matter of fact it was.

9 Q. So, that would have been then sometime in
10 the last 15 years?

11 A. It would have probably been 1980, '81,
12 something in that time frame.

13 Q. How large a plant is that in terms of
14 employees?

15 A. Seadrift?

16 Q. Yes, sir. It's fairly small?

17 A. As far as chemical complexes are concerned,
18 I think it's small. You know, small is a relative term.
19 I don't know. I think they had ---

20 Q. (Interrupting) A few hundred employees I
21 think.

22 A. 1,000, 1,200, something like that. That
23 may be exaggerated. I said that earlier, and I worried
24 about it when I said it. I don't know what the plant
25 population was.

1 Q. In loose terms it was at least - no greater
2 than half the size of the Texas City employment?

3 A. It wasn't nearly as big as the Texas City
4 complex; that's true.

5 Q. Who were the physicians that you had
6 contact with - I mean the company physicians - when you
7 were at the corporate offices of Union Carbide?

8 A. Jack Welch, Tom Lincoln, Dale Guillot, Ken
9 Lane, Carl Dernehl, Tom Nale. Well, Tom goes back
10 earlier. I guess Tom was gone by the time I transferred
11 in - or was about to retire. Pretty close. Because I
12 think Tom Lincoln took his place as corporate medical
13 director. There is another one. Walt Haushear.

14 Q. How do you spell that last one?

15 A. It's H-a-u-s-h-e-a-r, I think. And there
16 may not be an "a." It's H-a-u-s - and it may be h-e-r
17 or h-e-a-r. I don't remember.

18 Q. That seems like a large number of
19 industrial physicians for one corporate headquarters.

20 A. Large is relative.

21 Q. And they were all industrial doctors as far
22 as you knew?

23 A. They are all medical doctors, yes.

24 Q. I meant they had some special ---

25 A. (Interrupting) There were a couple of

1 others that I didn't mention. Not just them, but there
2 was a couple of doctors that did most of the periodics
3 in the New York office. I can see them, but I can't put
4 names on the faces. There are a couple of more.

5 Q. Where was the New York office?

6 A. 270 Park Avenue.

7 Q. Is that near the Pan Am building?

8 A. Right next door. Between 47th and 48th
9 Street.

10 Q. And Carbide had its own building at that
11 time?

12 A. Uh-huh.

13 Q. And what sort of interaction did you have
14 with these different company physicians when you were
15 the corporate industrial hygienist? I mean how would
16 you interact with them? What would they do for you?
17 What would you do for them?

18 A. Well, if they were -- They visited plants
19 like my staff visited plants. And most of the interface
20 was between the hygienist that reported to me and the
21 doctors that had that particular division. I can't --
22 I'm just trying to remember who had what. I still
23 haven't sorted that out. But whoever the doctor was,
24 the hygienist - he and the hygienist rode in the same
25 airplane. They went to see a facility together. It was

1 something that the medical director and I set up when I
2 went to New York, which we were tired of them going off
3 in different directions together. So, we insisted that
4 they start going to the - visiting the plants together.
5 And we felt that this interface would help the exchange
6 between the medical department and the industrial
7 hygiene group. So, that's -- That's why they did it
8 that way.

9 Q. And did you find it to be helpful?

10 A. Oh, I think so, yes. They began to -- It's
11 helpful for the doctor to see what the complexity is of
12 taking just a simple air sample. You know, and then he
13 doesn't go back to his office and write a memo that says
14 you really need to take 4,000 air samples out there. It
15 happens. It happens. Then you spend the next four
16 months trying to explain that silly memo that is in the
17 file. But it does help. You know, it helps. It gives
18 us an appreciation for what they are trying to do and
19 vice versa.

20 And we had -- These guys had lunch together
21 every day that they were in the office. We all went to
22 lunch at the same time. We all sat at the same table on
23 the second floor, 270 Park Avenue. I don't ever
24 remember a lunch that we didn't talk something about
25 business.

1 In other words, I don't ever remember going
2 down there just to eat. It was, "Oh, let's go eat; and
3 we can continue our conversation while we are at lunch."

4 Q. So, this was a case where the two different
5 professions really had a beneficial relationship in
6 terms of protecting the employees of the company?

7 A. I think so.

8 Q. Do you remember a J. J. Duggan or Duggan -
9 D-u-g-g-a-n?

10 A. No. Tell me where he was; that might help.

11 Q. I had a note that I can't attribute to any
12 source that put him at Carbide around '49.

13 A. Well, that's before my time.

14 Q. Just barely. He might have lingered.

15 A. Well, I just worked at Oak Ridge for four
16 years. So, really from '56 back I would not have a
17 reason to know very many of them.

18 Q. I thought he might have lingered on.

19 A. That name doesn't ring a bell.

20 Q. Were there -- Excuse me if Herschel already
21 asked you this and I have forgotten it. Were there
22 occasions when Carbide industrial hygienists would
23 actually go to the facilities of Carbide's customers to
24 deal with industrial hygiene questions or problems?

25 A. I don't think so. I don't know so, but I

1 don't think so.

2 Q. So, that's not something you had occasion
3 to do?

4 A. I never did it.

5 Q. Of course, at Oak Ridge you-all were ---

6 A. (Interrupting) Well, I didn't ...

7 Q. It was a different situation there.

8 A. Yeah. Well, we didn't really have
9 customers at Oak Ridge.

10 Q. So, there weren't any particular raw
11 materials or let's say materials that Carbide provided
12 to others as an ingredient or a feed stock or something
13 of that sort that you know of that required Carbide's
14 oversight or assistance in the use of?

15 A. They are in the commodity chemical
16 business, you know. I don't really know. I can't
17 answer that question.

18 Q. Well, you didn't really spend too much time
19 with that division, the chemical division anyway, did
20 you?

21 A. No.

22 Q. You spent five years or so?

23 A. Right. And that was a very pointed
24 assignment. That was strictly industrial hygiene
25 chemistry, not industrial hygiene.

1 Q. Yes, sir.

2 MR. BLANKS: It's five until, and
3 this strikes me as a good stopping
4 point, if that suits you. Let us
5 break.
6

7 (THE PROCEEDINGS ON THIS DAY WERE RECESSED
8 UNTIL THE NEXT DAY, JANUARY 12, 1993, AT
9 9:00 A.M.)
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1 MR. BLANKS: Back on the record.

2
3 RESUMPTION OF EXAMINATION BY MR. BLANKS:

4 Q. Good morning, Mr. Bolton.

5 A. Good morning.

6 Q. Welcome came to our fun-filled deposition.
7 Could you give me some overview of where the industrial
8 hygiene department of the Union Carbide companies that
9 you worked in fitted in with the medical department in
10 the organizational structure. And I'm assuming that
11 probably changed over time.

12 A. Well, in - in the plants it's almost
13 invariably part of the medical department. I don't
14 remember. It wasn't in the - in the -- That sounds like
15 such an easy question. But at the plant locations
16 generally they were part of the medical department. As
17 you got further up in the organization, they became
18 free-standing. And I don't know where that transition
19 took place, and I don't know when in time that
20 transition took place.

21 Q. And from an organizational administrative
22 standpoint, how did the industrial hygiene workers in
23 the plant report back to the industrial hygiene man up
24 high in the organization?

25 A. Well, there was no direct report

1 relationship at all. It was to keep them informed.
2 They sort of had a coordinating role, I guess is the
3 best way I can describe it.

4 Q. The man at the higher level?

5 A. Right.

6 Q. Would it have been the case that the plant
7 industrial hygiene folks would have then been at least
8 officially supervised by the medical chief in the plant?

9 A. I think that's right, but I -- I don't
10 remember. In Oak Ridge I worked for the medical
11 director. I don't -- I don't recall where they reported
12 in the chemicals and plastics.

13 Q. But in any event, it was Carbide's practice
14 when hiring full-time physicians to work in its plants
15 to hire doctors who were trained in industrial medicine
16 or occupational medicine?

17 A. I have no way of knowing that.

18 Q. Was it the case that those doctors you
19 worked with were, in fact, experienced in industrial
20 medicine or occupational medicine?

21 A. In my opinion, yes. But whatever -
22 whatever that's worth.

23 Q. And how did the safety staff in the plants
24 work with, if at all, the industrial hygiene people and
25 the medical people?

1 A. They were in a different organizational
2 structure. I don't -- I don't recall. Frankly it's
3 been too long. And once I got to New York, it was
4 different because we were all in the same group;
5 everybody was in the same group. But that was late in
6 my career.

7 Q. So, in the late '70's and the '80's, at
8 least at the corporate level, the safety, the industrial
9 hygiene and the medical staff people were in the same
10 group?

11 A. They were all -- Organizationally they were
12 all together.

13 Q. And there was a Vice-president I suppose to
14 which that organizational group reported?

15 A. Yes.

16 Q. And who was that during your last decade or
17 so?

18 A. Jackson Browning was the Vice-president in
19 charge of health, safety and environmental affairs.

20 Q. Did you in your fun years in school learn
21 to read or speak any foreign languages?

22 A. I took German, but I wouldn't want to be
23 quizzed on it.

24 Q. Did you take enough of it back when you
25 were a student and shortly thereafter to be able to read

1 it?

2 A. At that time, yes.

3 Q. And that was customary for folks that were
4 pursuing a technical education in the university, wasn't
5 it?

6 A. I think that's right. In chemistry you had
7 to -- You had to be able to read and translate German -
8 German or French as I recall.

9 Q. Do you recall any specific types or brands
10 of asbestos insulation that were in use or being
11 installed at the Oak Ridge plant during the 17 years or
12 so you were there the second time?

13 A. No. No idea what the material was.

14 Q. Did you have any stainless lines there that
15 required thermal insulation?

16 A. I'm sure we did. I can't give you an
17 example, but I'm sure there were.

18 Q. Were there any sort of asbestos dust
19 studies or sampling work done there of the sort that Bob
20 Peele did over at Institute that we discussed yesterday
21 other than the samples you took up on the pole?

22 A. I don't think so. None that I recall.

23 Q. I gather the Oak Ridge facility was not one
24 where there was a frequent change out or need to change
25 out insulation on lines?

1 A. No. Again, not as I recall.

2 Q. Basically just all on steam lines?

3 A. Yes.

4 Q. Part of the heating system?

5 A. (Witness nodding affirmatively)

6 Q. Did you use any in any of your laboratories
7 when you were working as an industrial hygiene chemist
8 for filter materials?

9 A. Yeah, small quantities as I remember. Very
10 long fibers, very coarse.

11 Q. Was this something where your men in the
12 laboratory took any kind of precautions in dealing with?

13 A. No. You typically worked in a hood.

14 Q. With an exhaust?

15 A. Yeah.

16 Q. I see. During the five years or so you
17 were working out of Charleston, '56 roughly to '61, did
18 you get out into the plant and observe what was going on
19 in the plant in those days?

20 A. It would have been an unusual circumstance.

21 Q. You were pretty much stuck in the lab?

22 A. Yeah.

23 Q. So, I suppose then you are not really in a
24 good position to tell us much about the techniques that
25 were used during that '56 to '61 period at the

1 Charleston plant for handling asbestos insulation?

2 A. No.

3 Q. What other Carbide facilities have you had
4 a chance to be in as an industrial hygienist besides the
5 ones where you actually worked in Texas City, Seadrift?

6 A. I have been in Texas City. I have been in
7 Seadrift.

8 Q. You told us you have been to King City.

9 A. King City. That was not chemicals and
10 plastics. That was the metals and mining division.
11 Sistersville, Ohio. Institute. I visited a lot of the
12 facilities in Linde.

13 Q. The air separation plant?

14 A. Most of the -- Most of the air separation
15 plants I've been to; most of the large ones certainly.
16 Deer Park, places like that - Montana, California.

17 Q. What about the plants in those divisions
18 you were listing for us, the - you say home and
19 automotive, battery, so on and so forth. Did I
20 understand those were under your supervision or your -
21 under your territories at that later point in your
22 career?

23 A. Supervisor is overstating it. But, yes,
24 they -- I was in the battery plants at Edgewater;
25 Cleveland, Ohio; St. Albans, Vermont. I'm drawing a

1 blank. I don't know where the rest of the battery
2 plants were. Films packaging, Chicago. And there is
3 one out in the west. I can't remember the name of it.

4 Uravan, Colorado, with the metals
5 division. Home and automotive would have been West
6 Hartford - East -- It's in Hartford, Connecticut. I
7 can't remember if it's east or west. There was one in
8 New Jersey. There was one out in the midwest somewhere
9 that I visited. But these were typically very short
10 visits, one day, two days, a quick tour of the plant to
11 see what was going on, things like that. That was all.

12 Q. Where was it that they made the antifreeze
13 for Union Carbide?

14 A. East Hartford.

15 Q. That was the only place in the country
16 that ---

17 A. (Interrupting) No, there was another --
18 There were two plants that packaged Prestone. I'm
19 drawing a blank. I don't know where the other one was.
20 I don't think it was New Jersey. I think New Jersey was
21 basically polyethylene - Glad Wrap.

22 Q. I suppose the stop leak products would have
23 been formulated in the same places that the antifreeze
24 was made?

25 A. I don't know where that was made frankly.

1 Q. When you moved to New York in 1978, from
2 that time on, do you remember working on any special
3 projects to bring Carbide into compliance with changing
4 OSHA regulations about asbestos handling, asbestos
5 hazards? Or was that ---

6 A. (Interrupting) I don't -- I don't recall
7 honestly. It's possible, but I don't remember.

8 Q. Well, it's possible that program had
9 already been well under way by the time you got there;
10 right?

11 A. Well, they had been running the asbestos
12 location out there for a long time at that point. I
13 don't know. I really don't know.

14 Q. Who did you replace when you went to New
15 York?

16 A. Paul McDaniel.

17 Q. And how long had Mr. McDaniel had the
18 position?

19 A. 19 - a guess, 1952.

20 Q. Do you know, Mr. Bolton, if he had a
21 predecessor; that is, was there a corporate industrial
22 hygienist before that time?

23 A. I don't honestly know.

24 Q. So, was it the case that Mr. McDaniel
25 retired around '78, or did he change jobs?

1 A. He retired in 1980 as I recall I think.

2 Q. Do you have any understanding or
3 recollection of where he had come from before taking
4 that position in 1952?

5 A. No, none at all.

6 Q. When to your understanding did Carbide
7 begin to or cease to buy asbestos insulation for use in
8 its plants?

9 A. I have -- I honestly have no idea.

10 Q. Do you have ---

11 A. (Interrupting) When -- I guess in Oak Ridge
12 in the early '70's we were beginning to look at - we
13 were using alternatives; but I don't remember what they
14 were at this point. Too long. I'm sorry.

15 Q. Well, was there a policy implemented after
16 you went to New York to stop any further purchase of
17 asbestos insulation for use in Carbide facilities?

18 A. I don't -- I don't honestly know. I don't
19 remember.

20 Q. What kind of substitute insulations do you
21 remember considering or using at Oak Ridge in the early
22 '70's?

23 A. It was a black material. I don't recall
24 what it was called. It was -- I know when you sawed it,
25 you got the sulfide odor as I remember. I don't know

1 what it was. I just don't remember.

2 Q. Do you know, sir, if Union Carbide ever did
3 or participated in any epidemiology studies that would
4 concern asbestos-related diseases in its work force or
5 in similar work forces?

6 A. I -- I would be surprised if they didn't.
7 I don't recall one specifically, but I would be very
8 surprised if they didn't.

9 Q. But you don't remember any from your years
10 as the ---

11 A. (Interrupting) No.

12 Q. --- chief industrial hygienist?

13 A. Well, we had a director of epidemiology;
14 and she -- She would have been the one that would have
15 done it.

16 Q. Who was that lady?

17 A. Susan - Susan Austin.

18 Q. A-u-s-t-i-n?

19 A. A-u-s-t-i-n. Her maiden name was Gates. I
20 don't know why I remember that. Susan Gates Austin.

21 Q. Was she with the company as the director of
22 epidemiology when you went to New York in 1978?

23 A. No. She was brought in shortly after that
24 as I remember.

25 Q. Had there been such a position at Union

1 Carbide prior to her joining?

2 A. Well, there was -- Mike Utidjian was there
3 already. I think Michael came -- Michael was there when
4 I got there. I guess Michael was the one.

5 MR. HOBSON: Utidjian?

6 THE WITNESS: Utidjian.

7 I have no idea how to spell it.

8 U-t-i-d-j-i-a-n or something like that.

9 (By Mr. Blanks)

10 Q. And you thought of him as an epidemiologist
11 or a statistician?

12 A. Michael was not -- Michael was not
13 epidemiology. Michael was toxicology. He was -- He was
14 the director of toxicology, I believe, not epidemiology.
15 Susan I think was perhaps the first -- That's not been
16 that long ago. I'm sorry. I just -- I just don't
17 recall the details.

18 Q. Well, leaving aside epidemiology studies,
19 do you recall any other kind of studies that would have
20 involved following Carbide workers or the chemical
21 industry workers over time to report occupational
22 diseases or deaths due to occupational diseases?

23 A. Oh, I think the -- I think the corporations
24 had a mortality study program going for a long time.

25 Q. Union Carbide did?

1 A. I think so.

2 Q. Do you know ---

3 A. (Interrupting) I don't recall the details,
4 but perhaps that would have been what Susan started.

5 Q. Or continued?

6 A. Or continued as the case may be, yeah.

7 Q. Did you learn of any studies of those sorts
8 that may have been under way through the auspices of the
9 MCA?

10 A. No. No. The company had a study going
11 on - I remember on radon daughters with Saccamono out
12 in Grand Junction, Colorado. That's the one that comes
13 to mind. I'm sure there were others, but I just -- I
14 just don't recall them at this point.

15 Q. What information, if any, do you recall
16 seeing at Union Carbide or receiving from the
17 manufacturers of asbestos insulation products that would
18 have related the health hazards of that material?

19 A. I -- I don't know how to answer that
20 question. I would have -- I'm sure I saw an MSD sheet.
21 It might not have been called that, but it was -- It
22 would have been basically the MSD sheet. I don't
23 remember anything -- I don't remember anything specific
24 frankly.

25 Q. Can you place that in time in any way?

1 A. My guess would have been the mid to late
2 '60's or something like that, maybe earlier than that.
3 I just -- I have no idea. I have no conception of time
4 relative to that particular thing.

5 Q. So, I suppose during the '60's and on into
6 the '70's when you were at Oak Ridge, Union Carbide at
7 Oak Ridge was not purchasing very much asbestos material
8 or asbestos insulation. Just enough to patch and repair
9 the steam lines; true?

10 A. I don't remember any huge quantities.
11 There was a couple of major building projects, but
12 they - but they would have been done by a contractor,
13 not by the company. No, not that I -- I'm not aware of
14 any.

15 Q. The contractor at Oak Ridge, would that
16 have been the Carbide construction company or somebody
17 else?

18 A. No, it would have been - depending on the
19 project - it could have been anybody; the size of the
20 project. There was a contractor there - Rust
21 Engineering, H. K. Ferguson Company. There were two
22 that basically did -- What did they do? They were a
23 C.P.F.F. contractor just like Carbide was. But Rust
24 lost the contract. They were low bid. And Ferguson
25 took it over. And the next time they bid the contract,

1 I think Rust came back in. So -- And they did -- That
2 company did basically most of the demolition work as I
3 remember.

4 Q. They would have been a contractor with the
5 U. S. Government?

6 A. They would have been a D.O.E. contractor or
7 an A.E.C. contractor or whatever the time - whatever the
8 group was called at that point in time.

9 Q. They weren't a contractor to Carbide?

10 A. No.

11 Q. That's what I meant.

12 A. No. A contract division of the A.E.C.,
13 then ERDA. Then D.O.E. would have been the contract
14 administrator.

15 Q. So, if I understood you earlier then, you
16 have a vague recollection of maybe getting one
17 equivalent of a Material Safety Data Sheet about
18 asbestos hazards sometime in the '60's. But ...

19 A. Oh, I'm sure -- I'm sure I had more than
20 one. I just don't recall. I have no recollection of
21 any specific activity. That's all.

22 Q. Are you aware of any toxicological testing
23 that companies like Owens Corning Fiberglas or
24 Owens-Illinois or Johns-Manville or Pittsburgh Corning
25 did with the asbestos used in their insulation products?

1 A. I'm sure I have read articles about it. I
2 don't recall the specifics.

3 Q. So, you don't recall being advised of it
4 back at the time that you were overseeing plants that
5 used asbestos or learning of it at the time they were
6 doing these studies? It's just something you read about
7 somewhere along the way?

8 A. Well, most of the -- Most of the studies
9 like that were published in the journal of the A.I.H.A.
10 There were articles there. There were articles other
11 places as well. But I just -- I'm sorry. I just have
12 no recollection of when and what.

13 Q. All right, sir.

14 A. I can remember reading volumes - not
15 volumes; that may be an overstatement. But lots of
16 information about asbestos in the literature. And I
17 just don't recall what it was or where it was or even
18 when it was.

19 Q. Was it ever the policy of Carbide during
20 your roughly 40 years with the company not to inform
21 people working in its plants about materials that they
22 were using that were suspected of causing cancer?

23 A. Not that I know of. Not that I'm aware of,
24 no.

25 Q. Well, was it then the policy to tell people

1 when they were working with a suspected or known
2 carcinogen to tell them the need to protect themselves
3 and the why and the how?

4 A. Well, I -- At some point in time we -- This
5 thing evolved so gradually that I have no recollection
6 of the timing. But at some point in time we began to do
7 just that. And I -- The thing that I remember is that
8 there is absolutely a policy to tell everybody
9 everything at this point. That's -- But everything as
10 you -- As I try to go back in time, it's gets so fuzzy
11 that I don't know when it happened.

12 Q. Well, are you saying that the state of
13 knowledge about different carcinogens evolved over time
14 or the policy changed from one of not telling the
15 workers to one of telling them?

16 A. I think the early - the early days of
17 industrial hygiene, there was a reluctance to tell the
18 workers what you were doing when you were taking air
19 samples because they might not understand. And, you
20 know, psychologically they - it might scare them. I
21 don't even remember feeling that way frankly. It may be
22 the exception, but I don't think so.

23 It never -- When I took air samples in a
24 location, it never bothered me to say that I'm sampling
25 for this and, you know, this is the reason I'm sampling.

1 So, you assume everybody does what you do; and I'm not
2 sure that's correct. Maybe it is; maybe it isn't.

3 Q. Well, do you remember that any of the
4 doctors you worked with told you that they didn't
5 believe in telling the employees that this material
6 could cause cancer or that one - that material in the
7 plant could cause cancer? They didn't want to scare
8 them?

9 A. No. I don't -- That I never heard. That I
10 never heard.

11 Q. Did you ever hear the opposite from them,
12 that they believed in informing the worker of the
13 hazards he faced; that that was the right thing to do?

14 A. Well, the one I knew the best was Tom
15 Lincoln. And Tom Lincoln would have thought that -- He
16 always felt that the employees needed to be told; and as
17 a matter of fact, we did.

18 Q. And how did Newell Bolton feel about that?

19 A. The same way.

20 Q. Always?

21 A. Of course.

22 Q. Well, that's what I suspected; but I wanted
23 to hear you say it. And was that the perception you had
24 generally with the other industrial hygiene and
25 occupational health professionals you worked with at

1 Carbide?

2 A. I never observed them directly. My
3 impression is, yes, they would -- They would have been
4 straightforward and direct. But it's an impression.
5 It's not -- I can't tell you exactly.

6 Q. Who owned the Oak Ridge plant - the United
7 States Government?

8 A. The government. They still own it.

9 Q. So, Carbide was in the plant working as a
10 contractor to the U. S. Government ---

11 A. (Interrupting) Yes.

12 Q. --- responsible in part for maintaining
13 parts of the facility?

14 A. Right.

15 Q. And for operating parts of it?

16 A. Yes.

17 Q. What kind of people did the government have
18 in there from a safety standpoint? Did they have safety
19 folks?

20 MR. ELLISTON: Objection to the
21 form, vague.

22 A. There was a safety department.

23 (By Mr. Blanks)

24 Q. That was ---

25 A. (Interrupting) At all of the plants. There

1 were two - I think two safety engineers at the
2 laboratory as I recall. I'm not sure I could come up
3 with their names. Yeah. Yeah, I probably could. They
4 are both older than I am. I have no idea where they
5 are. But, yeah, there were two I recall.

6 Q. When you said the laboratory ---

7 A. (Interrupting) Oak Ridge National
8 Laboratory.

9 Q. That's what I thought you meant.

10 A. I try not to use the code names for the -
11 from the war. It was X-10, you know, and we -- A.E.C.
12 jargon jumps in, and you have to be careful because
13 people don't understand it.

14 Q. So, the Department of Energy or the Atomic
15 Energy Commission, whichever of the agencies that was
16 running it at any particular time, had a safety
17 department and at least two safety engineers at the Oak
18 Ridge Laboratory?

19 A. No. No. No. These were -- These were
20 Carbide employees that I'm talking about. These were
21 Carbide employees. Two safety engineers that worked for
22 the Oak Ridge National Laboratory that were Union
23 Carbide employees.

24 Q. Well, then, tell me if there was any
25 government personnel working in a safety position at the

1 Oak Ridge National Laboratory during the years that you
2 were there as the industrial hygienist?

3 A. Yeah. I'm trying to remember who they
4 were. Yes, there was a safety group that had medical
5 and safety and industrial hygiene in it, but I don't
6 remember who they were.

7 Q. And their responsibilities covered safety
8 in the plant where Carbide people were working I
9 suppose?

10 A. I don't know how to describe their role
11 frankly.

12 Q. Give it a try.

13 A. They were -- They were contract
14 administrators in the sense that they made sure that we
15 complied with the health and safety regulations of the
16 Atomic Energy Commission and all of its subsequent
17 organizations, whatever it was called.

18 Typically visited -- I think I got one
19 visit a year, maybe two visits a year from this group of
20 people. Oak Ridge operations office was fairly large.
21 It covered a large geographic area. I don't remember
22 how many plants they had.

23 Q. So, I suppose that there were safety
24 regulations that Carbide was required to follow as part
25 of its working at the Oak Ridge Laboratory?

1 A. I can remember the A.E.C. manual chapters.
2 I can't -- I don't remember any details. But the --
3 Theoretically the programs were designed to be sure that
4 these -- I guess they were policies. I don't know what
5 they -- I guess they were. There were manual chapters
6 that dealt with health and safety. And they visited a
7 couple of times a year to be sure that we were doing
8 what the manual chapters required. I think -- As I
9 recall they had manual chapters about everything.

10 Q. So, they had - can we call them safety
11 rules? I mean they were detailed to some extent.

12 A. I don't remember specifically. I have -- I
13 have a feeling that they were not highly specific. They
14 were more general than they were specific. There may
15 have been exceptions. I don't remember.

16 Q. Were they directed at protecting the plant
17 and the physical things there or the people working
18 there or both?

19 A. I would think both.

20 Q. Now, if the government agency that was
21 running that plant knew about some hazard that could
22 affect the Union Carbide employees, wouldn't you expect
23 them to inform you about that if it was apparent that
24 you weren't aware of it?

25 MR. ELLISTON: Objection to form.

1 Leading and calls for speculation.

2 A. My guess is, yes, they did. And I cannot
3 give you a specific example. But certainly they were --
4 I'm sure they would have made a phone call and said, did
5 you see such and such and are you doing such and such.
6 But I don't have any specific recollection.

7 (By Mr. Blanks)

8 Q. And is that the same sort of approach that
9 you at Union Carbide would take with respect to
10 contractors working for Carbide on a job ---

11 MR. ELLISTON: (Interrupting)

12 Objection to -- I'm sorry.

13 (By Mr. Blanks)

14 Q. --- to inform those people, the
15 contractors, about hazards their employees might face in
16 the plant, if you could see that they weren't aware of
17 it or taking precautions?

18 MR. ELLISTON: Objection to form.

19 Calls for speculation.

20 A. I need you to repeat the question. I'm not
21 sure I know what you are asking.

22 (By Mr. Blanks)

23 Q. As a Carbide industrial hygienist who
24 perceived a potential hazard to contractor employees,
25 would you or would you not tell that contractor or those

1 employees facing the hazard about it?

2 A. As I remember there was a contractor policy
3 in Oak Ridge. I can remember going to what they call
4 kickoff meetings where you discussed what the job was.
5 We were very careful because in many cases they were
6 coming in to areas that were potentially contaminated
7 with radioactivity. And, so, there was lots of
8 discussion about how you - what you have to do in order
9 to protect yourself. And they had to follow -- They had
10 to follow all of the company - all of the plant rules as
11 it related to radioactive contamination and also any
12 chemicals that they might encounter.

13 They were responsible to -- They were
14 directly responsible for doing this themselves. All we
15 did -- All we were required to do was to tell them what
16 it was they were going to encounter. And after that,
17 they were to supervise their own. Like every other -
18 any other contract that you would have, you had to go
19 back and be sure that they did that.

20 So, we had -- I had a couple of people on
21 my staff that would - that would sort of follow the job.
22 Not on a minute-to-minute basis, but a day-to-day basis
23 or a week-to-week or something like that; enough that we
24 knew that if they were required to wear respirators,
25 that they were, in fact, wearing respirators.

1 Q. So, sort of following the principle that
2 people don't necessarily do what you expect, but they do
3 what you inspect for?

4 A. I suspect that's true.

5 Q. So, the industrial hygiene staff
6 participated in these kickoff meetings as you recall?

7 A. Yeah, and other groups, too.

8 Q. Just whichever department or professional
9 in your organization was best able to address the
10 hazards that those contractors would be facing would
11 normally be the one to speak to them about it at the
12 outset I guess?

13 A. Most -- Yes, that's true. Most of the --
14 Most of the activities were remodeling, taking down a
15 wall here, putting up a wall there kind of thing. I'm
16 trying to remember something specific to give you a
17 better example than that. I just -- I just don't
18 remember anything specific enough that would give a
19 feeling for what they were doing.

20 These were -- These were small jobs.
21 Anything less than \$100,000 would be handled like this.
22 Anything over that would be - would be put out on a bid
23 basis kind of thing.

24 Q. As the corporate industrial hygienist from
25 1978 until 1991, did you learn ---

1 A. (Interrupting) '82.

2 Q. I'm sorry. '78 to '82. So, '82 to '91 you
3 were in the gas department?

4 A. Right.

5 Q. Did you learn of any reports of
6 asbestos-related disease in Union Carbide employees past
7 or present while you were at the corporate headquarters?

8 A. I'm sorry. Ask your question again. I
9 don't know whether I heard you - exactly what you said.

10 Q. Very good.

11 A. Ask me again.

12 Q. While serving as the corporate industrial
13 hygienist in New York City from 1978 to 1982, did you
14 learn of any cases of asbestos-related disease in Union
15 Carbide employees or former employees?

16 A. I don't think so. I don't think so. I
17 don't -- Not that I recall.

18 Q. Did you at any other time hear of such
19 reported cases of asbestos disease of Carbide employees?

20 A. I guess there must have been -- There was
21 one in Linde. I don't recall the details. But it seems
22 to me like there was one. This would have been '80 --
23 I'm guessing. My guess is '85, '86, something like
24 that. It may have been a little earlier than that, a
25 little later than that. I just don't know. I don't

1 remember. I don't recall.

2 Q. Going back to using contractors at Oak
3 Ridge, was it the case that Union Carbide provided
4 industrial hygiene services in connection with the work
5 the contractors were doing?

6 A. No.

7 Q. So, even on a small contract, you wouldn't
8 do the necessary monitoring or sampling in the area
9 where they might be creating or facing a hazard?

10 A. No. We did do the health physics
11 monitoring because it was more - it was considered to be
12 too complicated to give to a small contractor. But
13 everything else was assumed that they - they could do
14 what they needed. We provided the respirators.

15 Q. Why was that?

16 A. It was just always done. It's -- I
17 don't -- I don't even remember when they didn't. The
18 logic would have been that they had a potential to be
19 contaminated. And if they brought them onto the plant,
20 they could not take them off the plant because you could
21 never certify that they had no radioactivity on them.

22 And, so, we let them use ours because we
23 had a system in place, that they were cleaned and
24 refurbished and repackaged to go back out into the
25 field.

1 Q. So, you had an ongoing respirator program
2 there with maintenance of them?

3 A. Right.

4 Q. And how long had that been going on; since
5 at least back to your beginning there?

6 A. It was there when I went in '61.

7 Q. And in '51, too?

8 A. In '52 at K-25 I can remember being taught
9 to wear the Chemox, the old MSA Chemox; self-contained
10 breathing apparatus. Plus they had Army assault masks
11 and things like that. But they were always there.

12 Q. And, of course, by providing the
13 respirators to the contractors, Union Carbide also could
14 control then the type of respirator used?

15 A. Right.

16 Q. And the type of filter used?

17 A. Yes.

18 Q. So that they would be satisfied that the
19 proper equipment was, in fact, being used to protect the
20 workers?

21 A. Right. I think that's a fair statement,
22 yes.

23 Q. Did the respirator program involve fit
24 testing?

25 A. It did later. It didn't earlier when - in

1 '61 when I went there. The program developed naturally
2 over a period of time from careful inspection to
3 expanding the kinds of respirators that we had and
4 things of that type. We -- My group as a matter of fact
5 did the fit testing. And this would have been -- I
6 don't -- Again, I don't remember not having it is the
7 problem. I can't give you a time frame. It would have
8 been somewhere in the -- We began to do it somewhere in
9 the mid-'60's, and we went to -- Over two or three or
10 four years we went to a full-blown quantitative fit
11 testing.

12 Q. Do you recall, Mr. Bolton, how you came to
13 learn of the need for fit testing?

14 A. It was based on a program being performed
15 at Los Alamos, New Mexico, by Ed Hyatt.

16 Q. And he was - what, a government employee?

17 A. No, he worked for the University of
18 California. They are a contractor just like Carbide was
19 in Oak Ridge.

20 Q. Was he the one you called "Mr. Respirator"
21 yesterday?

22 A. Yes, as a matter of fact.

23 Q. Was he affiliated with any of the
24 respirator manufacturers to your knowledge?

25 A. I don't think so.

1 Q. So, the knowledge or the information you
2 got that led you to set up a respirator fit testing
3 program at Oak Ridge did not come from the manufacturers
4 of these respirators, but rather from a fellow
5 professional?

6 A. Well, not -- That's a half truth really.
7 Because we -- I can recall going to Pittsburgh and
8 visiting the Mine Safety Appliances Company's factory;
9 seeing how respirators were put together and things of
10 that type; the quality control that they went through in
11 order to - to come out with the device; the details of
12 getting a respirator approved by the -- I guess early it
13 was the Bureau of Mines; later it was the testing and
14 certification laboratory in NIOSH after 19 - whenever it
15 was - '70 or '71 or '72, somewhere in there.

16 I have a vague recollection of being in
17 Minneapolis at 3M, but I don't know when that was. At
18 MSA -- When I went to MSA, that would have been the
19 early '60's because we were - we were already beginning
20 to question whether or not the devices that we were
21 using were really appropriate.

22 It wasn't the devices; it was more the -
23 the cartridges. We had not been able to figure out how
24 the devil to test a cartridge so that you knew it was
25 doing what it was supposed to be doing. At some point

1 we began to - we began to do the penetration test with
2 D.O.P. I don't -- I don't recall when that was. It
3 must have been in the mid-'60's.

4 Q. What led you to start questioning the
5 effectiveness of the cartridge?

6 A. Well, every now and then we would get an
7 aberration in the health physics program. Someone would
8 show up with a touch of -- You know, we could measure at
9 one alpha particle almost. That's an exaggeration, of
10 course. But the sensitivity of the radioactive material
11 is very low. You can determine pico curies, which is -
12 which is way less than a smidgen kind of thing.

13 And you would get an aberration, and you
14 would back up and try to figure out how did he do that;
15 how did he get that? Was it because we left a bit of
16 contamination on the facepiece of the respirator. It
17 was -- Basically it was sort of - that was what led up
18 to the whole thing; that and being sure that we weren't
19 discharging the material to the atmosphere.

20 Q. Well, how would you stumble into these
21 aberrations in the first place?

22 A. Health physics picked them up. The health
23 physics division ran a very careful bioassay program:
24 Monitoring, bioassay, the whole nine yards.

25 Q. I think I know what you mean, but for the

1 benefit of the Jury, what did that amount to in simple
2 terms? The health physics department was giving these
3 individuals physical exams or ---

4 A. (Interrupting) Oh, no.

5 Q. Now did that work?

6 A. They used the -- They used survey meters,
7 special - special devices to detect radioactivity. They
8 ran bioassay programs to determine what the
9 radioactivity was in the urine. They did a whole series
10 of things.

11 It was -- They did to radioactivity what we
12 would do to trichloroethane or a chemical exposure of
13 some kind. They just had various -- Had had super
14 sensitive equipment to do it.

15 Q. So, they were looking at each individual
16 who could potentially --

17 A. (Interrupting) Everyone -- Everyone who
18 worked in the laboratory - Oak Ridge National Laboratory
19 had some kind of urinary surveillance I think once a
20 year. I'm not -- I don't recall exactly. And the
21 people that were quote classified as radiation workers,
22 people that worked in areas where there was
23 radioactivity were given whole body counts.

24 Q. What is a whole body count?

25 A. I get myself in more trouble as I talk. A

1 whole body counter is what the name implies. It was a
2 huge device. They put you on a table and slide you in
3 after you have had an appropriate -- You have been
4 scrubbed and showered and washed, and had on clothes
5 that had been counted for radioactivity. They knew
6 there was no radioactivity on the material. There was
7 none that could be detected on the skin.

8 And they put you in this thing, and it
9 took - as I remember it took about 40 minutes to do the
10 radioactive scan with the whole body counts. It took a
11 long time, long enough that most people went to sleep.
12 It was a big, sound cylinder that you went in. And the
13 detector - the radiation detectors went back and forth
14 down the body and they got a printout of this thing.
15 They could tell exactly how much strontium-90 you had
16 and how much Iodine 131 and so forth.

17 Q. So, the program there was to look for
18 physical signs of exposure?

19 A. To detect - to detect if there was a build
20 up of radioactive material in the body, yes.

21 Q. And if and when you found some, which you
22 referred to as an aberration earlier, then appropriate
23 steps would be taken to try and find out why and how it
24 happened?

25 A. Yeah. I didn't get involved in that part,

1 but I think that's true. I think that's correct. They
2 were very careful, very meticulous to be sure they knew
3 what was going on.

4 Q. But this would then lead sometimes to
5 efforts by your people such as looking into the
6 respirator issue?

7 A. We would end up going through the
8 decontamination laundry, making sure the equipment was
9 working properly, making sure that the cycles were going
10 through correctly; that the drying cycle was right and
11 that they weren't doing something that violated the
12 washing procedure. So, yes, we did that.

13 Q. So, I guess this is an important part then
14 of any industrial hygiene occupational medicine program
15 is to monitor for problems so that you can detect them
16 early, and then respond by trying to find out what is
17 causing the problem so you can correct it. Is that fair
18 to say?

19 A. If I understood what you said, I think so,
20 yes.

21 Q. Well, at least at Carbide, you would
22 monitor the workers for changes that would suggest -
23 that would tell you if they had exposure to something
24 harmful; and then the appropriate people in the company
25 would look into it?

1 A. Right. I think -- I think that's a fair
2 statement.

3 Q. And if it involved an industrial hygiene
4 problem, the industrial hygiene program would try to
5 solve it?

6 A. I can remember doing it with lead, for
7 example, yes.

8 Q. Did you come to know any industrial
9 hygienists who worked at MSA or for MSA?

10 A. Yeah. I guess Joe Zatek would -- I think
11 his -- I think his title was corporate industrial
12 hygienist as a matter of fact. I don't know when he got
13 that title, but I think that's -- As I recall that was
14 his title.

15 Q. This would have been in the '60's roughly?

16 A. I remember meeting Joe when we went to
17 Pittsburgh in the early '60's. Yeah, I think Joe was
18 there then.

19 Q. I think you said when you first met him.

20 A. Yes. Yes. Oh, I may have met him earlier
21 because they had - they always had people at the shows,
22 the A.I.H.A. meetings. So, I don't -- I don't know when
23 I met Joe. I'm sure I met him when I went to Pittsburgh
24 in the early '60's. I may have met him earlier than
25 that. I just don't remember.

1 Q. Do you remember meeting any industrial
2 hygienists from 3M?

3 A. John Pendergrass.

4 Q. Was he there when you went to visit their
5 facility?

6 A. Yes. Yes.

7 Q. You might also have encountered him at the
8 American Industrial Hygiene Association meetings?

9 A. I have known John since -- I don't -- I
10 don't know when I met John even frankly. It seems like
11 I have always known him, and I'm sure that's not a
12 correct statement.

13 Q. What led you to go to 3M?

14 A. I think I got an invitation to come and
15 look at what they were doing from John as I remember.
16 The same reason I went to -- It really was basically the
17 same reason I went to Pittsburgh. We had -- We had
18 talked to the local representative in Oak Ridge, and we
19 had asked questions about, you know, "How do you" --
20 "What kind of quality control program do you run?" How
21 are you sure that this, that and the other is
22 accomplished? So, we just got an invitation to come and
23 look.

24 I don't remember when I was at 3M. It was
25 a little bit later than the early '60's, but I don't

1 remember when.

2 Q. Well, did you go there to look at their
3 respirator program?

4 A. We went basically to look at the respirator
5 program, yes.

6 Q. Were you using 3M respirators at Oak Ridge?

7 A. I think we used respirators from everybody.
8 It's a government operation, had to. Had to. Well, no,
9 that's a misstatement really. Whoever was the low
10 bidder was the one that got to sell the respirators.
11 That was -- You know, as long as they met certain
12 requirements, specifications and so forth.

13 Q. Do you recall any industrial hygienists
14 from any of the other respirator companies such as
15 American Optical or Bullard or Pulmosan?

16 A. There is one from American Optical, but I
17 can't call his name. I don't remember any of the
18 others. I'm sure they had them, but I just don't -- I
19 don't recall their names.

20 Q. Did you go to the American Optical plant?

21 A. I don't think so.

22 Q. How about Joe Zdrok?

23 A. Who?

24 Q. Zdrok, Z-d-r-o-k.

25 A. I don't think I ever heard that name.

1 Q. Vince Yurgolas?

2 A. Not - not familiar.

3 Q. William Revoir?

4 A. Bill Revoir, yes. American Optical; right?

5 Q. Yes, sir.

6 A. Yes, Bill I remember.

7 Q. Can you connect any ---

8 A. (Interrupting) The others I can't connect
9 at all. I have no recollection of having ever met them.
10 Although, again, I'm sure I did. I met thousands of
11 people in my career.

12 Q. Did you go to the A.O. plant did you say?

13 A. No, I don't recall ever being there. I may
14 have, but I just don't recall.

15 Q. Do you know where Mr. Revoir is now?

16 A. No, I have no idea.

17 Q. The last time you've seen him was when, or
18 talked to him was back in Connecticut?

19 A. He went to Los Alamos at some point in his
20 career I think, and I lost track of him after that. I
21 haven't seen Bill in 15 years, longer than that maybe.

22 Q. So, you think he went to Los Alamos after
23 A.O. - left A.O. to go there?

24 A. I have a vague recollection that that's
25 what happened, but I'm not sure of that. Seems to me

1 like he was involved with the respirator program at Los
2 Alamos for a while. But as I said, that's a vague
3 recollection. I just don't recall.

4 Q. How about John A. Jones?

5 A. The name is familiar, but I couldn't put a
6 location with it.

7 Q. Well, did you get any advice from the
8 respirator companies about how to do a fit testing
9 program after you went to visit them?

10 A. Yeah. As we -- One of the reasons we went
11 to MSA was to see how they were testing the respirator
12 cartridges. And I think what we did at that point was
13 sort of pattern the equipment that we were contemplating
14 buying or building after what we saw there.

15 We had -- None of this equipment as I
16 remember was commercially available; so, you had to
17 custom build everything which you used. And that's -
18 that's really all I remember.

19 Q. Do you recollect having any dealings with
20 any of Union Carbide's insurance companies over the
21 years that you were with the company? And I don't mean
22 filing claims for major medical coverage, but dealing
23 with the insurance companies on health and safety
24 matters, inspections, audits.

25 A. No.

1 Q. Not even after going to New York or on to
2 the gas division?

3 A. Well, Workmans' Comp. was part of my job
4 description at Linde. But I had a -- I had a couple of
5 people that worked with the insurance company. I don't
6 recall personally having any contact with them.
7 Maybe -- I was going to say Kemper rings a bell. I
8 visited Kemper one time, but that was not in relation to
9 anything - any company - anything company oriented.
10 I -- The people that worked for me dealt with these
11 people. I didn't do it personally frankly.

12 Q. You don't know then of any inspections for
13 safety or health purposes that were made of Union
14 Carbide's facilities by any of its insurers one way or
15 the other I guess?

16 A. None that I recall. None that I recall.

17 MR. BLANKS: Let's take a break.

18

19 (A BRIEF RECESS WAS TAKEN.)

20

21 (By Mr. Blanks)

22 Q. Mr. Bolton, other than myself who spoke
23 with you a few times on the phone over the last couple
24 of months about setting up this deposition, who have you
25 had a chance to meet with by way of actually preparing

1 for the deposition?

2 A. I have met with Gary and also with John
3 Bissell. But I don't think we have prepared for the
4 deposition. I mean I didn't review volumes of records
5 or anything like that.

6 Q. By "Gary" you mean Mr. Elliston?

7 A. Yeah. I'm sorry.

8 Q. I didn't mean it that way.

9 A. Yeah.

10 Q. By "Gary" you mean the Gary Elliston who is
11 here representing Union Carbide ---

12 A. (Interrupting) Right.

13 Q. --- and other companies? And would John
14 Bissell be that Beaumont lawyer from Strong, Pipkin?

15 A. I think that's correct.

16 Q. Have you had dealings with him or worked
17 with him in the past on any litigation that you know of?

18 A. No.

19 Q. What did you and Mr. Bissell speak about
20 when you met before this deposition?

21 MR. ELLISTON: I'm going to
22 instruct the witness that he not
23 answer that question because that is
24 a privileged attorney/client
25 communication. And for clarification

1 of the record, Joe, I am here on
2 behalf of Union Carbide only in those
3 cases which they have been served and
4 answered and made an appearance and in
5 no other cases; but I'm also here
6 serving as Mr. Bolton's attorney as
7 well.

8 And, so, I would instruct
9 Mr. Bolton not to reveal any
10 communications between the two of us
11 or between he and John Bissell, as
12 John was also serving as his personal
13 attorney.

14 (By Mr. Blanks)

15 Q. When did you hire John Bissell to serve as
16 your personal attorney, Mr. Bolton?

17 A. Hire may be too strong a word. But it
18 was - the week after Christmas I think was the week we
19 met for half a day or something like that.

20 Q. He called you up, did he?

21 A. Yes.

22 Q. And before you hired him, he told you Union
23 Carbide had designated him to represent you in these
24 depositions that I was trying to take?

25 MR. ELLISTON: Objection to the

1 form. Leading. It calls for
2 speculation.

3 A. Would you tell me the question again,
4 please.

5 (By Mr. Blanks)

6 Q. Well, John Bissell called you. You didn't
7 call him to hire him?

8 A. Right.

9 Q. He called you first?

10 A. He called me, yes.

11 Q. And I'm asking you, did he not tell you
12 something to the effect that you were going to be
13 deposed and Union Carbide wanted him to either meet with
14 you or to be your lawyer for the deposition or something
15 like that? What was it?

16 A. I'm trying to remember exactly what he
17 said. I think what he told me was that he represented
18 Union Carbide in the case that I was being - the cases
19 that I was being deposed. I think -- I think that's all
20 he said. It wasn't until he came - actually came to
21 Hilton Head until we got into the other part of it.

22 Q. So, when was it that Mr. Bissell came to
23 Hilton head to see you?

24 A. It was -- It was a week after Christmas.
25 I'm trying to remember which day it was.

1 Q. Well, that's close enough.

2 A. Okay.

3 Q. And, then, how was it actually that
4 Mr. Bissell led you to understand that he was going to
5 become your lawyer for purposes of this deposition?

6 MR. ELLISTON: Objection. I am
7 going to instruct the witness not to
8 answer that question. I think we have
9 established -- Joe, I think you have
10 established that John was retained in
11 the week after Christmas to serve as
12 his personal attorney. And beyond
13 that, any communications that were had
14 between the witness and Mr. Bissell
15 are privileged. So, I will instruct
16 him not to answer it.

17 (By Mr. Blanks)

18 Q. So, I'm just interested at this point, sir,
19 in any conversations you had with John Bissell before
20 that magic moment in time when you hired him to
21 represent you as opposed to that moment when Union
22 Carbide may have hired him to represent you.
23 And -- I mean you understand?

24 A. I don't -- I'm sorry. I don't understand
25 what you are asking me. I want to try to answer you,

1 but I don't understand what you are asking me.

2 Q. Well, if, in fact, John Bissell is your
3 lawyer, that is that you consulted with him to get legal
4 advice and/or talked to him for purposes of getting
5 counsel about this deposition or anything else, then
6 whatever you and he talked about in that regard would be
7 privileged and not something under our Rules that I
8 would normally be able to ask you about.

9 The first question is: Did you, in fact,
10 consult with John Bissell to obtain legal advice with
11 respect to giving this deposition?

12 A. One of the -- One of the earliest things as
13 I remember that John mentioned was that I had the
14 ability to hire my - to retain my own lawyer if I wanted
15 to. And he pointed out that he could represent me as
16 well as the company, and I chose that route because I
17 didn't feel that a lawyer down here on Hilton head would
18 be - could be brought up to speed and know what was
19 going on. So, to me it made good sense to do that. It
20 was a suggestion, and I took his advice.

21 Q. And the understanding you formed was that,
22 in fact, you wouldn't have to be paying him to represent
23 you; but that Union Carbide would be taking care of that
24 part?

25 MR. ELLISTON: I'm going to

1 instruct the witness not to answer.
2 Whatever fee arrangement or payment
3 terms between he and Mr. Bissell are
4 privileged communications. So, I will
5 instruct him not to answer it.

6 (By Mr. Blanks)

7 Q. Before you hired Mr. Bissell, did he
8 discuss with you that there could be a potential
9 conflict of interest between yourself and the other
10 parties that he and his law firm represent in this
11 litigation, which I would tell you include some of the
12 asbestos - at least one of the asbestos insulation
13 manufacturers as well as Union Carbide? Well, no, I
14 don't think they do represent Union Carbide in this
15 litigation as a matter of fact, but various
16 petrochemical companies and oil companies.

17 A. I'm sorry. I lost the train of thought.

18 Q. I'm talking too long.

19 A. What is it that you are asking me that John
20 asked me? That's what I want to know.

21 Q. I was asking you, sir, if before this point
22 when you decided that you wanted him to represent you in
23 this deposition as well as Union Carbide, if before that
24 point he explained to you that there could be a conflict
25 of interest for him because he - he and his law firm

1 also represent other companies in this litigation, not
2 including Union Carbide?

3 A. There was something said about - about
4 conflict of interest, but I -- I don't remember
5 exactly -- I don't remember exactly how it was phrased
6 or what was said. I can't be more specific than that.

7 Q. And at what point, sir, did you retain the
8 firm of DeHay & Elliston to represent you?

9 A. At the same time.

10 Q. That was suggested by Mr. Bissell as well
11 or by someone from the DeHay & Elliston firm?

12 A. I think what John told me was that either
13 one or the other would do what was appropriate. I -- I
14 don't know a better way to say it than that.

15 Q. Appropriate for Newell Bolton or
16 appropriate for Union Carbide, or are they one in the
17 same?

18 A. I assume ---

19 MR. ELLISTON: (Interrupting)
20 Objection to the form. It's
21 argumentative. It's leading. And
22 without some time frame, it's
23 impossible to determine at what point
24 you are speaking of. So, I will
25 instruct the witness not to answer

1 that question.

2 (By Mr. Blanks)

3 Q. Did you have any time frame in mind when
4 they told you they would do what was appropriate?

5 MR. ELLISTON: Objection. I will
6 instruct the witness not to answer
7 because - without some clarification
8 at what point this communication you
9 are asking about was made. It's been
10 established at what point he retained
11 counsel. He has told you of all of
12 his communications prior to that time,
13 or at least he's responded to your
14 questions in that regard.

15 So, further questioning along
16 this line, I will instruct the witness
17 not to answer those questions.

18 (By Mr. Blanks)

19 Q. Mr. Bolton, before you were pursued to hire
20 these Texas lawyers to represent you here -- Now I
21 forgot my question. It had a good lead-in, didn't it?

22 MR. ELLISTON: We were all
23 enjoying it up to that point.

24 (By Mr. Blanks)

25 Q. Were you led to believe, sir, that you

1 would or would not receive a bill for the legal services
2 provided by these two firms?

3 MR. ELLISTON: I will instruct
4 the witness not to answer that
5 question as it deals with the fee
6 arrangement between he and his
7 counsel. And those are privileged
8 communications.

9 (By Mr. Blanks)

10 Q. Are they working for free for you, sir?

11 MR. ELLISTON: The same
12 objection. The same instructions.
13 It's privileged attorney/client
14 communication.

15 (By Mr. Blanks)

16 Q. Before you hired these people, did they
17 tell you that there wouldn't be any charge to you?

18 A. No.

19 Q. Did they tell you there would be a charge?

20 MR. ELLISTON: Are you still
21 referring to prior to the date of
22 hiring?

23 MR. BLANKS: Well, sure. Not
24 just the date, but the actual moment.

25 A. I don't -- I don't recall it. I don't

1 recall anything, no.

2 (By Mr. Blanks)

3 Q. Are you expecting to get a bill from them?

4 MR. ELLISTON: Objection.

5 Instruct the witness not to answer as
6 it deals with communications between
7 he and his counsel. It's privileged
8 communication.

9 (By Mr. Blanks)

10 Q. In making the decision to let these people
11 represent you, were you at that point expecting you
12 would have to pay, Mr. Bolton?

13 MR. ELLISTON: I'm going to
14 instruct the witness not to answer as
15 it deals with the fee relationship
16 between he and his counsel. Not only
17 is it privileged communication, but
18 it's not likely to lead to the
19 discovery of any admissible evidence
20 in this case.

21 MR. BLANKS: Well, it certainly
22 bears on the credibility of the
23 witness and the fact that Union
24 Carbide company, through paying his
25 legal expenses or other charges, has

1 got some interest here and may lead
2 the witness to have some interest in
3 the matter.

4 MR. ELLISTON: I will stand on
5 the objection and instructions.

6 (By Mr. Blanks)

7 Q. Were you told, sir, that the firm of DeHay
8 & Elliston, besides representing Union Carbide in this
9 litigation, represents a host of asbestos insulation
10 manufacturers?

11 MR. ELLISTON: Once again,
12 without some designation as to the
13 timing of the communications mentioned
14 in the question, I will instruct the
15 witness not to answer based on the
16 attorney/client privilege.

17 (By Mr. Blanks)

18 Q. Before they induced you to hire DeHay &
19 Elliston, sir, did they inform you that that company
20 represents along with Union Carbide a number of asbestos
21 insulation manufacturers?

22 MR. ELLISTON: Objection to the
23 form of the question in that it
24 assumes facts not in evidence.
25 Furthermore, it's argumentative

1 specifically by the word "induced."
2 And further it's leading.

3 THE WITNESS: Now, am I supposed
4 to answer that question? I'm so
5 confused.

6 A. I guess I don't -- I don't mean to appear
7 dense, but I don't -- I really don't understand what you
8 are asking me.

9 (By Mr. Blanks)

10 Q. Do you know? Do you know that DeHay &
11 Elliston besides representing Union Carbide in a couple
12 of these cases we are here on today also represents a
13 number of asbestos insulation manufacturers?

14 MR. ELLISTON: Objection to the
15 form. Assumes facts not in evidence.

16 MR. BLANKS: You are not denying
17 that, surely, Mr. Elliston. It's a
18 matter of record in this case. I'm
19 going to represent to the witness it's
20 true.

21 (By Mr. Blanks)

22 Q. Did they tell you that before you hired
23 them, sir?

24 MR. ELLISTON: You have a -- We
25 have two questions on the table. The

1 question that was just asked was
2 different than the question that I
3 previously made an objection to.

4 A. Tell me what the question is more one time.
5 I'm -- I'm sorry. I'm not used to this. This is the
6 only time I have ever been deposed in my entire life.

7 (By Mr. Blanks)

8 Q. No, there was one more time.

9 A. That wasn't a deposition.

10 Q. I thought it was.

11 A. No.

12 Q. Did you come to the trial?

13 A. I was at the trial.

14 Q. You were at the trial and I haven't -- I've
15 forgotten. I'm sorry.

16 A. I told you something you didn't know,
17 sorry. I'm sorry. I really am getting tired.

18 Q. I'm sorry, Mr. Bolton.

19 A. Tell me -- Ask me the question one more
20 time and let me see if I can ---

21 Q. (Interrupting) I don't know which one came
22 first.

23 A. --- answer it. Whichever the question is.
24 I understand that there are two questions. Ask one of
25 them, and I will try to answer it if appropriate.

1 Q. Have you heard from anyone or at any time
2 that this law firm that represents you here today along
3 with Union Carbide also is here today representing a
4 number of asbestos insulation manufacturers?

5 MR. ELLISTON: Objection to form.

6 Assumes facts not in evidence.

7 A. I -- The answer to the question is yes, I
8 think we did -- That was mentioned that he not only
9 represented Union Carbide but other companies as well.
10 I don't know that he specifically - he specified; but
11 he -- I just -- I don't recall.

12 (By Mr. Blanks)

13 Q. And in your conversations with the
14 peripatetic John Bissell prior to his persuading you
15 that you might want him to represent you, did he suggest
16 to you in any way that maybe you shouldn't have any
17 conversations with me about the substance of the
18 deposition or what you might testify about or to or that
19 sort of thing?

20 MR. ELLISTON: Objection to form
21 in that it's argumentative, some of
22 the descriptions used within the
23 question. But you may answer it.

24 MR. BLANKS: You didn't like
25 peripatetic?

1 A. I didn't understand it, but that's all
2 right. Please do the question one more time. I'm a
3 little bit confused at this point. Try the question one
4 more time.

5 (By Mr. Blanks)

6 Q. Before you hired Mr. Bissell, what did he
7 say to you about any conversations you had had or might
8 in the future have with me or Herschel Hobson?

9 A. As I recall he told me that there was not a
10 problem with my telling you that I had met with he and
11 Mr. Elliston; that that was not privileged information;
12 that there were some conversations that were or would
13 be, and that one or the other of them would always be
14 present to advise me about that. But there was no --
15 There was no instructions not to be cooperative, not
16 to -- You know, no instructions on how I was to - what I
17 was to say or anything like that. There was no coaching
18 or anything done.

19 Q. Well, I appreciate that. What did he say
20 to you about talking to me without him or some other
21 lawyer from Union Carbide present, though, before you
22 actually hired him?

23 MR. ELLISTON: Let me instruct
24 the witness to carefully answer the
25 question with only information you

1 received from John Bissell prior to
2 the time that you hired him as your
3 counsel.

4 A. The only conversation I had with John prior
5 to his being here the week after Christmas was by
6 telephone. I talked with him a couple of times. And he
7 told me that -- He said at that time that since you had
8 contacted me, that I should continue that contact and
9 that I should make arrangements with you to schedule
10 this at a time when it was convenient for me and I
11 assume mutually convenient for both of us. I don't know
12 that those words were used specifically.

13 (By Mr. Blanks)

14 Q. John said that?

15 A. He said -- He said make your arrangements
16 to fit your schedule, and we will somehow manage to work
17 that into our own schedule. I think that was sort of
18 the way it was said, not exactly. But those are my
19 words, not his.

20 Q. That was about the extent of it, huh?

21 A. That was the only thing that was ever said
22 on the telephone. We never talked about the deposition
23 or anything else. We were simply talking about the
24 scheduling. And he -- As I remember he asked me how my
25 vision was coming, and I told him that the vision was

1 still blurred because of blood in the eyeball. And
2 that's -- As a matter of fact, I think you talked more
3 to my wife than you talked to me.

4 Q. Well, that's a fact. That's a fact. She's
5 a very nice lady, too. At least she was nice to me.

6 A. Thank you. I appreciate that. I agree.

7 Q. In fact, I had to swear a blood oath to her
8 that she would have the veto when we took your
9 deposition on account of your vision.

10 A. That's true. That's true.

11 Q. Did you look at any papers or any things
12 to - I hesitate to say prepare for this deposition, but
13 in advance of the deposition as a way of kind of being
14 ready for it other than the package which I sent you?

15 A. I don't think so.

16 Q. I mean you did look through your book
17 shelves and found a couple of books. And you found a
18 couple of videos.

19 A. What I found I brought with me. I don't
20 have anything else because I left all the papers that I
21 had in my office when I retired.

22 Q. Yes, sir. But you weren't provided any
23 other papers ---

24 A. (Interrupting) No. No. Oh, I mentioned --
25 I guess I must have mentioned that I had testified only

1 one other time, and John brought a copy of the testimony
2 which I had forgotten. I read it yesterday. I had
3 forgotten it completely for a while. It was the
4 testimony I gave in Beaumont - I think it was Beaumont.

5 Q. It was. Joe Fisher's court.

6 A. Right. And I reread that but then promptly
7 washed it out of my mind because I had forgotten it
8 yesterday until way late in the day.

9 Q. Did you keep a copy of that?

10 A. No.

11 Q. They took it away?

12 A. I do not have a copy.

13 Q. I mean you don't have a copy presently?

14 A. No.

15 Q. You were allowed to read it, and then it
16 was ---

17 A. (Interrupting) I read it, and I don't know
18 what John did with it frankly.

19 MR. BLANKS: Well, I think that's
20 all for this section. We have a
21 little more to go, but we are
22 following a format where we try to
23 wrap up one topic more or less before
24 we go on to the next one and give
25 other people a chance to ask you some

1 questions on that topic.

2 So, I'm going to pass the witness
3 temporarily.
4

5 EXAMINATION BY MR. MARTIN:

6 Q. Mr. Bolton, I have just a few questions for
7 you. You testified yesterday that you had taken maybe
8 10 or 12 samples at Oak Ridge for asbestos. Do you
9 recall that?

10 A. Yes.

11 Q. And these samples would have been taken
12 sometime in the 1960's or earlier?

13 A. Some of them probably were taken in the
14 early '50's; part of them were taken -- The others were
15 taken in '61 or '62, something like that.

16 Q. Who specifically were you monitoring in
17 terms of the craft?

18 A. You mean the person?

19 Q. The craft.

20 A. Oh, the craft. They were -- The sampling
21 at K-25 at the gaseous diffusion plant, which would have
22 been the earlier time frame, would have been '52 to '55;
23 and I think they were called insulators. The craft at
24 the Oak Ridge National Laboratory, which would have been
25 '61 to '78 were called utility mechanics.

1 Q. And those utility mechanics, they
2 functioned as insulators?

3 A. They were, in fact, the insulators. The
4 union - that particular union, I don't remember which
5 one it was, did not have an insulators craft. They had
6 a utility mechanic, and they did the insulation.

7 Q. You observed them doing the work while you
8 were doing the sampling?

9 A. Yes.

10 Q. When they handled the insulation material,
11 other than using respirators that you told us about, did
12 they use any other methods to control the generation of
13 dust, the block insulation that they were handling?

14 A. Not - not the block insulation. But the --
15 What do they call it? The mud that they put in the
16 joints to fill it out. They had -- Even in -- I think
17 this was '61. I'm not sure. It could have been earlier
18 at K-25 at the gaseous diffusion plant. But they cut a
19 corner off of the asbestos that they were going to make
20 up as the mud material and put water in it.

21 And they did this because it just didn't
22 get this stuff all over their hands when they mixed it.
23 Apparently they had come up with the idea that they
24 could stay cleaner if they did - if they wet that down.
25 So, that's what I saw them do. I think that was '61 or

1 '62.

2 Q. That was something they did without you
3 having to tell them to do?

4 A. Yeah. I thought it was terrific.

5 Q. And the insulators ---

6 A. (Interrupting) Very creative, sure.

7 Q. And they were using hand saws and other
8 tools to cut the insulation?

9 A. We called -- I think we called them keyhole
10 saws. It was a saw that came down to a point.

11 Q. Did the operation appear to be very dusty
12 when you observed it?

13 A. No, you - you couldn't see any dust being
14 formed.

15 Q. And the samples - I think you told us the
16 samples that you collected on both of these occasions
17 showed the potential exposures to be within the accepted
18 exposure limits.

19 A. Well, as I remember the numbers were - they
20 were less than half a million particles per cubic foot,
21 something like that.

22 Q. That was way below the standard at that
23 time?

24 A. I don't remember exactly what the standard
25 was at that time. It was probably five million or

1 one -- Probably five million. I don't remember which
2 one it was.

3 Q. Assuming it was five million, half a
4 million is way below that?

5 A. Ten percent. It was less than ten percent
6 because the numbers were not - they were not 500,000.
7 They were maybe 300,000, 350,000 as I remember.

8 Q. These people that you monitored were Union
9 Carbide employees?

10 A. Yes.

11 Q. Did you at Oak Ridge monitor contractor
12 employees for exposures to things like solvents and
13 vapors and asbestos?

14 A. No.

15 Q. Did you ---

16 A. (Interrupting) Oh, I take that back. We --
17 There were -- Occasionally we would be asked -- If they
18 were putting in a gas line or something like that, we
19 would be asked to bring an explosimeter out and make
20 sure that the pipe had been thoroughly purged. But
21 beyond that, there were no air samples per se taken;
22 although that's an air sample.

23 Q. That's an air sample to make sure it
24 doesn't blow up?

25 A. Right. Right.

1 Q. For long-term exposure-type evaluations ---

2 A. (Interrupting) No, we didn't do anything
3 like that.

4 Q. Did you do any medical surveillance on
5 those contractor employees for things like exposure to
6 asbestos?

7 A. Me personally?

8 Q. Did Carbide?

9 A. I don't -- I don't think so. If -- If they
10 did, it would have been on -- I don't think so. I think
11 they had their own medical program.

12 Q. You talked about the respirators that were
13 used in the plant down at Oak Ridge. Wasn't that
14 primarily for the control or prevention of exposure to
15 radioactive materials?

16 A. Oh, of course. Everything -- Everything
17 started there was more conservative I guess is the right
18 word than it would have been anywhere else perhaps. No,
19 not that's not true. There was a -- That was not a
20 correct statement.

21 What I'm trying to say is that they were so
22 concerned about radiation and about the potential for
23 exposure to radioactive materials that they went to the
24 extreme to protect employees and to prevent exposure. I
25 guess that's the best way to put it.

1 Q. And the mechanism for these respirators to
2 prevent exposure to radioactive material was that the
3 radioactive material would adhere to dust particles or
4 be airborne in dust particles and potentially inhaled
5 into the lungs?

6 A. It was, in fact, radioactive dust. And,
7 yes, the canisters would separate that out, would filter
8 it out.

9 Q. And there was specific regulations from
10 A.E.C. or other government organizations that dealt with
11 controlling that potential hazard?

12 A. Yeah, I'm sure that there -- I know there
13 were. There was the I.C.R.P. and the N.C.R.P. and the
14 manual chapters of A.E.C., D.O.E. or whatever that they
15 followed as well I'm sure. I.C.R.P. is International
16 Council on Radiological Protection. N.C.R.P. is the
17 National Council on Radiological Protection. And now
18 you have the sum and substance of my knowledge about
19 those two organizations. I do not know what they wrote
20 or anything.

21 I'm not trying to pre-empt a question. I
22 just -- I'm aware of them. I know what they are, and
23 that's all.

24 Q. Do you know if the Rust contractors that
25 worked at Oak Ridge, the insulators that were working

1 for Rust, did they wear respirators when they were
2 working in the plant; or do you know?

3 A. I don't know. If I answered your question,
4 it would be a little more than a guess.

5 Q. So, the respirators that were furnished
6 were for existing conditions in the plant primarily
7 dealing with control or protection from radiation?

8 A. Correct.

9 Q. Did Carbide do epidemiology studies on
10 contract employees?

11 A. No, not to my knowledge.

12 Q. Who specified the products that were used
13 in the construction at Oak Ridge? Would that have been
14 the government or Union Carbide?

15 A. It would have been the government. It
16 would have been a passed-down requirement.

17 Q. Do you know if there were alternative
18 insulation products available in the '60's for
19 substituting away from asbestos-containing insulation?

20 A. Not specifically, no.

21 Q. Did you specifically have a concern in the
22 '60's that the Rust insulators were being overexposed to
23 asbestos when they worked on your plant site?

24 A. Not that I recall.

25 Q. Because the only monitoring you had done

1 showed exposures below the standard?

2 A. Right.

3 Q. Since you had that understanding, you would
4 have had no reason to warn them about potential problems
5 of exposure to asbestos, would you?

6 MR. ELLISTON: Objection to form.

7 Assumes facts not in evidence.

8 Furthermore, it's leading.

9 A. I -- I -- I can't tell you exactly my
10 feeling. My instincts tell me that if they were going
11 to be handling asbestos, that there would have been
12 something said. What, I don't remember. I don't know.
13 But it would have been handled just like any other
14 stress that they might run into, whether it was
15 radioactive or a chemical stress or what have you.
16 (By Mr. Martin)

17 Q. If it was work that they were doing that
18 generated conditions unique to their work, not something
19 that already existed in the plant, would that be
20 something that Carbide would have been involved in?

21 A. No.

22 Q. Now, in the early '70's I think you said
23 yesterday that Carbide employees who were doing
24 tear-outs used wet methods.

25 A. Right.

1 Q. Is that not true in the 1960's?

2 A. I don't remember whether it is true or
3 false frankly. It's just beyond my recollection.

4 Q. I think you said the other day that the
5 problems with asbestos didn't really come to the
6 forefront until late '60's, maybe even early '70's.
7 What happened to trigger that if you can recall?

8 MR. BLANKS: Object to the form
9 as misstating Mr. Bolton's testimony
10 and assuming facts not in evidence
11 and misstating facts not in evidence
12 and being vague.

13 A. Would you ask that question again.
14 (By Mr. Martin)

15 Q. Whatever you said yesterday, I thought it
16 was that sometime in the late '60's or early '70's
17 problems with asbestos came to the forefront. Is that
18 fair, sir?

19 A. Yes, I think that's -- I think that's a
20 correct statement.

21 Q. What happened ---

22 A. (Interrupting) It may have been late '60's.

23 Q. What happened to trigger that if you can
24 recall?

25 A. It would have been all of the studies I

1 guess that Dr. Selikoff did that brought it really --
2 Selikoff clearly brought the asbestos problem to a head
3 from the studies which he made, whether they were right
4 or not.

5 Q. Why didn't Carbide provide industrial
6 hygiene services to its contractors?

7 MR. BLANKS: Well, I object to
8 that as misstating testimony
9 Mr. Bolton has already given. He's
10 already said that to some extent they
11 did provide such services.

12 (By Mr. Martin)

13 Q. Let me restate that.

14 MR. BLANKS: Well, it's overly
15 broad.

16 MR. MARTIN: And since you don't
17 like that question, Joe, I will
18 withdraw it. Thank you, sir.

19
20 EXAMINATION BY MR. HALEY:

21 Q. I only have one question for you. By the
22 way, my name is Clayton Haley just for purposes of the
23 record. And I was wondering whether or not Union
24 Carbide conducted safety meetings at any time during
25 your tenure there?

1 A. Oh, where are you talking about now - at
2 Oak Ridge?

3 Q. Right.

4 A. Safety meetings were normally held monthly.

5 Q. Did any of these revolve around the hazards
6 of asbestos?

7 A. I don't know.

8 Q. Did it ever involve discussions of
9 sandblasting or silicosis?

10 A. The same answer, I don't honestly know.

11 Q. Do you know ---

12 A. (Interrupting) I think, if my memory serves
13 me - and sometimes it doesn't - I think that I had a
14 discussion with the painters about the sandblasting
15 activities because the painters did the sandblasting at
16 Oak Ridge National Laboratory. And I think we did talk
17 about that at a safety meeting one time because some of
18 them were - had asked about the solvents that were being
19 used to dilute the lacquers and the paints and so forth.
20 And, so, we had a safety meeting. It was just sort of a
21 bull session.

22 Q. Do you recall the time period this would
23 have evolved?

24 A. It would have been the 1960's. It probably
25 would have been '62, '63, somewhere along in there.

1 That's the closest I can come to it.

2 Q. Do you know whether or not the insulation
3 and/or sandblasting contractors - independent
4 contractors conducted safety meetings?

5 A. I -- No.

6 Q. That was not required by Union Carbide of
7 the contractors themselves?

8 A. Not to my knowledge.

9 MR. HALEY: That's all I have.

10

11 RE-EXAMINATION BY MR. MARTIN:

12 Q. Mr. Bolton, the plaintiffs in this lawsuit
13 in the Allen, Hicks litigation have alleged that there
14 has been a conspiracy among the petrochemical companies
15 to hide information about the hazards of exposure to
16 asbestos. Do you have any information or knowledge
17 concerning this allegation?

18 A. No.

19 Q. What is your experience regarding the
20 discrimination of information of the health hazards
21 within the petrochemical industry?

22 A. I have always felt - thought, whatever the
23 right verb is, that there was exchange of information;
24 and that they shared information. But I don't have
25 anything to base that on. It's just here, you know.

1 (Indicating)

2 Q. In your experience if you had a question
3 about a problem someone - you could call someone to help
4 you with it?

5 A. Every time.

6 Q. And if someone called you with a question
7 about a problem with a process in their plant, you would
8 try and help them?

9 A. The converse was also true; correct.

10 MR. MARTIN: Thank you, sir.

11

12 RE-EXAMINATION BY MR. HOBSON:

13 Q. Mr. Bolton, let me ask you just a few
14 follow-ups if I may, sir. You answered in response to
15 questions just a moment ago that you felt that the
16 asbestos situation was brought to a head by
17 Dr. Selikoff's activities in the 1960's or words to that
18 effect. Do you recall that testimony?

19 A. Yes.

20 Q. Will you agree with me, sir, that the
21 hazards of asbestosis from inhalation of asbestos were
22 well-known and well reported in the medical and
23 scientific literature for at least two decades before
24 Dr. Selikoff's work?

25 MR. ELLISTON: Objection to the

1 form. Calls for speculation by this
2 witness. Furthermore, it's leading.

3 MR. LEDYARD: I also further
4 object that it does not specify as to
5 whom the dangers were being
6 encountered.

7 MR. BLANKS: I object to the
8 objection as being unintelligible.

9 MR. ELLISTON: I think we have a
10 vagueness objection as well.

11 MR. LEDYARD: The dangers of
12 asbestos doesn't specify who the
13 danger is to, and I think ---

14 MR. HOBSON: (Interrupting) Now we
15 have a speaking objection.

16 MR. LEDYARD: Well, you didn't
17 understand it. So, I had to make
18 myself ---

19 MR. HOBSON: (Interrupting) I
20 didn't say anything. I understood it
21 fine.

22 MR. BLANKS: Go ahead.

23 A. Excuse me. Is the question: Was
24 asbestosis from asbestos exposure known earlier than the
25 connection with cancer and asbestos? And the answer is

1 I think that is a correct statement.

2 (By Mr. Hobson)

3 Q. By at least 20 years there were a number of
4 reports in the medical and scientific literature of
5 asbestosis from the inhalation of asbestos I'm talking
6 about now in the 1930's and '40's?

7 MR. ELLISTON: Object to the
8 form. Calls for speculation, and it's
9 leading.

10 A. I can't answer the question beyond 1952
11 because that was when I came into the field. I suspect
12 that's correct.

13 (By Mr. Hobson)

14 Q. Will you also agree with me, sir, that
15 there, while it may not have been brought to a head in
16 your mind; that is the hazard - the connection between
17 asbestos and cancer - that there were reports in the
18 medical and scientific literature of exposure to
19 asbestos and the finding of cancer earlier than
20 Dr. Selikoff's work, again going back 10, 15, 20 years
21 earlier?

22 MR. ELLISTON: Objection to form.
23 Calls for speculation by this witness.
24 Furthermore, it's leading.

25 A. I'm trying to remember what was in that

1 stack of papers. In many cases the early references, I
2 knew about only after I read this information on Sunday,
3 this past Sunday. I'm trying to sort it out. I didn't
4 study the publications. All I did was -- I read through
5 them and tried to absorb what I thought was more
6 important. But they are as I recall references earlier
7 than 1952 to asbestosis. I don't know that there was
8 one to cancer earlier than that.

9 (By Mr. Hobson)

10 Q. I suggest to you that the editorial in the
11 Journal of the American Medical Association, November,
12 1944, did mention asbestos and cancer, did it not?

13 A. That's correct. It did. I had forgotten
14 that.

15 Q. I take it that really part of your job at
16 Union Carbide and your work experience has really never
17 required you to do any kind of an historical analysis of
18 the health hazards of asbestos then?

19 A. No, not at all.

20 Q. And that's at least part of the reason why
21 you have been unable to answer our questions about what
22 was in the literature 20 or 30 years before
23 Dr. Selikoff's work?

24 MR. ELLISTON: Objection to form.

25 Calls for speculation by this witness

1 and it's leading.

2 A. I think that's a correct statement.

3 (By Mr. Hobson)

4 Q. I was a little bit unclear about some of
5 your responses earlier. When the gentlemen were working
6 on the poles insulating - or repairing insulation that
7 you told us about where you did some of your air
8 sampling.

9 A. Uh-huh.

10 Q. Were they wearing the respirators out of a
11 concern for exposure to radiation on that pole, or were
12 they wearing the respirators to prevent exposure to any
13 potential dust generation from their asbestos work?

14 A. It could have been either. It could have
15 been either one. It could have been both.

16 Q. Was it the general practice then,
17 Mr. Bolton, that any maintenance activity of any kind at
18 the Oak Ridge National Laboratory was done with
19 respiratory protection?

20 A. Not - not all of it. A large part of it
21 was because of the radioactivity potential. As I
22 remember, the utility mechanics had on respirators.
23 These would have been Custom Comfos or -- Yeah, I'm sure
24 the Custom Comfo had been manufactured at that point. I
25 think they had them on by choice.

1 Q. In your mind when you watched these men do
2 this work on the pole, did you perceive that it was
3 better to be wearing the respirators to protect them
4 from a potential radiation exposure or from an asbestos
5 exposure?

6 A. I don't know that I would have made a
7 distinction.

8 Q. Had there not been the potential for a
9 radiation exposure in handling these asbestos-containing
10 products, would you have thought it would be a good idea
11 that the men wear the respirators anyway?

12 MR. ELLISTON: Objection to form.
13 Calls for speculation.

14 A. I probably would have -- I probably would
15 have recommended that they wear respirators, even in the
16 absence of - or that they have them handy in case they
17 were needed. On every job, I don't think I would have
18 done it on every job because we -- You would do it on
19 something that was extremely dusty that you could see
20 the dust clouds coming up. But you would not -- You
21 would not normally require them to wear respirators. We
22 made them available. We were -- We had them. And I
23 guess they had been brainwashed enough that they wore
24 them because of the radioactivity.

25

1 (By Mr. Hobson)

2 Q. Brainwashed would be about the same as
3 trained?

4 A. Trained, yes. There was -- There was a
5 concern about the radioactivity. And much of the
6 wearing of the respirators was probably associated with
7 that, not with - not with the other things that they
8 might be exposed to.

9 Q. Did you find, sir, at Oak Ridge that
10 because of the training that I guess you characterized
11 as brainwashing almost, that it was so intense and so
12 straightforward about the radiation hazards that the men
13 went beyond what was actually required and took extra
14 precautions besides that that was actually required by
15 the regulations or your written procedures?

16 MR. BEASON: I'm going to object
17 that it calls for speculation.

18 MR. BLANKS: It really calls for
19 recollection.

20 A. I don't -- I don't think so. My -- Your
21 word, my recollection, is that they would have not --
22 They would have not worn this simply because there might
23 have - there might have been a radioactive problem.
24 It's possible. But as a general rule, there is such a
25 great resistance to wearing a respirator. I can't

1 believe they would do that. I mean it's an
2 uncomfortable device under the best circumstances.

3 (By Mr. Hobson)

4 Q. So, it was a tribute to your training
5 programs at Oak Ridge in really instilling in these
6 men's mind the understanding of the hazard that got them
7 to wear the respirators even as much as they did. Would
8 that be fair?

9 MR. ELLISTON: Objection to form.

10 Leading. Calls for speculation.

11 A. Maybe. I don't -- I don't know. I
12 honestly don't.

13 (By Mr. Hobson)

14 Q. I got the impression from your testimony a
15 moment ago in response to Mr. Martin's questions that
16 you at Oak Ridge followed these regulations, these
17 manuals; but you only went as far as the manuals
18 required you to go. Is that true or not?

19 A. No, that's not. That's not correct.

20 Q. Tell me what is correct.

21 A. The manuals as I recall were -- They were
22 not vague. They were not specific. They were very
23 general directions. You know, programs will be
24 established to protect the workers against aerosols,
25 mists, blah, blah, blah, that might - that might have

1 been shown to be toxic or something like that.

2 That would have been -- That would have
3 been I think in the main what they would have said.
4 They may have used a lot more words than I did, but
5 that's the way it came out.

6 Q. And then you as the professionals, you
7 conceived and implemented the programs that you felt
8 were necessary to achieve these ends?

9 A. Correct, with a lot of input from people
10 outside and inside.

11 Q. You told us a little bit about the use of
12 respirators and the development of qualitative fit
13 testing. And I think you said that was sometime as best
14 you remembered in the 1960's?

15 MR. MARTIN: Excuse me. What
16 kind of testing did you say?

17 MR. HOBSON: Qualitative.

18 A. Yeah, qualitative I think we did perhaps a
19 little early than we did quantitative. It was the old
20 isoamyl acetate test, if you had a cartridge that would
21 absorb the organic vapors so that the odor didn't go
22 through. But I don't know that it was done in the
23 '60's. It was probably -- I don't -- I don't recall
24 precisely when -- My guess would have been the early
25 '70's because everything was marching very quickly at

1 division or their industrial hygienist or to a location?
2 How would you have gone about doing that if you wanted
3 to?

4 A. I probably would have just picked the
5 telephone up and called whoever it was at the plant that
6 I knew and said, "Hey, what have you got on this? Look
7 it up. Give me a call and tell me." And that's
8 probably the way it would have been handled. I don't
9 know that it would have been much - any more formal than
10 that.

11 Q. At the corporate offices in New York when
12 you were in the corporate job, did you maintain files by
13 location and by division so that you could go to your
14 files there in New York and learn about historically
15 what had happened in either a division or at a location
16 from an industrial hygiene standpoint?

17 A. I didn't. The hygienist that worked for me
18 did. They maintained theirs. But I didn't have -- I
19 had enough paper to deal with without trying to deal
20 with what they were doing, too.

21 Q. Was it your experience that someone
22 working -- We have used Mr. Peele's name here. If
23 Mr. Peele is working at the Institute facility and goes
24 out and does an industrial hygiene job and generates a
25 report, did you find it to be the practice that a copy

1 what you were telling us. Can you ---

2 A. (Interrupting) Oh, the bags -- The bags of
3 asbestos that was used to put - to make the mud as they
4 called it; to make the corners and to fill in the parts
5 that didn't quite fit. You know, if they had a big,
6 complex valve or something like that, why, they might
7 have to mud a corner in order to get the asbestos all
8 over it.

9 What they did is they just cut the corner
10 off of the bag. The bag was plastic as I remember. And
11 they put water in the bag and mixed it in the bag so
12 that they didn't end up with asbestos all over their
13 hands and so forth. It was just an easier clean up for
14 them.

15 Q. And really if you think about it, wouldn't
16 that be an example of not only using wet methods to
17 control dust but also be an example of isolation?

18 A. Well, isolation is overstating because it
19 is open to the atmosphere.

20 Q. But I mean using the bag to isolate
21 the ---

22 A. (Interrupting) They were -- If I had to
23 guess - and it would be little more than a guess - if I
24 had to guess, the reason they put the water in the bag
25 was for the cleanliness of it. It was not because

1 they -- They just didn't want to have to wash their
2 hands. They didn't want to have to clean up after they
3 finished. And this was the easy way to circumvent that.
4 That would be my guess.

5 Q. So, an unexpected result was that it
6 reduced the amount of dust that would be generated
7 by ---

8 A. (Interrupting) It certainly was a fringe
9 benefit. There is no question about that, yes.

10 Q. (Tendering) Mr. Bolton, let me show you
11 what we have marked at Plaintiff's Exhibit 511200.22
12 capital G capital U capital L capital F. And it's ---

13 MR. MARTIN: (Interrupting) And
14 while he looks at that, let me
15 retrieve Ledyard.

16 MR. HOBSON: Okay.

17
18 (A BRIEF RECESS WAS TAKEN.)
19

20 (By Mr. Hobson)

21 Q. Mr. Bolton, what I have handed you here is
22 a statement. I would like to ask you, sir, if you agree
23 or disagree with the statement. And I would like to go
24 back to the time period when you were observing the
25 mixing of the asbestos cement in the bag like you told

1 me about. Would that be - I think you said - what, in
2 the 1960's, early 1960's?

3 A. It would have been sometime in the '60's as
4 I recall.

5 Q. It says -- The document I have handed you
6 says, "Asbestos cement" - it says, "Asbestos cement with
7 or without water is nonpoisonous and will not harm the
8 hands or clothes other than soiling them. It is a
9 fibrous material made by tearing into fibrous asbestos
10 rock, which is a fibrous rock that occurs in nature.
11 The fibers of asbestos do not tend to form an
12 air-floating dust so are not injurious to the
13 respiratory organs. Working with this material does not
14 subject one to this hazard to his health." If I read it
15 correctly?

16 A. Yes.

17 Q. Would you tell me what your appreciation
18 was in the early 1960's of this statement, sir, as best
19 you can.

20 MR. ELLISTON: Objection to form
21 in that it's leading and it calls for
22 speculation by this witness to the
23 extent it calls for medical opinions
24 to be rendered; and further it's vague
25 without some better definition as to

1 what particular asbestos cement is
2 being described or discussed.

3 A. Would I agree with this?

4 (By Mr. Hobson)

5 Q. Yes, sir.

6 A. Not based on what I know today, certainly
7 not.

8 Q. What about ---

9 A. (Interrupting) You said 1960?

10 Q. Yes, sir. When you were working -
11 observing the insulators wetting the asbestos cement in
12 the bag as you told us about earlier. In that time
13 period, sir.

14 MR. ELLISTON: The same
15 objections.

16 A. I -- I think if memory serves me correctly
17 that asbestosis was - had already been reported at that
18 point. I would have to go back and read the literature
19 again. But it just seems to me that it was. My
20 recollection is that it had been reported.

21 (By Mr. Hobson)

22 Q. And if it had been reported, what would
23 your comment about this statement be then, please?

24 A. It think it would overstate ---

25 MR. ELLISTON: (Interrupting)

1 Excuse me. The same objections as to
2 leading, calling for speculation
3 and vague without some definition of
4 the type of content of that particular
5 cement. Now go ahead.

6 A. I think it's understating the hazard that's
7 associated with asbestos frankly.

8 MR. HOBSON: I think that's all I
9 have on this subject. Anybody have
10 anything else on the subject of
11 asbestos?

12
13 RE-EXAMINATION BY MR. BLANKS:

14 Q. Let's move briefly to silica-related
15 topics, Mr. Bolton.

16 A. Okay.

17 Q. Which to some extent I think you have
18 already addressed, and perhaps this will be as short as
19 you and I both want it to be. When do you recall first
20 encountering work that had a potential hazard for
21 causing silicosis through the exposures to men at Union
22 Carbide?

23 A. It probably would have been when I went -
24 when I went back to Oak Ridge the second time. It would
25 have been in the early '60's.

1 Q. And at that time your painters at the Oak
2 Ridge plant from time to time had to do some
3 sandblasting?

4 A. Yes.

5 Q. What kind of protection did Union Carbide
6 require and provide for its employees in the early '60's
7 who did sandblasting work?

8 A. If I remember correctly, we used the
9 Bullard sandblasting helmet. I think it was the
10 Bullard.

11 Q. That would have been an air-supplied
12 helmet?

13 A. It was an air-supplied helmet through a
14 regulator with sort of a protected air supply; protected
15 in the sense that it would not have had carbon monoxide
16 or anything like that in it that might affect the
17 worker.

18 Q. And before early 1960 - the early '60's,
19 you hadn't stumbled onto any sandblasting being done at
20 Carbide facilities?

21 A. Not that I recall.

22 Q. Did you see any being done at Texas City
23 when you went down there?

24 A. I guess it's possible, but I don't -- I
25 don't honestly remember it.

1 Q. What did you tell your painters as best you
2 can remember about the hazards of silicosis and the
3 hazards of sandblasting when you discussed this with
4 them at Oak Ridge in the early '60's?

5 A. I think we talked about the fact that
6 excessive exposure to sandblasting - materials of
7 sandblasting, silica itself, would cause silicosis which
8 was a fairly debilitating disease, which they clearly
9 did not want. And, therefore, it behooved them to wear
10 the respiratory protection, that they follow the
11 procedures that had been established for sandblasting
12 pieces of equipment, and that they -- Well, I know they
13 used the buddy system. They were always two people, one
14 watching the other one work so that you could get him
15 out if something happened. These were high pressure
16 lines that you were dealing with.

17 Q. Were they working inside blast cabinets?

18 A. No. It was a big, big sandblast - Yeah, I
19 guess cabinet -- It wasn't a cabinet. It was -- The
20 doors on it were 20 feet high.

21 Q. A chamber, huh?

22 A. It was a big, walk-in chamber. You could
23 get huge pieces of equipment in there and sandblast it
24 down.

25 Q. Did you have forced exhaust ventilation in

1 this big room?

2 A. Oh, yeah. They had -- As I recall there
3 was a cyclone to remove the -- Most of the grit fell
4 into the hopper underneath through the steel grate. But
5 the dust was carried through some kind of cyclone filter
6 where the fines were -- And then the fines I guess went
7 on. They didn't collect in that filter. They were
8 collected in -- I believe it had a bag house, too.
9 That -- You are straining me. I just -- I'm not sure
10 I -- I can see the building outside, but I'm not sure I
11 remember exactly what the components were.

12 I know there was - there were hoppers
13 underneath that captured the stuff that fell down. I
14 know there was a cyclone because I can still remember
15 that conical-shaped device on the outside of the
16 building. There may have been a bag filter. I suspect
17 that there was, but I -- I would not want to swear to
18 that.

19 Q. Did they reuse the aggregate?

20 A. Not the -- They reused the stuff which fell
21 down for a period of time as I remember. I -- There
22 wasn't that much sandblasting done.

23 Q. What aggregates did they most commonly use?

24 A. I have no idea. I have no idea.

25 Q. You say most of the aggregate, though, was

1 not sand?

2 A. No, it was sand.

3 Q. I'm sorry.

4 A. Most of it was sand. There was some steel
5 shot. But the steel shot was done -- I think that was
6 done a different place.

7 Q. Probably.

8 A. It wasn't -- I don't think they mixed sand
9 and steel shot. I think that was a separate -- That was
10 a smaller operation. I'm sorry. I don't remember.
11 I don't remember the steel shot operation frankly.

12 Q. The cyclone exhaust system you described,
13 typically what sort of an air turnover would you have
14 from one of those systems in a room like that? Would it
15 replace the air in there several times a minute?

16 A. I don't -- I don't know what the design
17 criteria were. It certainly would have been more than
18 six air changes an hour. If I told you, it would be
19 little more than a guess. I just -- I don't remember.
20 There was a significant volume of air that was drawn
21 through that, whatever significant means.

22 But it was more than six air changes an
23 hour. I'm sure of that. Because that's standard
24 ventilation for an office, three air changes, four,
25 five, six, or something like that. So, it would have

1 been more than that.

2 Q. To keep the dust level down just for
3 visibility purposes, you would have been having to move
4 a large amount of air through that chamber; correct?

5 A. As I remember, it get pretty dusty on
6 occasion.

7 Q. And when do you recall learning about the
8 disease of silicosis itself? Is that something you
9 encountered in your education as an industrial hygienist
10 or as an industrial hygiene chemist?

11 A. I suspect that's true. I suspect that I
12 knew it at K-25, but I can't tell you precisely. I
13 don't know at what point in time.

14 Q. During your years in West Virginia, did any
15 of the doctors or other professionals you were working
16 with ever mention to you the Carbide experience at
17 Gauley Bridge in the '30's?

18 A. No. I know where Gauley Bridge is because
19 I worked up there, but I don't recall anything about
20 that.

21 Q. Were your employees at Oak Ridge also using
22 cartridge respirators to do sandblasting?

23 A. Oh, no.

24 Q. All the sandblasting was done inside that
25 big cabinet room?

1 A. Right. There -- As I -- I don't -- I don't
2 think that they had portable equipment. I think if it
3 had to be sandblasted, it had to be taken up there. And
4 most of the cleaning was not done by sandblasting. Most
5 of it was done with strong acid, nitric acid and so
6 forth.

7 Q. So, you weren't having to buy cartridge
8 respirators to protect from silica dust during those
9 years at Oak Ridge?

10 A. I don't know anyone that would have worn --
11 The individual, the watcher might have; the person that
12 had to watch the person doing the sandblasting. Because
13 it always was done with the buddy system. He might have
14 had a respirator on. I -- I don't think so, though,
15 because he was outside looking through the door -
16 through the glass because the whole thing was closed up.
17 He -- He had one.

18 Q. In case he had to go inside?

19 A. No. He did -- He would not have gone
20 inside unless it was a real emergency.

21 Q. Right.

22 A. He had one. That may have been the reason.
23 It may have been one -- I can remember vaguely one
24 hanging around his neck. It was probably to - in case
25 he had to enter to get the worker out. He had control

1 of the valves and everything from where he was, from his
2 vantage point. So, he could shut the air off and stop
3 the process at any time he felt it was necessary.

4 So, he -- I suspect that that's -- I
5 just -- I hadn't thought about that in a long time, but
6 I think he did have one hanging around his neck just in
7 case.

8 Q. Was electric arc welding done at Oak Ridge?

9 A. Yes.

10 Q. What kind of protection was provided for
11 people doing that from particulates?

12 A. Most of the work was done again in the big
13 central mechanical shop. It was -- And again, most of
14 it was primarily heliarc. It was not -- It was inert
15 gas welding, not stick welding. It was very unusual to
16 do stick welding in Oak Ridge because you were working
17 with all kinds of funny Hastallow-C's and stainless
18 steels and everything like that. And they just -- There
19 was very little work that was done with black iron until
20 the point where they used stick - stick rods. They did
21 do on rare occasions stick rod welding.

22 Q. How do you deal with the gases when doing
23 the inert gas welding? Were they recaptured somehow?

24 A. No. There was -- Each of the -- Each of
25 the welding booths had spot ventilation. But as I

1 remember, it had to be very carefully balanced because
2 if it was too strong, it would blow the gas shield away
3 and you would get a crappy weld. And if it was not
4 strong enough, then you would - whatever small amount of
5 fume was generated -- And heliarc was not a smoky
6 operation as I remember. It's been a long time since
7 I've watched one. But it was a fairly clean operation
8 because you were -- If it were aluminum, you were
9 welding with the aluminum. And if it was stainless
10 steel, you were using a consumable rod that had no
11 coating on it. There was no oil. Everything had been
12 degreased. So, it was a fairly clean operation as I
13 remember.

14 Q. You would just lose the helium?

15 A. Oh, the helium was -- You are talking about
16 trivial quantities, trivial amounts of helium.

17 Q. I was just curious.

18 A. Yeah, very low. It comes out around the
19 rod - the welding - the tip and provides a shielding to
20 keep the material from being oxidized while it's being
21 welded or melted into place I guess is a better
22 description of it.

23 Q. When did you come to appreciate the
24 potential for pneumoconiosis caused by breathing welding
25 fumes?

1 A. It was probably at the time that I was at
2 K-25 because I remember sampling the welders. Yeah, it
3 would have been K-25. I remember.

4 Q. That would be back at the beginning of
5 your ---

6 A. (Interrupting) That would be 1953, '54,
7 something like that - maybe '52.

8 Q. Did you-all have some foundries at the Oak
9 Ridge facility?

10 A. Foundries at Y-12.

11 Q. What did they found there?

12 A. Uranium. It was a glove-box operation. I
13 mean everything was totally enclosed.

14 Q. Did they do any machining of parts at Oak
15 Ridge?

16 A. Absolutely.

17 Q. Any beryllium parts?

18 A. Absolutely.

19 Q. Did you have to deal with the dust control
20 there?

21 A. Yes, I did.

22 Q. What kind of protection was provided for
23 that - a respirator?

24 A. All the machines were in glove boxes.
25 Those machines that were too large to be enclosed in

1 glove boxes had local, high velocity chip pick-up
2 systems in the order of as I remember 6,000 linear feet
3 per minute.

4 So that there was -- And there was such
5 a -- We must have taken a jillion beryllium air samples.
6 Every machine had a filter cassette that you took an air
7 sample. It was taken every day. It was analyzed every
8 day. And I don't -- I don't remember ever getting a
9 positive result for beryllium frankly.

10 Q. So, you had monitors to sample the air at
11 the machine tools that were generating the dust?

12 A. Right.

13 Q. And you ---

14 A. (Interrupting) Well, it was in the vicinity
15 where the work - where the machinist was standing.

16 Q. You had exhaust ventilation at each machine
17 I take it?

18 A. Absolutely.

19 Q. But then you had a monitor in the workman's
20 vicinity at each ---

21 A. (Interrupting) It was an area sample, not a
22 personal air sample at all. It was simply if there
23 happened to be a column, a steel girder holding up the
24 roof of the building, then that's where we chose to
25 put -- Most of them are mounted at nose level, five,

1 five and a half feet off the floor. And they were on a
2 central house vacuum system that pulled the air. Each
3 of them had a rotameter so that everybody knew that
4 yeah, that little ball is bouncing. It's drawing air.
5 It's sucking air through there like it's supposed to.

6 Q. And you never had any high readings that
7 you remember?

8 A. Not -- There was not high -- There was not
9 a positive reading as I recall during the 12 months that
10 I was at Y-12. I don't ever remember looking at a
11 result - beryllium result that was above 0.00
12 micrograms.

13 Q. Well, why -- I mean you ventilated each
14 machine. You provided the men with respirators and you
15 took samples; and, yet, you never had even a positive
16 dust measurement. Why would you need to keep sampling?

17 A. Beats me. I would not have done it. I
18 would have gone in there -- Once the ventilation was in,
19 it didn't make any sense to me to continue to do it.
20 But every time I said I don't -- Let's do them on a
21 weekly basis; let's do them on a monthly basis. And I
22 was trying to free the people up so we could do
23 something else, you know. Maybe there was some other
24 pressing problem that needed to be addressed.

25 Every time I did that, I got beat up. "Do

1 you know how toxic beryllium is?"

2 I said, "Yeah, I think I do. I think I've
3 read some of the literature, at least a small part of
4 it." But there was such a -- Apparently they had
5 instilled into them such a fear of beryllium that nobody
6 was willing to shut the air sampling system off; that
7 they wanted those air samples taken every day that that
8 machine shop operated. It was just as simple as that.

9 Q. Well, you wouldn't have stopped it for
10 good, would you?

11 A. Oh, no. No. No.

12 Q. You would have just done it a little less
13 frequently?

14 A. I would have done it less frequently.

15 Q. Or even perhaps randomly?

16 A. Never randomly, no, not in those days. I
17 think we would have -- We would have -- If -- If I had
18 had my way in 1956, whenever it was - about '56 I guess,
19 '55 or '56 - I would have cut back on the number of
20 samples because I had looked for eight months for
21 something, and I had looked at nothing but zeros.

22 And I'm sitting there looking at zeros and
23 saying, "Why do we continue to sample when we are
24 getting zeros?" And the answer is that the maintenance
25 people, the management in that operation were not

1 willing to shut the systems down. They wanted to know.
2 So, we continued to monitor.

3 Q. Well, just explain for me because I'm not
4 an engineer and a technical person just how in that
5 period, '51 to '56 when you worked at Oak Ridge the
6 first time, how did this air sampling system work, I
7 mean the mechanical part of it? You had a ---

8 A. (Interrupting) There was a big central
9 vacuum pump. And all of the lines were run from that
10 central vacuum system. It was run off of a manifold,
11 and the piping as I remember was probably stainless
12 steel.

13 Q. And it came back - you had a pipe to the
14 work areas?

15 A. It was piped out to the work area. And
16 these little -- There were little aluminum filter
17 holders which we made up, which we machined ourselves in
18 the shop. We used filter paper about so big, an inch
19 and a quarter or something like that. And these things
20 unscrewed. And you could take tweezers and pull them
21 out and put them in a planchette holder and put them in
22 your pocket. Take another piece of filter paper out,
23 stick it in, screw it back down and you were ready to
24 go.

25 Q. And you said there was some kind of a

1 bouncing ball indicator. Where was ---

2 A. (Interrupting) There was a rotameter.
3 There was a rotameter on each one of them so that it
4 was -- As I remember the rotameter was after the filter
5 head. It was mounted on the -- The filter head was
6 mounted on the bottom of the rotameter. And it was
7 mounted in a horizontal position so that the material --
8 It wasn't mounted up so material wouldn't fall into it.

9 Q. Yes, sir.

10 A. It was mounted this way so it actually had
11 to draw in whatever was the contaminant. And the
12 rotameters were calibrated periodically by people. We
13 had little bureau of standard rotameters. They would go
14 around and check them and make sure that the air volumes
15 were still correct and that we were getting the proper
16 amount of air. They all had needle valves so that you
17 could adjust them.

18 Q. So, in the early '50's then, Carbide at
19 least at this plant, you had a fixed, in-place
20 monitoring system where you could monitor for dust in
21 the air at different places in the plant, wherever the
22 lines were run?

23 A. In those -- In the beryllium machine shop;
24 that's right. This was a very dedicated -- This is a
25 dedicated machine shop, dedicated to machining beryllium

1 parts.

2 Q. Did you ever suggest to the - whoever would
3 make the purchasing decisions that some abrasive other
4 than sand might better be used at the Oak Ridge
5 facility?

6 A. Not me personally, no.

7 Q. Were such suggestions made while you were
8 there?

9 A. I don't know. I'm sorry. I didn't mean to
10 imply that I knew somebody else did. No, I'm not aware
11 of that.

12 Q. Do you know of any of your employees who
13 came down with silicosis?

14 A. I don't -- I have no recollection of any.

15 Q. Do you think that Bullard equipment was
16 selected because it was one of the better ones at doing
17 the job of protecting the man, or did you buy it on a
18 lowest bid basis?

19 A. I can't answer that question. It was --
20 From my viewpoint, there was no appreciable difference
21 in the sandblasting hoods that were available from the
22 various manufacturers. I -- That's thinking back in
23 those days. Why it was Bullard? It was probably
24 Bullard because they happened to be the low bidder at
25 the time when we bought them. They may have been

1 specified now that I think about it. That would have
2 been such a small order. It would have been two or
3 three. They probably didn't bid it. They probably
4 bought it on the basis of a recommendation from the
5 safety department. That would be my guess.

6 Q. Did you ever allow Carbide people to
7 sandblast using only a canvas hood with a wire mesh
8 screen and no lung protection?

9 A. As I said, the only sandblaster was that
10 one big building which we were just talking about. And
11 the answer to the question is no.

12 Q. Would you have allowed it back then in the
13 1960's?

14 A. I don't think so.

15 Q. Did you do any air sampling in connection
16 with the sandblasters, or was it just obvious to you
17 that it was excessive levels of dust and the men had to
18 be protected?

19 A. No. 1, it was obvious to me when you stand
20 outside with the buddy who is watching the sandblaster,
21 that he cannot stay in this atmosphere. It is so dusty
22 that he cannot stay in there; that he has to have
23 something on. The answer is yes, we did take some air
24 samples up under the hood. I remembered that yesterday
25 from something triggering it. But -- And I don't -- I

1 was trying to remember how we got the air sample. It
2 had to be -- It had to be on millipore paper. Was
3 millipore paper available in 1962, '63?

4 I don't -- I don't honestly remember. I'm
5 having trouble with the time frame. But as I recall, we
6 did -- We did take the -- We did take the sample on
7 millipore. It was clipped to his collar underneath the
8 hood. And the concentrations were trivial. The air
9 sample -- The results as I recall -- I don't remember
10 the results exactly. But they were trivial by anybody's
11 standards. Less than two percent, one percent of
12 the ...

13 Q. What led you to go to the trouble of taking
14 a sample of the air the man was actually breathing
15 inside the hood?

16 A. I think one of the -- One of the painters
17 that was doing most of the sandblasting, he was - he
18 seemed to be the one that was the expert. He could get
19 the stuff out of the crooks and crannies that nobody
20 else could get to for some reason or other.

21 He said, "How do you know this thing
22 works?"

23 And I said, "Why don't we take an air
24 sample." So, we took an air sample. And, so, we took
25 it because he asked me to; not because I felt it needed

1 to be taken. It's a reassurance factor; that's all.

2 Q. It was a fairly simple thing to do, wasn't
3 it?

4 A. Well, as I recall it wasn't too simple
5 because once you get the sample, then the problem
6 becomes how do you count it and so forth. And as I
7 recall, the millipore filter paper gave - was an
8 advantage because all you had to do was take a piece,
9 put immersion oil on it and then it was transparent.
10 Then you could put a little cover glass on it and you
11 could look at it. And you also had a permanent record
12 if you wanted to keep it. If it were something that you
13 wanted to keep for a while, why, you could because it
14 literally stuck to the glass slide. And then you had a
15 field that you could count.

16 As I remember we photographed them. We
17 photographed the fields because it was easier to count
18 the particles on an eight by ten glossy print that it
19 was to go cross-eyed through a microscope.

20 Q. That makes sense. When you started doing
21 your respirator fit testing in the '60's ---

22 A. (Interrupting) No, that wouldn't have been
23 until the '70's.

24 Q. I'm sorry, '70's. Did you then discover
25 that one size did not, in fact, fit all; that you had a

1 percentage of faces in your work force that a particular
2 brand wouldn't fit; and, in fact, it required several
3 different types of masks to accommodate all the people
4 in the plant that needed to wear respirators?

5 A. It was about that time that we began to
6 understand it. What -- I can tell you what brought it
7 to a head with us at the laboratory - at the Oak Ridge
8 National Laboratory. We had a -- What was his job
9 title? He was a laborer. And we brought him into the
10 department where we did the training and how to get the
11 respirators on. This was a new employee as I remember.

12 And this guy had the biggest face on him
13 that I have ever seen on anybody in my life. We put --
14 We put an Army assault mask on him, and you could not
15 see his eyes. I mean his eyes were under the -- His
16 eyes were literally covered. I honestly never saw a
17 face that big in my life.

18 And all of a sudden we realized, "Gee, if
19 that's the case, how many of these small-faced people
20 are going to have problems?" So, we -- That was -- At
21 that point -- And I don't know when that was. That had
22 to be -- It was probably early '70's, '72, somewhere
23 in - '74 or something like that. And we began to -- We
24 looked around. We found that we could not use just one
25 size, a half-face respirator even. It ran off -- You

1 know, we put an Army assault mask on him, and he
2 couldn't begin to wear it. We could put a -- We could
3 put an MSA Clearview on him and his chin was out
4 underneath. And if you put it where he could see
5 through it -- It just was in -- He was impossible to
6 fit. And, so, we -- The medical department wrote a
7 restriction that this man was not to work in anything
8 which required him to have to wear a respirator. And,
9 so, as far as I know he never did.

10 Q. That's what got ---

11 A. (Interrupting) We -- We didn't have the
12 problem with small-faced people at the laboratory
13 because we didn't have that many female operators. Y-12
14 on the other hand did have female operators, and they
15 ended up having to buy an assortment because you could
16 actually get some of the respirators in different sizes.

17 But we found that the Custom Comfo which we
18 had stocked, which was the low bid item and bought on a
19 bid for - on a bid basis, fit 99 percent of our
20 employees as I remember. It was a very high percentage.
21 And those which we could not fit with the Custom Comfo,
22 we simply put a full-face respirator on them. We found
23 that we could get a quantitative fit test with the
24 Clearview and with the other full-view face pieces. I
25 don't remember the names of the others. The MSA one was

1 the one that we used primarily. But there were a couple
2 of others that were just as good as the MSA Clearview.

3 Q. Did Carbide sell stick rods through its
4 Linde division?

5 A. We sold them through the filling stations,
6 the welding -- Not gasoline filling stations. But
7 our ---

8 Q. (Interrupting) Retail outlets?

9 A. Retail outlets where we sold -- We even
10 sold Lincoln welders as well as Linde welders, Monarch
11 and things like that. We sold them but I don't -- As I
12 recall we did not make stick rods. We -- I don't
13 believe Linde ever made stick rods. Now, that may not
14 be a correct statement, but I don't -- I don't remember
15 it if we did.

16 Q. Do you recall if Linde sold any stick rods
17 under its own label?

18 A. I don't know.

19 Q. When you became responsible for industrial
20 hygiene in the gas - the Linde gaseous division, did you
21 determine that welding rods, stick rods ought to have
22 some warning on the packages about the health hazards
23 from breathing the fumes?

24 A. Me personally, no.

25 Q. Or anybody that was working under you?

1 A. I don't know whether they had a label on
2 them or not frankly. That's too much of a detail. I
3 would not have known that kind of detail.

4 MR. BLANKS: That will finish
5 this part. Thank you. I will pass
6 the witness.

7
8 (A BRIEF RECESS WAS TAKEN.)
9

10 RE-EXAMINATION BY MR. HOBSON:

11 Q. Mr. Bolton, I asked you to get out your
12 Curriculum Vitae during the break here that's 280227,
13 capital BOL, capital New, capital E. And I wanted to
14 ask you a few questions about it. On Page 3 there is
15 the letter "I" under your "Publications" that says
16 "Industrial Hygiene in a Research Oriented Facility,
17 Published in Proceedings of the Southern Area Research
18 Symposium." Then it says O-R-N-L. What is O-R-N-L,
19 please?

20 A. Oak Ridge National Laboratory.

21 Q. So, there would be proceedings at the Oak
22 Ridge National Laboratory of this symposium?

23 A. No. I'm sorry. I anticipated your
24 question. The answer is no, there would not be -- This
25 probably would not be -- The Southern Area Research

1 Symposium - it seems like a long time ago, '69 -
2 there -- They may still exist. I don't honestly know.
3 But it was published by them. The symposium was held at
4 the Oak Ridge National Laboratory. And I think it was
5 the Fall of 1969 if I remember right.

6 Q. And the proceedings would have been
7 published by whom?

8 A. They would have been published by somebody
9 in the Southern Area Research Symposium. I don't recall
10 the details. And I don't have a copy of that paper
11 anymore.

12 Q. Item "L" on the next page, Page 4,
13 "Evaluation of Detector Tubes," which you published I
14 guess in the American Industrial Hygiene Association
15 Journal in 1956. Tell me what you did in that.

16 A. We did a series of evaluations as I
17 remember, and I can't tell you -- At this point I don't
18 know which ones of the detector tubes we checked. But
19 we generated known concentrations of whatever the
20 detector tube would - would pick up, would analyze and
21 measure. And we did some sort of I guess accuracy
22 measurements on how well they did and so forth.

23 Carbon monoxide was one. I remember that
24 one because that one - that one was almost as accurate
25 as the CO analyzer, the instrument that we were using to

1 monitor the CO concentrations we were generating. It
2 was very accurate. There was -- What else? What else
3 did we do? That was 19 ...

4 Q. '56.

5 A. 1956.

6 Q. Do you remember what brand or brands you
7 evaluated of detector tubes?

8 A. No.

9 Q. There weren't too many choices in those
10 days, were there?

11 A. There weren't a lot of choices, no.

12 Q. MSA had a line?

13 A. The CO tube that we checked was MSA I
14 believe. I don't -- This is 1965. That was in South
15 Charleston. I was trying to remember if the Draeger had
16 come out at that point. The Draeger was the German - a
17 series of detector tubes. I -- That may be a little
18 early for the Draeger series. I don't think they were
19 made yet. Maybe they were. I don't remember. We had
20 Phosgene tubes. I'm sorry. I don't remember the rest
21 of them.

22 Q. Do you remember using Bendix tubes in those
23 days.

24 A. No.

25 Q. How about Kitagawa?

1 A. Well, Kitagawa and Draeger came out about
2 the same time. And I had forgotten about the Japanese
3 brand. But if the Kitagawa was available, the Draeger
4 was. I'm sorry. I just don't -- I don't remember other
5 than the carbon monoxide tube which one it was - or who
6 the manufacturers were. I have a feeling that we were
7 doing both MSA, Kitagawa and Draeger, but I -- As I said
8 I don't -- I don't honestly remember at this point.

9 Q. In looking at your C.V. here, in going
10 through it last night, I noted that at the top of the
11 pages, the first two pages seem to be different than
12 the ---

13 A. (Interrupting) Oh, they are.

14 Q. --- rest of the pages. How is that?

15 A. This -- This is a -- This is a copy of what
16 the corporate public affairs kept on me. And they sort
17 of kept it up-to-date. There was -- There was some
18 other information at one time on here that dealt with
19 who my children were and blah, blah, blah. And when I
20 retired, I cut that piece off and threw it away because
21 it didn't seem to make -- If someone wanted a vitae,
22 they couldn't be interested in where my children worked.
23 So, I just did away with it.

24 Q. And then I notice after that it follows -
25 there is two pages that precede the numbered Page 2.

1 So, that suggests to me that at one time you redid Page
2 1, and Page 1 became the new Page 2?

3 A. Yeah, I remember this. I remember this.
4 My secretary had a new word processor. And it was being
5 very unkind to her. It would not -- It would not take
6 the paginations. And, so, she -- We finally -- I told
7 her, I said, "Forget it. Just run it the way it is."
8 So, we have what appears to be a big blank when there
9 was no - when there was no blank. The computer wouldn't
10 paginate. And I think as it turned out, they had to
11 come and replace the computer. It was a new one that we
12 had just gotten in. And she was really frustrated over
13 that one.

14 Q. You also have listed in your bibliography -
15 I think it's under publications; but I didn't make a
16 note, so I may not be able to find it - but that you
17 worked on the American Industrial Hygiene Association
18 hygienic guides?

19 A. Yes. I don't know where that is, but yes.

20 Q. I see it now. It's on Page 2 under
21 "Special Activities."

22 A. Right.

23 Q. And that is listed for 1962 through '68.

24 A. Right.

25 Q. Did you work on the whole series at that

1 time, or did you have certain guides that were assigned
2 to you; would you recall?

3 A. I had one -- I remember the one that I
4 wrote was arsine. I'm sure that I rewrote - that I
5 updated two or three others. But the arsine one, I
6 wrote from scratch. And that's the reason that one is
7 indelibly etched in my mind. All the rest of them were
8 updates; taking what was there and simply adding -
9 looking at the literature quickly and determining
10 whether or not anything new had been reported and as I
11 recall putting it in a new format. We had changed the
12 format of the hygienic guides series. I don't remember
13 when.

14 Q. There was a hygienic guide for asbestos in
15 this time period and even earlier, was there not?

16 A. I don't honestly know. I would be
17 surprised if there wasn't, but I -- I can't conjure it
18 up in my memory.

19 Q. Would it be fair to say that you had a
20 complete set of the hygienic guides as published by the
21 American Industrial Hygiene Association whenever they
22 were published?

23 A. I had them -- Certainly I had them at one
24 time, yes.

25 Q. There was a hygienic guide for benzene,

1 also, was there not - or it may have been called benzol
2 in those days?

3 A. No, I think it was called benzene. I think
4 the hygienic guide was benzene as I remember.

5 Q. Did you do any work on the benzene hygienic
6 guide that you remember?

7 A. I don't -- I don't know who was assigned
8 benzene to update it. I -- If it -- In the time frame
9 that is covered here, whatever it is ---

10 Q. (Interrupting) '62 to '68.

11 A. '62 to '68. If it were updated in that
12 time period, I probably saw it. I probably scanned it.
13 Scanned it meaning reading 1,000 words a minute. You
14 know, is it in the right format. Do you see any
15 typographical errors kind of thing. And that would have
16 been the sum and substance of my contribution to it if
17 it were updated. I don't know that it was.

18 Q. Also under "Special Activities" there, Item
19 A, it says you were on the UCC Benzene Committee. I
20 take it that's Union Carbide Company?

21 A. Right.

22 Q. "To develop Union Carbide's position on the
23 proposed benzene standard by OSHA." And you list the
24 date there of November of '74, through September of '75.
25 Tell me what that involved, sir, please.

1 A. I was still in Oak Ridge at the time. I
2 guess this must have been the time of the emergency
3 temporary standard on benzene.

4 Q. It seems early to me, but ...

5 A. Maybe it was. I -- I don't know. There
6 was something about it that brought it to the forefront.

7 Q. Maybe the NIOSH criteria document.

8 A. This document, yes, of course. It was the
9 criteria document. And they assembled a task force in
10 New York. And I don't remember how many times we met.
11 Several times as I recall.

12 The task of that committee was to determine
13 what the exposure levels were within our particular
14 facilities. I was chosen from Oak Ridge to be the
15 representative. There were two or three other people
16 that could have done it just as well. But we were using
17 modest quantities of benzene in the laboratory as I
18 recall. And what they wanted to - they -- They wanted
19 to be able to add the laboratory uses of benzene and
20 what kind of exposures we had.

21 And, so, this group of people went -- They
22 got their charge. They went back to their specific
23 locations. And I don't remember who all was involved
24 now. And what they did was they mounted a massive -- I
25 guess that's not an understatement. It was a very large

1 air sampling program to determine what the benzene
2 exposures were.

3 There was -- I think -- I don't remember
4 what the concentration -- It was coming from 35 to 10 or
5 10 to 1 or something. I don't remember the details.
6 But I do remember that when all of this group reported
7 back, there was only one operation that had any level
8 of - any significant quote "level" of benzene in the
9 atmosphere.

10 And I think that was a barge-loading
11 operation, probably Taft. You are straining my memory
12 at this point. You are straining it badly as a matter
13 of fact. But that's what I remember. And I think it --
14 At that point everybody just sort of relaxed. This
15 committee had been established by the senior management
16 to determine what the exposure levels were as I
17 remember.

18 It would have been -- I don't remember
19 which Vice-president it would have been, probably Jim
20 Freeman or somebody like that. '74. I know that it
21 was - that I got a call from somebody in New York that I
22 had been selected.

23 Q. You volunteered.

24 A. I volunteered. That was the word I was
25 looking for. I had been volunteered to work with them.

1 Q. Who else ---

2 A. (Interrupting) I can't recall ...

3 Q. Who else was volunteered with you that you
4 remember?

5 A. Cressend Schonberg whom you mentioned - we
6 talked about yesterday. I think Cressend was involved
7 in that -- I believe he was. I believe he was. I think
8 Don Deese was at Texas City. Bob Peele would have been
9 at Institute. Somebody from New York. Newt Ketcham
10 would probably have been involved. Ordinarily I could
11 conjure up that conference room and see the faces around
12 it, but I can't do that right now. Those are the only
13 names that I remember.

14 There was some -- There had to be somebody
15 from the corporation. There was a room full of people.
16 I have only mentioned a handful. There was a room full
17 of people. I just -- I just don't remember the others
18 frankly.

19 Q. I take it from your previous comments that
20 at Oak Ridge National Laboratory where you were spending
21 most of your Union Carbide career the earlier times you
22 really didn't use very much benzene at all?

23 A. Laboratory quantities. Our Benzene came in
24 in five-pound bottles. You remember the old, brown
25 Baker's analyzed. It was about so big around and so

1 high. I think it was Baker's analyzed. It was U.S.P.
2 reagent grade or whatever. Very - ultra pure; ultra
3 pure benzene. And it was being used -- It was being
4 used in the laboratory as a solvent. I would have to
5 think a long time to figure out what it was dissolving,
6 but benzene is a pretty good solvent; it will dissolve
7 most things.

8 Q. You mentioned earlier that like when you
9 had used asbestos as a filtering agent that it was used
10 under a hood. Was it the usual practice at the
11 laboratories to do most chemical operations in a hood?

12 A. The 4500 complex at Oak Ridge National
13 Laboratory had over 750 individual hoods, individual
14 fans, all ultra-filtered. Remember, radiation. Think
15 about radioactivity again. Every hood started out with
16 an ultra-filter on it, and we finally got it down to
17 where, you know, if you weren't using radioactivity - it
18 wasn't a regulated zone; you took the filters out
19 because they were very expensive even in those days for
20 the government to pay for them. So, everything was done
21 in a hooded operation.

22 Q. Did you have a chance as part of your
23 activities at Union Carbide in Oak Ridge National
24 Laboratory to learn about the historical literature
25 about any connection between benzene and leukemia?

1 A. Yeah, I guess when I -- I don't know quite
2 how to answer that question. Let me take a shot at it
3 and see if I answer your question. When I started
4 working in industrial hygiene - and this would have been
5 the early days - there were three solvents, three
6 chemicals that were the infamous trio. One was benzene;
7 the other was carbon disulfide, and the third one was
8 carbon tetrachloride. Carbon tetrachloride was billed
9 always as a safe solvent, meaning it would burn but it
10 would sure destroy the kidney and liver.

11 Carbon disulfide was a central nervous
12 system poison and was ultra-flammable as I remember.
13 Benzene was the third one, and it - it was reported to
14 affect the blood forming organs. And that's -- I think
15 that's all that was said.

16 I would have to go back -- If we had a
17 Patty from that time period, from the '50's. Whatever
18 was in Patty was the sum of the knowledge from my
19 perception, for me personally because that's -- That was
20 the book that I used almost to the exclusion of
21 everything else.

22 Q. And I take it because you had very little
23 benzene usage at Oak Ridge National Laboratory and did
24 not work very much with benzene in your professional
25 career, you didn't research beyond Patty's?

1 A. No. If it wasn't being used, it wasn't a
2 chemical of interest to us. So, there was no -- There
3 was no real reason to. But even in that time period
4 that I'm talking about, the infamous trio, I don't think
5 it was referred to as a leukemogen or anything like
6 that. I think that jumped later when the criteria
7 document was written. I guess the criteria document was
8 what - what brought it -- NIOSH, that would have been in
9 the early '70's. Sure, it affected the blood forming
10 organs; but I don't think anybody was calling it a
11 leukemogen at that point. It wasn't until much later
12 that it was characterized that way.

13 Q. Of course, the information I asked you
14 about in the deposition yesterday referring to the
15 American Petroleum Institute's 1948 Toxicological Review
16 and the editorial in the Journal of the American Medical
17 Association, I think you said you had not seen either
18 one of those before.

19 A. I had not seen either one of them; right.

20 Q. And both of those mentioned benzene in
21 connection with leukemia.

22 MR. ELLISTON: Objection to
23 form. Calls for this witness to
24 speculate about a hearsay document and
25 it's leading.

1 (By Mr. Hobson)

2 Q. My question was going to be: I take it
3 that you never saw the need to seek out any information
4 about benzene because it didn't require it in your work;
5 and, therefore, you would not have gone to search out
6 sources such as the API or others that dealt with
7 organic chemicals such as benzene. Would that be fair?

8 A. That -- Yes, sort of. The only time I
9 would have had a reason to do that would have been when
10 I was a member of the hygienic guides committee. If I
11 had looked at something and it didn't quite look right,
12 I might have gone back to the literature and said, you
13 know, "Is that really the reference that it's supposed
14 to be?" or I might have remembered that it was a
15 different reference. But I would not have remembered
16 something about benzene. That was not one that I -- It
17 didn't require me to know very much about it. We didn't
18 use it basically.

19 Q. So, if I understand what you are saying is
20 that really when the Federal Government published the
21 criteria document - NIOSH published the criteria, that's
22 what brought any connection between leukemia and
23 benzene - to use your words about Dr. Selikoff and
24 asbestos - brought it to a head in your mind as
25 something to be of concern?

1 A. Yeah. The concern probably preceded the
2 actual printing of the document because a lot of us
3 were - a lot of us - not me personally, but a lot of
4 people were involved in reviewing the criteria documents
5 for NIOSH. And because of that, the information that
6 was going to be there had sort of, you know, filtered
7 through the - through the profession.

8 So, I guess maybe it was -- It might have
9 been a little bit earlier than the date that was on the
10 benzene document - criteria document.

11 Q. But it was the effort of the Federal
12 Government employees preparing the criteria document
13 that brought it to a head in your mind?

14 A. From my perception I think that's a correct
15 statement, yes.

16 Q. I'm going to change directions with you a
17 little bit here I will tell you as a tip off so I will
18 get you thinking in a different direction again here.

19 One of the things I believe you told me
20 that occurred in your - toward the earlier years at
21 Union Carbide when you were at the Institute plant is
22 that there was an operation that involved oils and - or
23 something about polynuclear aromatic hydrocarbons that
24 you were telling us about yesterday. And was it coal
25 gasification or something?

1 A. There was a coal gasification project at --
2 It was called coal hydrogenation I believe.

3 Q. Tell me about the coal hydrogenation
4 project, please.

5 A. That process was shut down when I got to
6 Charleston in September of '56. That was the one I
7 referred to yesterday. It was one of two to my
8 knowledge that the corporation shut down and backed away
9 from because they felt that they could not control the
10 potential for exposure to a polycyclic aromatic
11 hydrocarbon. And basically that was - that was why it
12 was shut down.

13 It was -- The super-structure was still
14 there. And they were dismantling the plant. The coal
15 was being hauled off that had been left behind. What
16 they were doing was what one might expect. They were
17 trying to develop an alternative to petroleum. And
18 senior management decided that it just couldn't be done.
19 And they were a little bit ahead of their time I guess
20 really.

21 Q. What was the perceived health risks from
22 these polynuclear aromatic hydrocarbons?

23 A. Well, they are notorious I guess for
24 causing skin cancer, contact. We knew that for sure.
25 And I guess by extension, the people in toxicology were

1 concerned that if it caused cancer on the skin, you
2 know, it's not something that you want to take
3 internally either. That was -- I guess that was sort of
4 the logic behind it.

5 Dr. Sexton who was the medical director
6 established a very careful skin examination program. He
7 had two or three of the local skin specialists in. And
8 they mapped on the people that were working in the
9 unit -- As I remember they mapped literally anything
10 that they found on the bodies of any of the people
11 assigned to work. They went over the skin inch by inch
12 practically. If there was a mole, it was characterized
13 as being exactly where it was on the body and so forth.

14 And this was so that they could watch those
15 things and make sure. It was a very, very, carefully
16 done medical program from my perception. I think they
17 made the wrong decision for the right reason. But
18 that's my - my opinion. They didn't ask me. I was not
19 there at the time.

20 Q. The medical and scientific literature that
21 dealt with hazards associated with polynuclear aromatic
22 hydrocarbons, was that something that you became
23 familiar with because of this coal gasification
24 operation - I'm sorry - coal hydrogenation operation at
25 Union Carbide?

1 A. I guess what little bit of knowledge I had
2 about it was given to me by Newt Ketcham and Dick Sexton
3 when I went to Charleston in 1956. "Let me show you
4 what we've been doing." And there -- My sum and
5 substance of the total knowledge that I had about
6 P.N.A.'s, and I had never heard of polycyclic aromatic
7 hydrocarbons at that point, was given to me by those two
8 people when I went to Charleston in 1956 or shortly
9 after. It was probably '57 or something like that.

10 Q. Since that time, have you learned about the
11 early publications of health hazards from polynuclear
12 aromatic hydrocarbons and the research done by Exxon
13 published in the literature - what is now Exxon?

14 A. I vaguely remember some of the references
15 that Exxon published, some of the papers that were
16 published. We started through an N.S.F. grant; we began
17 to look at the possibility when the embargo came up in
18 the '70's or whenever it was. At the Oak Ridge National
19 Laboratory we set up a small pilot plant, a coal
20 conversion plant. And it was in support of the
21 Department of Energy as I remember.

22 So, we -- What we did is we went back and
23 resurrected the program that had been developed at
24 Institute. And that's what we did at X-10. I don't
25 think we -- I'm sorry. Oak Ridge National Laboratory.

1 I don't think we -- I don't know. The engineer was
2 pretty - pretty - pretty cotton-picking thorough. I can
3 remember his first name, not his second name. His first
4 name was Gene. He was a very good engineer.

5 And he may very well have looked at every
6 piece of literature on the subject because he was the
7 one that was in charge of designing it - designing the
8 system to be sure that people would not be exposed and
9 so forth.

10 Q. Was it your perception that based on this
11 work that was done at Oak Ridge National Laboratory by
12 Gene and others that the hazards of - the carcinogenic
13 properties of P.N.A.'s is something that has been
14 reported in the scientific literature for many, many
15 years?

16 ELLISTON: Objection to the form.

17 Calls for speculation by the witness.

18 Further it's leading.

19 A. I don't know the answer to your question
20 frankly. I can't answer it accurately. I just don't
21 know.

22 (By Mr. Hobson)

23 Q. You are familiar with the early, early
24 literature of scrotal cancer in chimney sweeps in
25 England, are you?

1 A. Of course. Yes. The reason I know that is
2 that the thing that brought the coal hydrogenation
3 system to a head in Charleston was the fact that they
4 diagnosed scrotal cancer in one of the workers. And it
5 shook everybody to the very foundation. It turned out
6 later to not be scrotal cancer. But by that time the
7 decision had already been made to shut the system down.
8 And it was, in fact, shut down.

9 When they went back and reviewed the --
10 Apparently somebody went back and reviewed the slides
11 and said this is -- This is not even a precancerous
12 lesion. And, so, I remember that story.

13 Q. And it is the polynuclear aromatic
14 hydrocarbons that chimney sweeps got exposed to that
15 caused the scrotal cancer, is it not?

16 A. Correct. Correct. And that -- That was
17 when I -- I guess the first time I had learned about
18 that was when we were talking about it. They made the
19 connection between the chimney sweeps in Great Britain.
20 And I think we talked some time about it. I just -- The
21 conversations I don't remember at this point. But
22 that's where all the information came from.

23 Q. Do you recall that the study of chimney
24 sweeps and the finding of scrotal cancer is something
25 that was done in England in the late 1700's?

1 A. I didn't remember when it was done. But it
2 was done -- I do remember it was done on the chimney
3 sweeps, yeah.

4 Q. Has any of your work dealt with the rubber
5 industry at all?

6 A. No.

7 Q. Would you know anything about process oils
8 that are used in the manufacture of rubber products such
9 as tires?

10 A. No.

11 Q. Or know anything of materials called
12 extender oils? I think the term extender oils and
13 process oils are used somewhat interchangeably.

14 A. I vaguely recollect the term that you are
15 using, but I don't honestly know anything about them.

16 Q. Has any of your work as an industrial
17 hygienist dealt with a category of compounds called
18 nitrosamines?

19 A. Yes. When -- In the last job that I had
20 for Carbide. We did -- We had a special study of the -
21 because we had a lot of amines that we were handling at
22 one of our facilities. We had a study performed by
23 NIOSH to determine whether or not -- There was a concern
24 that the amines were being - that's ultraviolet and a
25 series of other things translated into nitrosamines; and

1 that people were being exposed because of it.

2 And the study -- I don't remember the -
3 precisely what the study said. But the study basically
4 showed that there was no generation. If there was a
5 generation, they couldn't detect it, of nitrosamines.
6 And that's - that's my sum and substance of knowledge on
7 that issue.

8 Q. And about what time period was that,
9 please?

10 A. It would have been -- It would have been in
11 the '80's. My guess would be '83, '84, something like
12 that. I don't think it was when I first went to Linde.
13 It was after I had been there for some time. It might
14 have even been as late as '86.

15 Q. Had any of your work at Union Carbide prior
16 to this work at Linde ever taken you to the literature
17 that dealt with nitrosamines?

18 A. No.

19 Q. Are you now conversant in nitrosamines and
20 the toxicology that goes with nitrosamines?

21 A. No. No. I just told you the sum and
22 substance of my knowledge of nitrosamines. I am not
23 familiar with the literature. The study was done by
24 competent people. And it was not necessary for me to
25 get involved in that detail; so, I didn't.

1 Q. I would like to go back a minute if I could
2 to the Union Carbide benzene committee that we talked
3 about earlier that you have on your C.V. from '74 to
4 '75. What was the result of that committee's activities
5 as you recall?

6 A. Well, I think your -- My guess is that -- I
7 can't remember what -- I know there was a report
8 generated, a position generated. I don't know that it
9 was ever made public in terms of -- You know, did we
10 give it to OSHA or something like that? I don't know.
11 I don't think that Carbide ever established an official
12 position on benzene. I think everything -- It would
13 have been through the Chemical Manufacturers
14 Association, not through Carbide directly.

15 Q. Was it your recollection that - or is it
16 your recollection that Carbide would make its comments
17 to the CMA, and then the CMA would incorporate Carbide's
18 comments with other companies and then go to OSHA or
19 NIOSH or whatever agency is involved for input through
20 public hearings?

21 A. I suspect that that's true. I don't know
22 it for a fact, but I think that's probably true. You
23 are now talking about a time period when I was not in
24 the corporation. I was in the nuclear division. And,
25 so, I'm - I'm almost arms length from them because I

1 have to have a security clearance in order to be where I
2 am and blah, blah, blah. So, you know, I don't know.

3 Q. Do you recall if the UCC benzene committee
4 took a position one way or the other on whether the
5 permissible exposure level for OSHA should be changed?

6 A. I don't know that there was an official
7 position, no.

8 Q. I'm talking about the committee.

9 A. Oh, the committee. I don't -- The
10 committee -- We did not make a - make the decision.
11 What we did was to go back and determine what the
12 exposure levels were to see where we were. When the
13 results came back and the exposure levels were very low,
14 I don't know that anything went beyond that frankly.

15 As I said, I was in Oak Ridge at the time;
16 and I would not have been privy to what happened next.
17 I told them what they asked me to do. I fulfilled my
18 obligation, my assignment; and that was the end of it.

19 Q. And these benzene barge operations that you
20 told us about that you thought could have been at Taft,
21 that's somebody else's responsibility?

22 A. Yes. Yes.

23 Q. Did Union Carbide to your knowledge have a
24 central procedure of gathering industrial hygiene
25 monitoring data collected by the different industrial

1 hygiene groups within the corporation at any time?

2 A. Not until -- Not central. I don't know
3 that there was ever a central. I'm not even sure there
4 is a central one now. There might be. I have been out
5 of that area for a long time. So, I can't tell you.

6 There were some records, some computerized
7 record systems that were developed. And these were
8 developed in the '75, '76 time frame. I worked with
9 chemicals and plastics people because we had already
10 begun -- In Oak Ridge everything was computerized. And,
11 so, we had already begun to develop work history records
12 that we could tie exposures back to.

13 So, yeah, there was -- There was that. I'm
14 not sure that there was a central system.

15 Q. When you were at corporate for that time
16 period before you split off with the gaseous group and
17 you wanted to know what had gone on historically in the
18 way of air sampling in any particular facility, no
19 matter which division it was, how did you go about
20 answering that question?

21 A. I could have gotten the information. I did
22 not ask for the information. But the information would
23 have -- It would have been a simple telephone request I
24 think to get it. I don't know that I ever got it.

25 Q. You would have had to call out to that

1 division or their industrial hygienist or to a location?
2 How would you have gone about doing that if you wanted
3 to?

4 A. I probably would have just picked the
5 telephone up and called whoever it was at the plant that
6 I knew and said, "Hey, what have you got on this? Look
7 it up. Give me a call and tell me." And that's
8 probably the way it would have been handled. I don't
9 know that it would have been much - any more formal than
10 that.

11 Q. At the corporate offices in New York when
12 you were in the corporate job, did you maintain files by
13 location and by division so that you could go to your
14 files there in New York and learn about historically
15 what had happened in either a division or at a location
16 from an industrial hygiene standpoint?

17 A. I didn't. The hygienist that worked for me
18 did. They maintained theirs. But I didn't have -- I
19 had enough paper to deal with without trying to deal
20 with what they were doing, too.

21 Q. Was it your experience that someone
22 working -- We have used Mr. Peele's name here. If
23 Mr. Peele is working at the Institute facility and goes
24 out and does an industrial hygiene job and generates a
25 report, did you find it to be the practice that a copy

1 of that report made its way to New York and placed in
2 your files in the New York offices?

3 A. My impression would be never.

4 Q. Never?

5 A. Never. There would -- I don't -- I don't
6 know that there would be a reason to put a distribution
7 that broad. It would probably not have been outside the
8 chemicals and plastics division would be my guess.

9 Q. Would you get summaries of what Mr. Peele
10 was doing at Institute that would make their way into
11 the files in New York so that you would have a concept
12 of what his program at Institute was at the corporate
13 level?

14 A. No, not at all.

15 Q. So, if I'm understanding what you are
16 telling me - and tell me if I'm wrong - whoever is
17 sitting in New York, if they want to know what
18 Mr. Bob Peele is doing in Institute, West Virginia, they
19 pretty much have to go ask somebody? There is no
20 routine way for them to learn what is going on at
21 Institute as to what Mr. Peele is doing?

22 A. I -- There probably were summary reports
23 that were available. I don't recall ever seeing one
24 frankly.

25 Q. Would you know where we can find Ms. Arlene

1 DeFrances these days?

2 A. No, not really. I suspect that she's -- I
3 think she still works at Bushy Run Research Center at
4 Export, Pennsylvania. I don't know that for a fact.

5 Q. When you had your conversations with
6 Ms. DeFrances that lead up to your paper on Dr. Smyth,
7 was she still at Bushy Run?

8 A. She was still working at that time. I
9 don't know if she is still or not. After all, I have
10 been retired since August of '91. I think that's right.

11 Q. Do you know where Tom Nale is now,
12 Dr. Nale?

13 A. I would be surprised if Tom is still alive.
14 He would have -- He would have retired in '78. 65.

15 MR. BLANKS: He would only be 81.

16 A. I don't -- I think he did. I don't know.
17 I don't know. I have no idea where Tom Nale would be.
18 (By Mr. Hobson)

19 Q. Would you know where he retired to shortly
20 after that?

21 A. No.

22 Q. Do you recall what part of the country he
23 was from before he had gotten into the Carbide
24 organization?

25 A. No, not all.

1 Q. The article that you wrote about Dr. Smyth,
2 I take it that you did a considerable amount of research
3 before you published that?

4 A. On Henry, yes. A lot of it is -- A lot of
5 it was my own recollections of Henry and so forth.
6 There were a few articles that I got from Arlene and
7 some help that I got from C. P. Carpenter. And that
8 formed the basis for that article.

9 Q. And I take it that you tried to give an
10 accurate rendition of your memory and the articles that
11 you based your report on?

12 A. I would certainly hope so.

13 Q. And that's the one that got published - or
14 was intended to be published in the American Industrial
15 Hygiene Association journal in December of last year,
16 1992?

17 A. Right.

18 Q. Did you footnote the documents that you
19 used in your article on Dr. Smyth, or would we have to
20 go someplace else to find out what those were?

21 A. There are -- No, there are footnotes there.
22 There is a couple of personal communications as I
23 remember. There is letters, personal correspondence to
24 me which I solicited from people like Lewis Cralley.
25 The article -- The tribute that Carp wrote to Henry that

1 appeared I think in the toxicology journal sometime
2 shortly after Henry died. He died in November of '89, I
3 believe.

4 There was a tribute written by Arlene.
5 There was one written by Carpenter, C. P. Carpenter.
6 And then there were -- Arlene sent me a series of things
7 which Henry had done. She had a copy of his Cumming's
8 lecture in 1950 - whenever it was, 7. When he received
9 the metal - the Mellon metal. The remarks that he made
10 at that time. There were a couple of other very pointed
11 articles which he was able to provide me that Henry had
12 written. And I don't recall what they were now beyond
13 that. I wrote that while I was still working by the
14 way.

15 Q. You brought a couple of video tapes with
16 you yesterday to the deposition and have given those to
17 counsel. And counsel is going to get us a copy of
18 those.

19 MR. HOBSON: I would ask that
20 those be marked as exhibits to the
21 deposition also through the Court
22 Reporter. If Mr. Ellison would be
23 so kind as to send them on.

24 A. Put the number on them if you want to now.

25 MR. HOBSON: Do we have them?

1 I don't know that we have them here
2 today unless Mr. Elliston brought
3 them.

4 A. Oh, do we have the tapes? I don't know the
5 answer to that. That was pretty presumptuous of me,
6 wasn't it?

7 (By Mr. Hobson)

8 Q. Well, he's your lawyer.

9 MR. ELLISTON: Herschel, would
10 you like for me to supply a copy to
11 you and a copy to the Court Reporter
12 or just one copy to the Court
13 Reporter? How would you like for me
14 to handle that?

15 MR. HOBSON: Well, I don't think
16 the Court Reporter is in the practice
17 of keeping copies of these things. As
18 long as I get my copy, that's of
19 course my big concern. If anybody
20 else wants one, I guess they can make
21 arrangements with you or my office
22 later on if they want to. I don't
23 mind making copies.

24 MR. ELLISTON: I don't mind
25 making as many copies as need to be

1 made. I just want to make sure that I
2 comply with what I'm supposed to do
3 here.

4 So, as far as you and the Court
5 Reporter are concerned, if I make one
6 copy and supply it to you, I will
7 satisfy my obligations to the two of
8 you?

9 MR. HOBSON: Certainly will to
10 me.

11 (By Mr. Hobson)

12 Q. We have marked the two exhibits to your
13 deposition, the two videotapes that you brought,
14 Mr. Bolton. One of them is Plaintiff's Exhibit 930111
15 capital BOL, capital, NEW; capital E; following that is
16 V as in Victor 1.

17 The other one has the identical Plaintiff's
18 exhibit sticker on it, except after your initials, it is
19 V2. And we will look forward to getting a copy of those
20 and taking a look at them at some later time.

21 These are the videotapes that you bought
22 yesterday to the deposition that you told us about
23 correct?

24 A. Yes.

25 MR. HOBSON: I will pass the

1 witness. Thank you very much for your
2 patience, Mr. Bolton. I apologize if
3 I in any way might have been rude to
4 you. I hope I have not been. And I
5 thank you for your patience.
6

7 (THE VIDEO DEPOSITION WAS CONCLUDED.)
8

9 REPORTER'S NOTE: (PLAINTIFF'S EXHIBIT
10 "280227 BOL NEW E" WAS MARKED FOR
11 IDENTIFICATION. SAME WILL BE FOUND AT THE
12 CONCLUSION OF THIS DEPOSITION.)
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1 THE STATE OF _____:

2 COUNTY OF _____:

3
4 I, NEWELL E. BOLTON, hereby certify that I
5 have read the foregoing transcript of my testimony given
6 in the foregoing numbered and styled case, and that same
7 is true and correct to the best of my knowledge and
8 belief.

9 I further certify that any and all
10 corrections have been made on a separate page and
11 initialed by me.

12
13 This _____ day of _____, 1993

14
15
16 _____
17 NEWELL E. BOLTON

18 SWORN TO AND SUBSCRIBED BEFORE ME this

19 _____ day of _____, 1993.

20
21 _____
22 NOTARY PUBLIC
23
24
25

1 STATE OF _____:

2 COUNTY OF _____:

3
4 I, RICK SMITH, a Certified Shorthand
5 Reporter for the State of Texas, hereby certify pursuant
6 to the Texas Rules of Civil Procedure and/or agreement
7 of the parties present to the following:

8 That this deposition transcript is a true
9 record of the testimony given by NEWELL E. BOLTON, the
10 Witness named herein, on January 11th and 12th, 1993,
11 after said witness was duly sworn by me.

12 SWORN TO AND SUBSCRIBED by me in Beaumont,
13 Texas, on this the 2nd day of
14 February, 1993.

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17 Rick Smith

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CONCORDANCE

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5,788 UNIQUE WORDS
386 NOISE WORDS
71,496 TOTAL WORDS

MULTI-FILE CONCORDANCE**CASE SENSITIVE**

WORD RANGES @ BOTTOM
OF PAGE

MULTI-FILE CONCORDANCE

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F2: nb011293.rtr

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\$20 [3 (F1-3)] (F1) 158:4, 7, 10

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- 1 -

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NEWELL E. BOLTON
DIRECTOR
SAFETY, HEALTH & ENVIRONMENTAL AFFAIRS
INDUSTRIAL GASES GROUP
UNION CARBIDE CORPORATION

Mr. Bolton was born in Hazard, Kentucky on February 27, 1928, and was graduated from the University of Georgia with a B.S. degree in 1951. He also attended the Graduate School of Chemistry in 1952.

Mr. Bolton began his career with Union Carbide in 1952, as a junior chemist at Oak Ridge Gaseous Diffusion Plant in Oak Ridge, Tennessee, then operated by Union Carbide Corporation for the Department of Energy. He was appointed assistant industrial hygienist at Oak Ridge's Y-12 plant in 1955, and in 1956 he became industrial hygiene chemist at the corporation's technical center in South Charleston, West Virginia. In 1961, Mr. Bolton moved back to Oak Ridge National Laboratory as director, industrial hygiene. In 1978, he became associate corporate director, industrial hygiene, and moved to the corporation's headquarters then located in New York, and later that year was appointed corporate director of industrial hygiene. In 1982, Mr. Bolton was appointed to the position as director, Linde Safety, Health & Environmental Affairs and, in 1986, he was appointed director, Safety, Health and Environmental Affairs for the Industrial Gases Group worldwide.

In 1981 Mr. Bolton was the recipient of the first Henry F. Smyth Jr. Award from the American Academy of Industrial Hygiene for outstanding contributions to the field of occupational health and, in 1987, he was awarded the Edward J. Baier Technical Achievement Award from the American Industrial Hygiene Association for outstanding leadership, efforts and accomplishments in the practice of industrial hygiene.

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Mr. Bolton presently serves as a director on the Board of Directors for the Compressed Gas Association. He is a member and past president of both the American Academy of Industrial Hygiene and the American Industrial Hygiene Association. He also served as chairman of the American Board of Industrial Hygiene - the organization which certifies competence in the various aspects of industrial hygiene.

BOLTON

CURRICULUM VITAE FOR N. E. BOLTON

Date and Place of Birth: February 27, 1928 - Hazard, Kentucky

I. Education:

A. 1951 - B.S. Degree in Chemistry, University of Georgia.

B. Special Training:

1. UCC Management Course
2. University of Georgia Graduate School, Chemistry Department, No Degree.
3. Certification in Comprehensive Practice of Industrial Hygiene by American Board of Industrial Hygiene
4. Certification as Occupational Hearing Conservationist by the Council for Accreditation in Occupational Hearing Conservation.

II. Professional Experience:

A. 1982 - 1991 - Director of Safety, Health and Environmental Affairs, World Wide Operations, Union Carbide Industrial Gases Inc.

B. 1/78 - 1982 - Corporate Director of Industrial Hygiene, Union Carbide Corporation.

C. 9/61 - 1/78 - Industrial Hygiene Department Head - Health Division, Oak Ridge National Laboratory - Union Carbide Corporation.
Job Description - To develop and implement a comprehensive industrial hygiene program for ORNL and to control exposures to chemical and/or physical stress to a level sufficiently low that there will be no significant impact on the health of the employees.

D. 9/56 - 9/61 - Industrial Hygiene Chemist - Developmental Department, Tech. Center, UCC, South Charleston, West Virginia.
Job Description - Develop industrial hygiene air sampling and bioassay techniques for specific chemicals used within the Chemicals Division, UCC.

E. 9/55 - 9/56 - Assistant Industrial Hygienist, Medical Department, Y-12 Plant, Union Carbide Corporation.
Job Description - Assist in the development and implementation of a comprehensive Industrial Hygiene Program for Y-12 Operations.

F. 9/52 - 9/55 - Jr. Chemist. Works Laboratory, ORGDP. Union Carbide Corporation.
Job Description - Perform all field surveillance for

chemical and/or physical stress as required by
Industrial Hygiene.

III. Professional and Academic Honors:

- A. Industrial Hygiene Roundtable, membership limited to 35 nationally known in field of Industrial Hygiene.
- B. 1972-74 - Adjunct Professor, College of Engineering, Department of Civil Engineering, TTU, Cookeville, Tennessee.
- C. 1973 - Sigma Xi Lecturer, TTU Chapter, Cookeville, Tennessee.

- D. 1949 - Eta Sigma Xi - Honorary Leadership Fraternity, Emory-at-Oxford, Oxford, Georgia. Membership was limited to 12 from entire student body. Academic average of B required for election.
- E. 1950 - Gamma Sigma Epsilon - Honorary Chemical Fraternity - University of Georgia.
- F. 1976 - Lecturer, University of Tennessee, Department of Occupational Health and Safety.

IV. Special Activities:

- A. UCC Benzene Committee - To develop UCC's position on the proposed benzene standard by OSHA (11/74 - 9/75).
- B. ERDA Accident Investigation - cause of fatality at HFIR in spring of 1963, to determine and recommend appropriate corrective measure (3/63 - 5/63).
- C. Hygiene Guides Committee - American Industrial Hygiene Association - to develop guides for prevention of exposure to specific chemicals (1/62 - 1/68).
- D. NIOSH Criteria Document Review - American Academy of Industrial Hygiene to insure all such documents received an adequate technical review (5/73 - Present).
- E. NIOSH-OSHA Occupational Standard - American Academy of Industrial Hygiene - to insure an adequate technical review of all standards prior to promulgation (5/73 - Present).

V. Civic or Community Activities:

- A. President, Pine Valley School PTA (6/66 - 6/67).
- B. Director and President of Awareness House. A non-profit corporation established by the citizens of Oak Ridge aimed at prevention of teenage drug abuse (5/70 - 5/73).
- C. Lions Club of Oak Ridge.

VI. Professional Society Membership:

- A.
 - 1. Tennessee Valley Section, American Industrial Hygiene Association.
 - 2. American Industrial Hygiene Association.
 - 3. American Board of Industrial Hygiene.
 - 4. American Academy of Industrial Hygiene.
- B. Offices Held:
 - 1. President, American Academy of Industrial Hygiene (5/74 - 5/75).

2. President of Tennessee Valley Section of American Industrial Hygiene Association (10/65-10/66).
3. Director, American Industrial Hygiene Association (1976-79).
Vice President, American Industrial Hygiene Association (1979-80).
President Elect, American Industrial Hygiene Association (1980-81).
President, American Industrial Hygiene Association (1981-82).
4. Director of American Board of Industrial Hygiene, Inc. - Certifying Body - only 14 Directors (1975-79).
Chairman of American Board of Industrial Hygiene, Inc. (1979-81).

VII. Publications:

- A. Electrical Energy and Its Environmental Impact - A research proposal submitted to NSF under the RANN Program (1972) (With J.L.Liverman, et al).
- B. Trace Element Analysis at the Allen Steam Plant, Chapter V, pg. 97 In Electrical Energy and Its Environmental Impact, ORNL-NSF-EP-40 March 1973 (With R. I. Van Hook, et al).
- C. Trace Element Measurements at the Coal-Fired Allen Steam Plant - Particle Characterization, published in proceedings of Conference on Coal and the Environment sponsored by National Coal Association and Bituminous Coal Research, Inc. Oct. 22-24, 1974 (with L.D. Hulett, et al).
- D. Pathways of Thirty-Seven Trace Elements Through Coal-Fired Power Plant, Environmental Science and Tech, Vol. 9, page 973, October 75 (With Klein, et al).
- E. Determination of Lead in Whole Blood by Graphite Furnace Atomic Absorption Spectrophotometry, AIHA Journal, pg. 566-570, Sept. 1974.
- F. Analytical Techniques for Determining Levels and Fates of Trace Elements in a Fossil-Fueled Steam Plant, Published in Proceeding of IAEA, FAD of the U.N. and WHO Symposium on Nuclear Techniques in Comparative Studies of Food and Environmental Contamination, Otaniemi, Finland, August 1973.
- G. A System for Labeling and Control of Toxic Materials in a Large Research Facility (C.L. Hunt and W. E. Porter) accepted for publication in AIHA Journal.
- H. Hyperfiltration of Plant Effluents, Water and Sewage, Works, Vol. 116, pg. 102-06. (H.C. Savage, H.O. Phillips, K.A. Kraus, and J.S. Johnson, Jr.) (1969).
- I. Industrial Hygiene in a Research Oriented Facility, published in Proceedings (pg. 19-41) of the Southern Area Research Symposium, ORNL (1969).

- J. Utilization of Scientific People Power in Occupational Health Programs, published in the Proceeding of the American Conference of Governmental Industrial Hygienists, May 1975.
- K. Trace Elements in Fuel, Chapter 13, Trace Element Mass Balance Around a Coal-Fired Steam Plant (J.A.Carter, J.F. Emery, C. Feldman, W. Fulkerson, L.D. Hulett, W.S. Lyon). Advances in Chemistry Series, 141.
- L. Evaluation of Detector Tubes, AIHA Journal (1956).
- M. Determination of Manganese in Biological Specimens, AIHA Journal Volume 23, 1962.
- N. Determination of Ethylene Oxide in Air, Archives of Environmental Health Volume 8, page 711-720, May 1964.
- O. Biological Testing of Containment Systems for Control of Viral Agents Accepted for publication in AIHA Journal (with W. E. Porter).
- P. Occupational Allergy to Animal Dander and Sera, JOM, Volume 16, No. 7, Pg. 465-469 (July 1974) (with T.A. Lincoln, M.D. and A.S. Garrett, M.D.)
- Q. ORNL-NSF-EP-43, Trace Element Measurements at the Coal-Fired Allen Steam Plant - Progress Report 6-71 to 1-73.
- R. ORNL-NSF-EP-62, Trace Element Measurements at the Coal-Fired Allen Steam Plant - Progress Report 2-73 to 7-73.
- S. ORNL Respirator Program - A Programmatic Description ORNL TM-4719.

ATTACHMENT

4. How could you approach and impress the boardroom on the costs of not supporting safety programs?
5. How are boards of directors likely to be influenced by the unions in coming years?
6. Is it valid to question if the concept of putting safety expertise on the board gets into the operating management area?

QUESTIONS FOR FURTHER STUDY

1. How do you expect that boards of directors have changed their views about safety and health matters after recent developments such as the Johns-Manville liability suits and the Union Carbide affair in India?
2. Reference question #1 above, can you provide any concrete evidence for your answer?
3. Let us suppose you, as the corporate safety and health director, have an opportunity to address your board of directors on accident, injury and health costs. Outline with ten major headings, what you are going to say.
4. The board of directors has been so impressed with your presentation on the costs of mishaps, they have asked you to come back and give the same type of presentation on the costs of the corporate safety and health program. Outline with seven major headings.

Chapter 26

CHALLENGE OF THE 80'S: THE MYSTICAL SAFETY— INDUSTRIAL HYGIENE INTERFACE

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UNION CARBIDE CORPORATION
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ABSTRACT

Safety professionals, in general, tend to divorce themselves from the medical aspects of safety covered by the industrial hygienist. This separation of responsibility is reflected in some corporate structures and governmental agencies and tends to dilute the overall effort. This situation is two-sided, in that a similar problem exists with the industrial hygienists who commonly separate themselves from the safety aspects of their work.

It is unlikely that I will say anything in this presentation that you have not heard before and perhaps more eloquently by someone else. Nevertheless, I have accepted a challenge and I will attempt to discharge that responsibility. I'm supposed to be emphatic without being sympathetic, to be controversial without being argumentative and to be provocative without being objectionable.

The title I have chosen may be only vaguely descriptive of my remarks. In preparing this presentation, I reviewed the previous AIHA president-elect's papers at this meeting. Although one was technical in nature and one addressed the "Way to the Top and Dollars," there appeared to be two common threads: 1) the basic mission of both professions is the same, to protect the worker; 2) communication between professions is of paramount importance—the mystical seem-

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"Attachments"

ingly illusive interface between safety and industrial hygiene. Please recognize that this is not the only interface. Safety and Health requires a coordinated approach of many activities: medicine, nursing, engineering, chemistry, safety and industrial hygiene and perhaps most important, an informed management. Informed is a key word! I believe an informed management is a responsive one.

Within the framework of the title chosen, it seems appropriate that I address three questions: Where were we; where are we; and where are we going or rather where should we be going?

Where were we? We, in the health and safety areas, have been almost preoccupied with establishing the activities as professions. With some, that preoccupation became an obsession. Too much time and effort and energies have been spent on who is more important, who should report to whom and so forth. Dr. Ralph Smith, of the University of Michigan and Vice President of the American Industrial Hygiene Association, in his presentation at the 1980 American Industrial Hygiene Conference said it this way, and I quote "One of the most important of these areas is Safety Management, a discipline, which by law is closely related to Industrial Hygiene, yet which many Industrial Hygienists have somehow tended to neglect. It is my personal observation that our friends in the Safety profession have long been making a concerted effort to learn as much as possible about Industrial Hygiene, while we in Industrial Hygiene have done relatively little to become proficient in their areas." The eagerness to learn Industrial Hygiene principles seems to permeate all levels of safety engineers whereas only the more senior Industrial Hygiene types have recognized the need to understand safety management. He went on to say: "In many organizations the distinction between safety and health activities is a fine one and inevitably there must be close cooperation between the two groups, while in other cases advancement may mean supervision of Safety personnel or much closer working relationships." Remarkably, mixed in this controversy, neither seems to have ever lost sight of the real mission—to protect the work force.

Where are we? Responsibilities for each professional activity have been somewhat defined, although not necessarily clearly understood. The safety professional should recognize that knowledge in industrial hygiene is not a license to practice any more than the professional Industrial Hygienist who develops a basic understanding of safety should practice in the safety profession. The basic knowledge should provide the insight necessary to reach the conclusion that professional advice is needed.

Certification Boards have been established which deal with profes-

sional qualifications and add credibility to the work activities. Three things have resulted: professionalism, credibility, and responsibility of actions.

No presentation on health and safety would be complete without some words regarding OSHA. Only one comment will be made. OSHA management has been preoccupied with promulgating standards and auditing for compliance. What is missing is a performance standard whereby the effectiveness of the regulations can be measured. An audit is a duty in and of itself, i.e., compliance with regulations. The single activity essential to an effective OSHA is to monitor the impact of regulations for effectiveness and to alter those that are ineffective! A suggested performance standard for the OSHA Act is: Occupational illnesses and injuries will be dramatically reduced through effective regulations.

And let's be realistic, for all our criticisms of the OSHA Act and the establishment of the Occupational Safety & Health Administration, we gained added visibility and importance. We may disagree with the *How*, but there has never been any argument with the *What*! But make no mistake, if the Occupational Safety & Health Administration were to vanish tomorrow, occupational health and safety activities would continue. Their value to industry, the unions, the government and indeed, the public at large, has been recognized.

Within the framework of these activities, responsibilities were identified for the work force, the employer/client, the public at large and the profession itself, be it safety, industrial hygiene or whatever. The list is not intended to be all inclusive but rather to flag only the more obvious. You should add to these lists from your own perceptions. Responsibilities to the worker include: 1) developing programs to protect; 2) altering ineffective programs; 3) informing of hazards; 4) being ethical in our relationships.

Responsibilities to the employer/client include: 1) applying cost-effective programs and controls; 2) constantly reviewing and improving programs; 3) anticipating problems and developing alternatives. Responsibilities to the public include: 1) technical input to laws and regulations, 2) reporting of unbiased facts to the press, special interest groups and so forth.

And finally, responsibilities to the profession include: 1) applying recognized scientific methods; 2) interpreting findings factually and impartially; 3) maintaining an awareness of new data and findings and developments; 4) publishing solutions to new problems or refinements of old solutions.

Where are we going or more to the point where should we be going?

Chuck Atkins and I in the introductory remarks at the AIHC (American Industrial Hygiene Conference) said "Clearly a critical issue in the chemical industry in the 1980s is the search for the most effective system of managing industrial hygiene or occupational health, environmental health or whatever name you call it; for a system that is capable not only of obviating the risks of potential disasters, but also continually improving the safety of the workplace; and for a system, finally, that will enable corporate managers to translate the scientific knowledge and judgment of health professionals into effective and measurable action." This quote can and should be broadened to include all health and safety disciplines. We, the health and safety professionals, must do the strategic planning necessary to accomplish this challenge. By strategic planning, I mean to establish the environment which permits the work to be done.

I suggest to you that the attitude that I'm a professional and you ought to do it my way, is not only inadequate, it's totally unacceptable.

Health and safety activities are, I believe, without exception a staff function. Further, most professionals are hired with only the vaguest idea of actual position duties and responsibilities. They must be developed and passed upward for understanding and acceptance by the boss. This has been my experience in every assignment I've been given throughout my employment.

Clearly a major defect in the health and safety effort is the lack of an environment which permits the work to be done. If the staff position is for service no real problem exists. You simply respond when asked and the customer or client can accept or reject your advice. If your position is line you simply staff to provide the necessary services. On the other hand, if your position has coordinating duties it becomes essential that you establish an environment which permits the work to be done. Staff roles with coordinating duties automatically produce conflict. Why? Because your activities produce a constraint on the group being coordinated. For example, manufacturing is accountable for producing a product and making a profit. And you, as the coordinating staff, put a constraint on them to produce without affecting the health and safety of the employees.

Establishing an environment which permits the work to be done is neither easy nor simple. It is an iterative process and it's hard work. The entire process cannot be adequately addressed in the short time available but some of the steps can be described to give you some perception of what's involved. First, a laundry list of the position activities must be developed; second, the role of each of these activities

must be defined, i.e., line, coordinating, service or personal staff. Third, group all activities related to common objective or mission. Fourth, prepare a list of direction setting assumptions. For example: the organization wants to be competitive, not the best, not the worst program; wants to be pre-active on important issues but low profile to the public and so forth. Fifth, write a standard for each activity. A standard defines how the boss will know the activity has been accomplished. Sixth, perform a needs analysis, i.e., do you meet the standards, need more information, need policy procedure, objective and so forth. Seventh, define the needed programs of action necessary to correct those deficient. The final step becomes a discussion with the boss and feedback. Does he agree with what you prepared; does he disagree; have you usurped some responsibilities and authorities which are clearly not yours? And understand that there is no monolithic solution. Corporations, companies, and so forth are organized in different fashions. A copy of my strategic plan would be of little or no help to you. This activity must be performed within the framework of your organization.

When agreement is reached action plans are prepared. Specific action results can be translated into measures of performance by which the boss can evaluate and control your work. The entire process is painful, time consuming, often frustrating, but if performed properly is infinitely rewarding. We, the health and safety professionals, can no longer simply sit idly by. Les Crowe, Vice-President of the 3-M Company, when talking about the Industrial Hygiene-Management interface at the 1980 American Industrial Hygiene Conference said: "Reach out boldly to make your management listen to what needs to be done." It applies equally to safety.

In summary, I've told you where we were; where we are; and where we ought to be. Will we meet the challenge of the '80s? Perhaps your conference arranger for 1990 will ask the President-elect of AIHA for 1990 to address some words to this area.

It is not sufficient in and of itself to be a competent professional. We, the safety and industrial hygiene professionals, will need skillful management techniques if we are to satisfy the principal tenant of both professions—to protect the worker. We have been and will continue to be subjected to corporate and societal pressures, to changing regulations, to legal pitfalls, and yes, perhaps professional liabilities. It would seem incumbent that we walk carefully as we must maintain credibility with all factions.

QUESTIONS FOR REVIEW AND DISCUSSION

1. While Vice-President of the American Industrial Hygiene Association in 1980, Dr. Ralph Smith made a quote about safety management which is included in this Chapter. It is also the reason for this particular chapter being in this book. What is that quote?
2. The author lists several responsibilities of the *industrial hygienist* to the worker, to the employer/client, to the public, and finally to the profession. Check each one of those specific responsibilities and see if the word *safety* could be substituted for industrial hygiene in the first sentence above and the responsibilities still be applicable. Be prepared to give examples backing up your conclusions.
3. Does the author see health and safety as a staff or line function?

QUESTIONS FOR FURTHER STUDY

1. Find out the organizational relationship of safety and industrial hygiene at the corporate level in each of these organizations: McDonnell-Douglas, the U.S. Navy, and Union Carbide Company. The best answer would be an organizational chart showing the relationships of industrial hygiene and safety.

Chapter 27

THE WORKPLACE OF THE FUTURE

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ABSTRACT

An acceptance of robots in the workplace is accepted in this article with emphasis given on the need for safe interaction with humans, and expansion of the safety management function to include the control and prevention of accidental losses to equipment, property and products.

A more accurate title for this chapter might be "Safety in the Flexible Manufacturing, Computerized, Databased, Robotized, Automated Workplace." However, let's refer to it as the "advanced workplace," which is here now and growing steadily by leaps and bounds.

The chapter will develop three primary themes: first, the safety requirements of this automated workplace for the benefit of these new and costly machines—an almost anthropomorphic assignment. Webster's defines that word as "attributing human shape or characteristics to an animal or god"—the modern world is adding robots to the list.

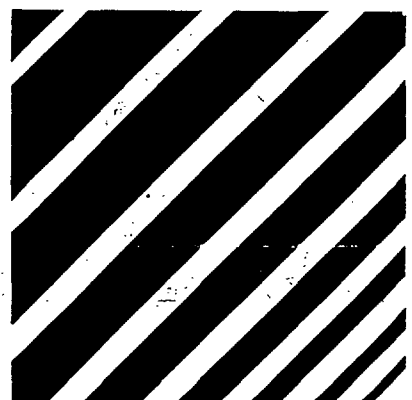
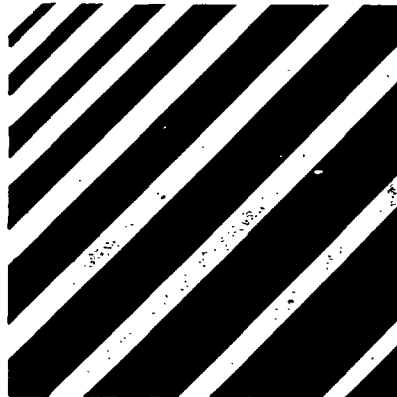
Second, the combination of humans and robots in interaction poses a new set of safety needs—virgin territory which, however, must not be ignored. If we did ignore it, the result might well be a giant step backward, with results akin to the early days of the industrial revolution when human lives were cheap and no one bothered about the quality of life.

Third, someone must take (or be given) the responsibility (and authority) for these two new tasks; and since it is a natural outgrowth of the safety manager's existing duties, agreement is imperative that he or she is indeed the one to whom they be assigned.

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New Directions In Safety

Edited with Commentary by
TED FERRY, ED.D., CSP



American Society of Safety Engineers

ABOUT THE SOCIETY

The principal objectives of the American Society of Safety Engineers are to advance the safety profession, and improve and expand the professional knowledge and capability of the individual safety practitioner. The safety professional uses his competence to prevent accidents, injuries, and occupational diseases; create safer environments for work and play; and develop safe products in all areas of human activity.

Founded in 1911, the Society is the oldest national safety organization in the United States. It has grown to 20,000 individual members located in the USA and abroad.

Contributing to the objectives of professionalism and setting of standards of performance, in 1969 ASSE conceived and established the independent **Board of Certified Safety Professionals of the Americas**, which is a certifying body. **Certified Safety Professional (CSP)** is granted only to those individuals whose professional safety experience meets a high level of established criteria and who pass a comprehensive, challenging examination.

ASSE has defined the **Scope and Functions of the Professional Safety Position**, which has resulted in the establishment of four major functional areas as: (a) identification and appraisal of accident and loss producing conditions and practices and evaluation of the severity of the accident problem; (b) development of accident prevention and loss control methods, procedures, and programs; (c) communication of accident and loss control information to those directly involved; and (d) measurement and evaluation of the effectiveness of the accident and loss control system and the modifications needed to achieve optimum results.

The Society produces and distributes basic and advanced educational materials for safety professionals. In addition, it has developed an **Expertise and Interest Questionnaire**, a data bank of members' technical expertise that enables ASSE to identify members' skills and experience and as a result be able to provide sources of wide-ranging safety information and knowledge. The Society also conducts an annual **Professional Development Conference and Exposition** and publishes **Professional Safety** magazine, one of the leading monthly magazines in the occupational safety and health fields.



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NEW DIRECTIONS IN SAFETY

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PREFACE

The editor wishes to acknowledge the contributions of the many authors and others who so freely gave information and time to make this book possible.

Of particular note are the chapters by Drs. D. A. Bekerian and J. M. Rolfe of Cambridge, and Dr. Gordon Robinson of the Universities of Southern California and Wisconsin who contributed chapters to be printed here for the first time.

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New Directions In Safety follows an earlier book titled *Directions in Safety* that was edited and authored by D. A. Weaver and myself. Weaver continued his participative role in selecting, evaluating, and contributing articles for inclusion in this book.

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INTRODUCTION

The promulgation of this book came from Jim Kiely, Manager of Technical Publications for the American Society of Safety Engineers. Earlier books edited by Ferry and Weaver, by Widner, and by Petersen and Goodale, have served the safety community well.

The articles selected to be chapters in this book range widely and reflect a new perspective. Most of them represent efforts of the last two years, while earlier included material is nearly timeless in concept. The choices are merely samples of their fields. It would take several such books to typify safety and the safety professions as they are today.

New Directions in Safety represents mostly proven ideas. The first quarter of the book accents the trend to understanding risk beyond the normal insurance concept and the more widely accepted ideas of employee involvement and management accountability.

There is an extensive section, roughly the middle third of the book, that deals with health related issues that were seldom covered in earlier works. This is followed by several chapters that do not fit any mold, yet should be in wider and more permanent circulation. The chapters glide into legal aspects that reflect a change in the times that now place these issues as an early consideration in safety and health practice.

The last six chapters in the book take the reader through two elementary, timely and appropriate chapters on computers in safety and health. From there, four short chapters carry the reader into the upper echelons of management and a look at the future.

Questions for Review and Discussion at the end of each chapter give a review of the chapters themselves. Questions for Further Discussion are for those who wish to know more about the subject and don't mind doing the research that leads to answers. Both sets of questions have been designed to pull out certain types of information that seem to fit emerging safety practice.

A college or university anticipating use of the book as a text should contact the author for assistance.

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