708202

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF NEW MEXICO

BERNICE LASOVICK,

Plaintiff,

vs. CV 77-323-M

UNITED STATES of AMERICA,

Defendant.

The Deposition of LOUIS H. HEMPELMANN, M.D., having been produced, sworn and examined on behalf of the Plaintiff, pursuant to Notice to Take Deposition and the Rules of Civil Procedure, was taken at the hour of 12:40 P.M., on Thursday, December 20, 1979, at the Occupational Health Building, Los Alamos Space Laboratory, Los Alamos, New Mexico, before: Angela Albarez, a Notary Public and Court Reporter within and for the County of Bernalillo, State of New Mexico.

* * * * * * * * * * *

A P P E A R A N C E S

For the Plaintiff: Ms. Elizabeth E. Whitefield
509 Roma Avenue, N.W.
Albuquerque, New Mexico

For the Defendant: Charles N. Estes, Jr., Esq.
Assistant U. S. Attorney
P. O. Box 607
Albuquerque, New Mexico

LOUIS H. HEMPELMANN, M.D.

was called as a witness by the Plaintiff, and having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MS. WHITEFIELD:

Q Would you please state your name for the record?

A Louis H. Hempelmann.

Q Dr. Hempelmann, have you had your Deposition taken before?

A No, never.

Q If you don't understand any of my questions--and I get really garbled sometimes--please just stop me, and I will explain it and go back over it again.

A Okay.

Q Would you state your present address?

A 283 Castle Road, Rochester, New York. The zip code is 14623.

Q Do you live there most of the year?

A Yes, although I have just retired, and I am spending more time out here now.

Q What is your address out here?

A Route 1, Box 193, Santa Fe, New Mexico. The zip code is 87501.

Q Could you please describe for the record what your

educational record is?

A I got my medical degree from Washington University in St. Louis in 1938.

Q Did you do a residency or an internship after that?

A Yes. I spent one year as an intern in pathology at Barnes Hospital, which is affiliated with Washington University. Then, I spent 20 months as a house officer in medicine at Peter Bent Brigham Hospital in Boston.

Q Would you describe for me what your employment background has been?

A After I left the Peter Bent Brigham Hospital in 1941--I should say I was offered a job at that time, also, at Washington University at the Mallinckrodt University, which was building a cyclotron unit for cancer patients. I was offered the job of treating these patients even though I didn't have any experience in X-ray therapy, radiation therapy.

So I got a Commonwealth Fellowship to learn about the cyclotrons and radiation therapy, and I spent about three months in St. Louis working with the cyclotrons, and also working in X-ray therapy.

Then I spent the four months following that at the Radiation Laboratory in Berkeley working with John Lawrence on treating patients with radioactive phosphorous, and with Dr. Robert Stone who was treating patients with neutrons from the cyclotron.

Then, after that, the war started, so all of our plans changed. I was supposed to go to New York to the Memorial Hospital to spend the rest of that Fellowship year with Dr. Edith Quimby learning about radiation physics.

After a month or so, I was called back to St. Louis because the cyclotron had been completed. They were involved in making the first sizable quantity of plutonium by filling the room with uranium and bombarding that constantly, day in and day out, with neutrons from the cyclotron.

I worked on the crew doing this type of bombardment, and I also established the third clinic in the country which treated patients with radioactive phosphorous, which we made on the cyclotron.

Q This was all prewar now?

A No. This was just after the war started. This was in the year of 1942.

Q When did you come to Los Alamos?

A I came in March. Well, I came here just for visiting in March of 1943. Then, I came back permanently in April, 1943. I was the first doctor here.

Q Are you familiar with the history of the Health Group?

A Oh, yes.

Q Could you tell me what your position was, and kind of describe the history for me?

A I was the group leader of the Health Group which was responsible for the health and safety of the Laboratory employees, and also for doing occupational medicine.

Q Did the Health Group start when you came here? You were the Health Group?

A I was, yes.

Q Did you report to anybody?

A I reported to Robert Oppenheimer.

Q Directly?

A Directly.

Q Were there any military personnel involved with the Health Group or the Safety Group?

A Not at first. But I think in 1944, a young officer, Captain Harry Whipple, was assigned to me. But, as in the other military personnel, he reported to me; not to a military officer.

Then, later on, Dr. James Nolan, who was head of the hospital, came over and actually replaced me sometime in 1946; the early part of 1946, I think.

Q He replaced you? Did you leave then?

A No. I was just involved in other things, and also trying to write up the history of the Health Group and what problems we had had; what sort of incidents and things like that.

Q Did Dr. Nolan still report to you then?

A No.

Q He just took your position?
A Yes.
Q Was it called the Health Group at that time?
A Yes.
Q Where did you get reassigned? To another group?
A No. I stayed here, and I was just involved in the writing of the history; Alamogordo, and all that sort of thing.

Then, I left in May, 1943. I was supposed to go back to St. Louis to Washington University.

MR. HUGHES: What year is that?

THE WITNESS: 1946.

Q (By Ms. Whitefield) After Nolan came?
A Yes. He left, also, I think in December of 1946. The Health Group was taken over by Dr. Harry Whipple, but there were some problems.

Dr. Bradbury, who was head of the Laboratory, asked me to come back as head of the Health Group. I said I would come back for two years if I didn't have to live up here.

Q Wise.
A So I came back. Then, soon after I got back, the Health Group became the Health Division. I stayed here until October, 1948.

Q Were you here initially before Dr. Nolan?
A Right.

Q Did you set up the health and safety standards?

A Yes.

Q Did Dr. Nolan then set up his own health agency?

A No.

Q He just continued to carry out yours?

A This was a joint thing. I didn't do it all by myself. We had committees with the CMR Division, and physics people were involved in the Alamogordo test. We would jointly work up these rules and policies.

Q Were there any military personnel that participated in that?

A Certainly down at Alamogordo, but I mean they were all reporting to their superiors in the Laboratory structure.

Q Were they involved with the safety of that particular test at Alamogordo, or was the military involved with setting standards?

A No. I was in charge of the health and safety test.

I want to tell you more than you want to know--

Q No. Please go ahead.

A Dr. Stafford Warren, Colonel Stafford Warren, was head of the medical part of the Manhattan Project, and his assistant was Major Heinrich Friedell. They would come out periodically, and we would get together. But, I mean, it was a cooperative thing. They weren't telling me what to do, and I didn't report

to them.

But the directors of all of the Manhattan Projects would get together and we would come up, for example, with ideas of what we thought was the maximum permissible body burden of plutonium.

Q Did Colonel Warren and Major Friedell participate or have input into the determination of that maximum?

A Yes.

Q When was Colonel Warren involved?

A I think he became involved in the spring of 1945. As I understand it, General Groves had a strong policy that none of his staff should come out here.

I asked Colonel Warren to come out. Then, he was given permission and, as far as I know, he was the only one of General Groves' medical staff who did come out here.

I think that is true. I can't vouch for it 100 percent or why General Groves felt this way, or what was the reason for it. I just don't have any idea.

Q Why did you ask Colonel Warren to come out?

A I met him someplace, and I felt we needed all the help we could get.

Q Was he pretty knowledgeable?

A He was a radiologist. As a matter of fact, at the University of Rochester where I am now, I held the same job there from

1960 to 1971.

I believe he was very knowledgeable.

Q Is he still alive?

A Yes. He was last year.

Q Do you know where he is?

A He is out in L.A. If you want his telephone number, I have it back in Rochester, and I could get it for you.

Q I would appreciate it if you could send a note to Nick or Reggie with the number, and I could get in touch with him.

A Okay.

Q How long did he stay with you when you would request him to come out?

A He would just stay for a visit for one or two days.

Q Was it mostly you and he discussing the problems of setting health standards?

A Yes. I mean, there were all sorts of problems; staffing, and things like that. He had much broader contacts than I, so he could help with that.

Q What kind of staffing problems?

A For example, he sent a radiation physicist named Paul Aebersold out here; I think he was at Oak Ridge at the time. So Aebersold came out here to become one of our radiation physicists.

I mean, there were all sorts of problems like that which I couldn't handle because of limited experience. I was 29.

Q We were just discussing earlier that age was so low out here at this time.

A I mean, he had more contacts in radiology; also more experience in handling big organizations. I had never handled a big organization before.

Q Could you tell me how the maximum permissible body burdens were determined as to safe limits of plutonium?

A M.P.B.B. for the radium patients was known. It had been determined by Robley Evans. He studied the radium dial dump painters in the Boston, Connecticut, and New Jersey areas.

There were radium dial projects in each of those places, and there were cases of radium poisonings. Their body burdens were carefully measured by Dr. Evans, who devised methods of measuring the gamma rays from the radium deposited in their skeletal systems; and also, the amount of radon breathed off.

Radon is a daughter product of the decay of radium.

He was able to measure quite accurately the body burden. Then, he got to some level--I think one-tenth of a microgram--at which no symptoms seemed to appear. So he declared that that was the M.P.B.B.

Plutonium is very much like radium in that it is a bone seeker; most of it is deposited in the skeletal system. It gives off alpha rays which are very similar to those given off by radium.

So, on the basis of this one-tenth of a microgram, we were able to say that we thought that the first M.P.B.B. for plutonium that was arrived at at those meetings with other medical directives and people from the Manhattan Project was five micrograms, I believe.

Then, later on, it was lowered to one microgram. Now it is forty nanocuries, and I can't make the conversion. I have been out of the field too long.

Q When was the forty nanocuries figure arrived at?

A I can't tell you exactly, because I wasn't in on that; that was after I left.

Q I have a copy of a letter written by you on June 23, 1945, on the first sentence of the third paragraph, it says, "I should also like to state that _____" (persons named deleted) "has exceeded on two occasions the accepted safe limit of 49 in the urine set by us with Lieutenant Colonel Friedell."

My question to you is: What do you mean by "set by us with Lieutenant Colonel Friedell"?

A In the conference with him and probably some of the medical directors from the project in the Manhattan District, I do remember Friedell coming out here. I'm sure Dr. Langham was in on this.

I would suspect that there were people from the other laboratories, but I can't say that would be for sure.

Q Was Colonel Friedell a medical doctor, also?

A He was a medical doctor, and he was also a radiologist.

Q Was he just a consultant with your Health Group, then, or actually a member?

A No. He was Colonel Warren's assistant, or he was second in the Manhattan Project Medical Group, or whatever it was called.

Are you clear on that? You look sort of puzzled.

Q I am confused as to the distinction between the Medical Group and the Health Group. Could you help me out there?

Was the Medical Group military?

A No. There was a hospital that took care of the illnesses of the people in the community; both those who worked in the Laboratory, their families, and everybody else, including the military guards and things like that. I think this was operated by the University of California contract.

But it had the most mixed-up organization that I have ever seen. The physicians were in the military; the nurses were civilians. Much of the personnel were special military aides. The specialized technicians, such as the X-ray technicians, were civilians.

They probably shouldn't have operated, but everyone was very cooperative, so it all worked out. We just sort of ignored whether they were in the military or not.

I think part of the confusion that you may have stems from the fact that the whole operation here was supposed to be military. I came out here as a civilian, but I was going into the military as a captain.

Then, at some point, I decided this wasn't a good idea.

In the meantime, these doctors that we wanted were in the military, so they came out here as captains. But this was an abrupt change of plans.

Q Were you ever in the military? You were going to; then Oppy cancelled that?

A Yes.

Q The Medical Group was primarily--

A No. That was the Hospital Group, which, as I said, took care of the illnesses of the people who lived up there; both people from the Laboratory, their families, guards, shopkeepers; people like that. I certainly use the Health Group and the Medical Group interchangeably, but it is all the same thing, and its proper name was the Health Group.

We would do the monitoring. We would set the standards. We would do the occupational medicine and physical examinations when the people first came and when they left. We had a small first-aid station for minor accidents in the Laboratory.

Q When you said "we," you mean the Health Group?

A Yes, the Health Group.

Q If there was an industrial accident where somebody would get plutonium in a cut, they would come to you and not the Medical Group, or did that just vary?

A It sort of varied. As I recall, it depended on how serious the wound was. I mean, if it was just a minor thing, either Dr. Whipple or I would take care of it; excise it. But if it were a deeper wound which was more difficult to handle, we would refer them to the hospital.

Q Did the Medical Group have any input in determining safety standards?

A I think I confused you by calling the Health Group the Medical Group. There were only these two groups: the Hospital Group which, as I say, took care of the illnesses such as the flu, births, and things like that. Then, the Health Group set the safety standards and monitored to make sure these practices were being carried out. We would also do the occupational medicine.

We would examine people. We would take care of the minor accidents.

But there were only these two medical groups; the Health Group and the Hospital Group.

Also, the Health Group tested people for evidence of overexposure to gamma radiation by doing blood counts. We had rules for how often each person would have to have a blood count.

Those who were not exposed at all, like the theoretical physicists, didn't have any blood counts except when they first came in. The more radiation they were exposed to, the more often they would have blood counts, because that was the most extensive indicator of radiation damage.

Q What was the primary function of the Health Group?

A To set policy and safe standards of operation; then to implement them. It was the function to monitor, to test the people for evidence of overexposure as well as to do just the usual occupational health things, such as examine people when they came in and when they left, just for the record.

Q The Health Group also had the charge of keeping the records?

A Yes.

Q When did tolerance levels become a serious concern to the Health Group?

A They were always a serious concern.

Could I offer a curiously strong opinion?

Q When was the general similarity between the plutonium and radium discovered?

A The first time it was mentioned, as I recall--well, I shouldn't say that, because I can't remember when I first heard of it--but I know that Glenn Seaborg pointed this out back in 1943, I think. So he wrote a memo to somebody saying how this was; that plutonium was so much like radium. He thought it

was going to present very serious health problems. Of the first really large-scale batch of plutonium, he sent ten milligrams of plutonium out to the Radiation Laboratory in Berkeley for studies in animals.

Q When were those studies completed?

A Very shortly. I noticed in Dr. Voelz' thing, he said that they were completed in a month. This was in the spring of 1944, I believe.

Q You made a trip back to Boston, didn't you, to the Luminous Dial Company?

A Yes.

Q Is that when you spoke to Dr. Evans, or had you just read his work? Did you confer with him when you went back to Boston?

A Yes. He was the one who arranged for this, and he escorted us through this plant and showed us his apparatus for measuring radium. We saw what safety precautions they had installed after the first cases of definite radium poisoning were identified.

Q What kind of safety precautions did they have?

A They would work in a hood which was continuously exhausting. I have forgotten if they wore gloves or what they did.

Q Did they do any kind of testing or monitoring on the workers?

A Oh, yes. Dr. Evans would take breath samples periodically

and analyze them for the radon content.

Q Was there anything else?

A He could also measure the radium in the body by a sensitive radiation indicator which would measure the amount of radium in the bones. He sort of wrapped the patients around this counter.

Q It was noninvasive?

A Yes. Both the breath samples and the gamma ray measurements were exterior or in vitro, as we say.

I know he would do the breath samples quite frequently. How often he did the gamma measurements, I don't know.

Q By "quite frequently," was it daily, do you recollect?

A No. As I recall, it was in the order of a month or so.

This was 30 years ago, and it is really blurred.

Q I know. It is really amazing what you and Dr. Baker remember.

Can you remember any other safety precautions or monitoring they were using at the Luminous Dial Factory?

A No. But their operation was quite simple. Of course, where they got into trouble at first was that in the early days, before it was suspected that radium might be so toxic, these workers would do this operation, painting the dials with luminous paint, and they would do it in the open.

Since, I think, they were paid on a piece-basis, they would go faster. They would point the brush with their lips, you see,

so the early workers were very heavily exposed.

Then, the workers at the time that I saw them, they didn't do anything like that. I think they probably wore gloves. They were also continuously monitored by Dr. Evans.

That was completely different from our problems out here, although we patterned our safety apparatuses after them.

But, I mean, we were working with up to kilograms of plutonium. Their operation was very simple, but ours were very complex; some of them being chemical engineering and metallurgical operations.

It was many orders of magnitude more difficult here.

Q In the History of the Los Alamos Project, it said that following your trip to Boston, that you had written a report to Mr. Kennedy, and, as a result of that report, there were three committees that were organized. Do you still have a copy of that report?

A No. I have not seen it.

Do you have it?

MR. HUGHES: Yes. That is one of the recent things I have found in the last two or three weeks. I have your trip report.

MS. WHITEFIELD: Will you produce those, Reggie?

MR. HUGHES: Sure.

MR. ESTES: We have your laundry receipts, too.

MR. HUGHES: And your travel vouchers.

Q (By Ms. Whitefield) In the History of the Los Alamos Project, it lists that the purpose of the first committee was to design counters for measuring contamination. Who was on that committee?

A Do you know?

MR. HUGHES: I can't remember, but it is on there.

measurements of what was going on in each Laboratory. The Laboratory had an agreement with the Metallurgical Laboratory; that they were supposed to develop sensitive counters that could be used in monitoring laboratories, but they weren't coming along fast enough to suit us.

So there was one of our electronic groups on its own which started to work on the project. Then, he was finally given a group. Most of the counters--I mean the monitoring apparatus--was made here.

But we kept using the swipes up until June, 1945.

The other way we tried to monitor exposure of individual people was to also take little pieces of paper and put them on little sticks and them swipe the insides of the nostrils on both sides. This was done, I think, twice a day. There was a young woman hired to do this twice a day.

Then, she would have to keep it straight. It would be counted in this proportion counter.

Q Was that twice a day in D Building?

A Yes.

Q For everybody in the building?

A I think, probably. I can't be absolutely sure that it was twice a day, but I think it was.

Q How accurate was the counter that you took the Laboratory swipes to?

A That was very accurate.

Q That just lacked portability, but it was sensitive enough?

A Yes.

Q Were the portable counters what were called the "Pewee counters" or what were the names given to the portable counters that were developed; do you remember?

A I was just reading in the--

Q Would your history help you?

A Yes.

MR. ESTES: Dr. Baker refers to a Pewee counter.

THE WITNESS: Yes. There was a Pewee counter.

Do you have your exhibits?

MR. HUGHES: I can remember two or three different names.

THE WITNESS: They are all listed here.

Well, I can't find it in this.

MR. ESTES: It is mentioned in this 27-year study of Pluto.

THE WITNESS: There is a picture of one, too.

MR. ESTES: This one?

THE WITNESS: Yes, that's it; "Super Snoop."

But even those early portable counters were pretty massive devices. You had a hard time really getting into areas that you wanted to check. If it hadn't been for the portable counters and the swipe system, we would have had no idea at all what the contamination levels were.

Q When did the portable counters come into being; do you remember?

A They came in, as I recall, the early part of 1945. But they were very sensitive. They would measure only five to ten thousand counts per minute. We were interested, really, in levels of 50 counts.

Q Did you continue to use--did you call it the "proportional counter"--the stationary one at the same time you were using the portable counters?

A Yes. Until this Super Snoop came along, which was reasonably sensitive and also reasonably portable, then air counters were also developed to measure the plutonium in the air that these people were breathing.

But they were unsatisfactory in that the plutonium-contaminated air was very localized. It was hard to know just where to put them.

Until this day, the nose counts are often used after an accident or something like that.

Q The nose counts are basically a qualitative measure?

A They are a qualitative measure, yes.

Q A positive nose count would indicate an exposure, say, to plutonium, but couldn't tell you how much; is that correct?

A The little hairs in your nostrils here are pretty efficient filters. We just figured, or we assumed because we couldn't do

anything else that the higher the exposure, the higher the nose count. You can also get a high nose count by scratching your nose.

But we tried to control this by doing each nose count individually. If one was very high and the other very low, we thought that was probably contamination, but we would call the man in and ask what he had been doing, and ask as to how that came about.

Q Could blowing your nose affect your nose count?

A I suppose so somewhat. These were done just as the people came out of the contaminated areas, you see. They had gloves on and wouldn't blow their noses until they got in the locker room and changed into their own clothes.

It was only qualitative, but I mean it was all we had to go on.

Q As a result of your visit to Boston and your report to Mr. Kennedy, there was a second committee that was formed, and I have copied down your History of the Health Group to design instruments or under the History of the Los Alamos Project to design apparatus or equipment for handling plutonium?

A Yes.

Q Do you recall who was in that group?

A No. But they came up with the dry boxes.

Q That was my next question.

What other things do you recall that they came up with as far as safety equipment?

A Also surgical gloves. They were used just as soon as people began to work with plutonium; also booties and gowns.

Q Were there any other devices that they either recommended or thought should be used in the handling of plutonium that you can recall?

A I don't know whether they were the ones that came up with the method of laundering clothes, decontaminating surfaces, equipment, and things like that.

As I recall, I don't remember that committee very well. But I think most of these developments were the result of this CMR Group which was responsible for monitoring, decontamination, laundering, and things like that.

They operated on the basis of rules or recommendations which were sent by the Health Group. I think there was a committee consisting of Joe Kennedy, myself, and somebody else. But there was a young man named Dick Popham who was in charge of the CMR Group.

He was the one that developed most of this.

Q Was that the CM-1 Group?

A I am not sure what the name of it was.

Q Was his group the one that would come in and decontaminate a place once it was contaminated?

A Yes.

Q Was his group also in charge of picking up the daily swipes?

A Yes.

Q They kept records of the swipe counts of the rooms?

A Yes.

Q Did you have concurrent records?

A I don't know whether they would give them to me on a daily basis or at the end of the month or what. But at any time when there was considered to be a serious contamination, we would be called.

Q What would you mean by a serious contamination?

A I mean if there was a spill which would give high counts on these swipes, then they would call us.

Q What would you consider high enough to call you?

A I don't remember any more: I really don't. I mean, we would make certain arbitrary levels and say, "If the contamination exceeds this level, then call us," or something like that.

I don't really recall what the rules were for this.

Q In your History of the Health Group and also in the History of the Los Alamos Project, it is indicated that the health rules and recommendations are embodied in the health safety and health records from April to September of 1944. Is that true, to the best of your recollection?

A I don't know. The Health Group would write a monthly report. I think you probably have some; I am not sure.

MR. HUGHES: You do, too.

MS. WHITEFIELD: Those are the ones that make up Exhibit 1 to Dr. Baker's Deposition?

MR. HUGHES: No. What you are thinking about there with Dr. Baker's affidavit are the CM Division monthly reports by a different group and different section leaders.

We have also got the CM-12 Health Safety Reports over in A-6. You have got some of those, too. I don't know if you have the ones you referred to.

THE WITNESS: I must say that at that time we considered them the greatest bore in the world because we were busy, and we would have to sit down and write these reports.

But I think, in retrospect, having seen the information that they conveyed, it would be worthwhile.

MR. HUGHES: Maybe you don't have any of those Health Safety Group Reports. They don't appear to be in here.

You have CM Division 12 Safety Reports, but not the Safety Group Safety Reports.

Do you understand the difference?

MS. WHITEFIELD: Yes.

THE WITNESS: CM had its own Health Safety Committee, Popham's group.

MR. HUGHES: Then he had one for his own division.

MS. WHITEFIELD: It is his we don't have. Could you produce copies of those?

MR. HUGHES: Sure. I have got them.

Q (By Ms. Whitefield) Do you have any recollection as to what were the rules as far as handling plutonium that your group came up with?

A I'm sure they are listed someplace. We had rules that the plutonium could only be handled in certain areas, and that people who worked with the plutonium had to wear gowns, garments underneath, rubber gloves, masks, hats, and booties.

Q How about rules concerning external radiation? Do you have any recollection as to what those were?

A They were mainly that the workers, the people who worked with radium and other radioactive materials could receive only, I think it was, one roentgen--I forgot what it was exactly--but it has been going down over a long period. It was something like one roentgen per week, or something like that.

They would all wear film badges which were developed every week or so. It was an elaborate operation, really.

Then, on the basis of density of the film and the blackness, we knew how many roentgens they had been exposed to. If they were exposed to more than they should be, we would look into it. Sometimes these were purely false. The person could

put the film badge on a source, or something like that.

But, I mean, if the films were blacker than they should be, we would send monitors there to find out what happened; why this person's exposure was so high..

Then we would also have monitors go around and measure the radiation levels around radium sources with the Van de Graf machine and the cyclotron.

I think we had something like half the world's supply of radium up here.

Q Who determined who would wear a film badge?

A Anybody going into an area where there was radiation would wear one.

Q If they went to visit the Van de Graf machine, they would have to don a film badge?

A Yes.

Q If they went to the Trinity Test, would they have to?

A Yes.

Q How about if they went to the Trinity site? After the Trinity site, would they have to wear a film badge?

A Yes.

Q Do you have any record of Daniel Lasovick having a film badge?

A I must have known him, but I can't recall him. I can't recall having met him, and I can't recall what he looked like.

As I looked over the exhibits, I see that he was exposed mainly to uranium. Apparently, the urine, you see, was carried out, because in June of 1945, or something like that, although he was still working with uranium, it was done in a room containing plutonium.

Q That group he was working in was handling plutonium, too?

A Yes. But I was much closer to the plutonium boys because they were the ones we were really worried about. We weren't worried about the uranium workers or even the polonium workers, because that wasn't nearly as toxic as the plutonium.

It spent very little time in their bodies.

But one other thing about it: he was also working in a room where there was a polonium source. Polonium is a very peculiar material in that if you put it in some sort of vessel, a beaker, it creeps out over the side.

Q It is insidious?

A It attaches to the air. So that was a terribly messy operation.

Q Was that in 301?

A I don't know.

You showed me something about that; do you remember? There were three or four memos that I saw.

MR. HUGHES: I thought that this had to do with the polonium source being in the Laboratory where they analyzed the

urine samples or, at least, the people were contaminating their urine samples with polonium and getting high readings which turned out to be false readings.

Q (By Ms. Whitefield) Was that your study of the polonium boys?

A No. They were plutonium. These were what we thought were the most heavily exposed plutonium workers in the history of the project.

Q What groups did they work in? Did they work in CM-5?

A They worked mainly in the Recovery Group. I think almost half of them worked in the recovery operation which was a terrible operation. They were responsible for recovering the plutonium that was dropped on the floor that contaminated everything; rags and things which had been used to decontaminate it.

They were prepared to tear up the floor and extract the plutonium, if necessary. They would even dissolve a bicycle. I mean, plutonium is so valuable that they went to great extremes to recover everything.

Q Was that Dr. Garner's group?

A No. I think it was Frank Pittman's group.

But these workers were in four operations. There was one for purification of plutonium as it came from Hanford; then, this purified plutonium was fluorinated, made into plutonium

fluoride. So there was a fluoride group.

Then, the plutonium fluoride was reduced to metallic plutonium. This was Dr. Baker's group. Of all these operations the Recovery Group was associated with the greatest exposures. They couldn't really design equipment so this could be done remotely or automatically as could be done in the first three operations.

I mean, every job of the Recovery Group was different, you see.

Q As part of the Health Group in your history and in the Los Alamos project history, there was a research program that was part of the Health Group; is that correct?

A Yes.

Q Who was in charge of the research in what was done, what was determined, and what were the results?

A You see what the problem was, we had determined what the M.P.B.B. was by comparison of the M.P.B.B. of radium. This was not like the situation in the case of the radium dial painters because we couldn't measure plutonium from the outside.

So what we had to do was to measure the amount of plutonium which was being secreted either in the urine or in the feces. We ended up assaying the plutonium only in the urine. We didn't know what fraction of the body burden was excretable per day until the animal experiments were done out in Berkeley by

Joe Hoffman.

On the basis of injecting plutonium into three or four rats he determined that about one-ten thousandths of the body burden was excreted per day.

So the only thing we could do was just apply that to our patients and say that the body burden was ten thousand times what they excreted in the urine per day.

Since we were interested in the body burdens in the order of one microgram, which is one millionth of a gram, we were looking for one-ten thousandths of a microgram excreted in 24 hours of urine.

That is a very difficult thing to do. The task was undertaken by Wright Langham, and in 1945, he had an acceptable reproducible method of assay. He was in charge of this research program to develop a method of assaying the amount of plutonium excreted in the urine.

Q The two amounts that you have been citing sort of indicates there was a little bit of trouble before that. Was there a little time lapse before that urine analysis was used on a routine basis?

A When we first used it, I think we first used it in March of 1945. We just told the fellows to go home and shower and scrub their hands; to take these urine specimens, take a day's worth of urine specimens, and then Langham would assay these

samples.

They were just frightfully high. My God, we were just terrified because they suggested--I mean, if they were true--if that much plutonium was being excreted, the workers would have God knows how much plutonium; much more than the M.P.B.B.

We reasoned that this was probably contamination from their clothes, staying on their hands, and things like that.

Within a month or so, we finally devised a program of sending the people off the hill for two days; then they would come back and report to the hospital. They would bathe and shower and wash their hair.

Then they were put in one room and made to wear hospital garments. They would stay there for 24 hours and collect their urine during that period.

When we did that, the amounts of plutonium in the urine were reasonable. It wasn't until this program had been worked out that we were fairly sure that the plutonium we were measuring had actually been excreted.

Even then, periodically, there would be high counts which we would repeat immediately and find were false. There was contamination.

Q When was this policy of sending them off the hill implemented

A It must have been soon after we started taking urine specimens from the plutonium workers; I would guess that it must

have been by May, 1945.

Q Prior to that, would it be fair to say that there was no method for quantitatively measuring how much plutonium somebody was ingesting?

A Yes.

Q Just off the record--

(A discussion was held off the record.)

Q (By Ms. Whitefield) On room swipe counts with the oiled piece of paper, how was it determined where swipes were taken?

A I didn't ever do it myself, but what the monitors would do would be to ask the people working in the Laboratory what areas were most likely to be contaminated.

A But just because of the nature of the method, the information you got from that was pretty spotty; is that right?

A Yes, admittedly.

Q In your 27-year history, you stated that it wasn't until July of 1945, when a specially made mask called the Kennedy hench mask was developed.

Was there comparatively good protection against airborne radioactivity?

A Yes.

Q Prior to that, there wasn't good protection then against ingesting plutonium?

A This Kennedy hench mask was a positive pressure mask. They

would pump air. They would have like a big bottle over their heads made of plastic. They would pump air from the outside in there so that the contaminated air from the room couldn't get up into this.

It couldn't enter this mask and be breathed. All the others were just dust masks. There is a picture of one here.

Q I will try to look at my copy, but it is kind of hard to tell.

A It is not a very good picture.

They are still used by people who work with mercury or dusts of various sorts.

Q The Health Group never did develop a satisfactory method of detecting plutonium in the lungs, did they?

A No.

Q If a man had a normal X-ray, that wouldn't mean he didn't have any plutonium in his lungs, would it?

A No.

MR. ESTES: Are we talking about the sort of early period of 1945 to 1946?

MS. WHITEFIELD: 1944 through 1946.

THE WITNESS: There was a method which was suggested by a fellow named Art Wahl, and that was to bombard the body with neutrons; then measuring any products that were being exhaled. But we thought the neutrons might cause more problems than the

plutonium.

Q The fact, then, that Daniel Lasovick had normal X-rays doesn't mean he wasn't carrying plutonium in his lungs?

A No.

Q The fact he did have some positive nose swipes, would that indicate, then, that he was ingesting--

A It would suggest he was breathing it.

Q He was breathing plutonium?

A Yes.

Did he have positive nose swipes only during the period he was in the Laboratory which contained the plutonium?

A We have a record of his nose swipes.

(A discussion was held off the record.)

Q (By Ms. Whitefield) There is more on the next page, Doctor, starting with April 24, that he started with nose swipes.

A I don't know why they were doing nose swipes on him; maybe we just did it routinely on everybody.

Q The last one, it looks like, was taken in July.

A July, 1945.

Q There are zeros in here, but most of them seem to be positive

A They are pretty low, though. We didn't consider them significant until they were more than 50 counts per minute. There were a couple of his which approached that in July of 1945.

Q In July, 1945, that is when there was a lot of activity with

the plutonium; the big kilograms started to arrive?

A Yes.

Q Isn't it true that the urine tests cannot detect insoluble plutonium compounds?

A If you ingest insoluble plutonium, it will just go right through the intestinal tract. It is only if the plutonium is breathed and the particles lodge in the lungs and stay there that we are concerned about the positive late effects of lung cancer, and things like that.

Q If that would happen, it wouldn't show up as a body burden on a urinalysis, would it?

A Probably gradually.

This has occurred since my time. It is just hearsay. I can't be sure, but some of the plutonium is gradually dissolved. It goes to the liver and the bones, and it is gradually excreted in the urine from these sites.

How fast that would occur, I don't know. This is all since my time.

Q Is it dependent upon the quantity ingested or the quantity breathed?

A You have to ask George Voelz, Jack Healy, or somebody like that.

We were very concerned, as you can see, in some of these health reports and memos. We were very concerned about the

exposures of some of the workers during June and July of 1945. If it had not been that we had to get the bomb made as soon as possible all work would have stopped. There was such urgency that we kept on going and doing everything we could to make it safe.

Q I'm sorry about the delay. I don't want to repeat my questions here.

A No. That's okay. It is good to have a rest.

MR. HUGHES: Anytime you would like to take a break, let us know, and we will take a break.

THEWITNESS: Okay. Could we do that now?

MS. WHITEFIELD: It will give me a chance to sort this through.

(A recess was taken.)

THE WITNESS: I have one thing of George Voelz' that I might expand on.

George Voelz, in his Deposition, was asked whether the people known to have plutonium body burdens were contacted and advised of this. Well, I wasn't here, but I'm sure that they weren't. When George and I sent out the questionnaires in 1973 or 1974, we didn't say anything about the risks because there is nothing they could do about it.

I mean, it isn't like they are trying to catch it early or something. The only thing this would have accomplished would

be to frighten people. In the search for radiation injury where you can do something about it, then we always do advise the people of the risks and tell them what to do about it.

For example, I have one population that I have been following for the past 25 years. They were treated with X-rays to the chest and neck as infants. They have a very high risk of thyroid cancer.

This is something you can do something about, because if it is caught early, it can be, as far as we know, cured by excision.

We have written to everybody in this group of about 3,000 people to tell them that they should see their doctor on an annual basis.

I also have a group of women who have been given X-ray treatments to the breast for inflammation of the breast while they were nursing. They have a very high incidence of breast cancer and, of course, if that is caught early, the chance of cure is good.

We are not advising them of the risks until they see their doctors, but we are actually calling in those that are still in the Rochester area and are giving them free mammograms.

Q What kind of risks were associated with plutonium that are inoperable or untreatable?

A We don't know that. I hope we never do, but on the basis

of the radium dial painters, we think they might develop osteogenic sarcomas, tumors and cancer of the bone, or cancer of the lung.

Q How about lymphomas?

A To the best of my knowledge, lymphomas are only caused by very high doses. I think this is true in the Japanese.

But this is what I was told. As I recall, there were no lymphomas in the Japanese.

Q Is leukemia a risk?

A A very high risk. There's nothing that can be done at this stage to protect them, so we have tried not to frighten them except if something can be done.

Q Are there any other kinds of risks besides the bones? You said sarcomas?

A Yes.

Q I suggested lymphomas and leukemias.

MR. HUGHES: Lung cancer?

THE WITNESS: Lung cancer, yes. Leukemias, I don't know about. I don't think even the radium dial painters--I think there was one case of leukemia in one of the early dial painters, but we weren't actually absolutely certain of that.

I have forgotten what it was because this was many years ago, but I think in 30 cases, we may have had one case of leukemia

Q Do you know where Popham may be?

A No.

Q You haven't had any contact with him recently?

A No. I lost track of him a long time ago.

Q In reading your History of the Health Group, I had a couple of questions that I would kind of like to go through a series that is based on that.

A Sure.

Q In that report, you state, "A failure to devise a satisfactory test to determine the amount of plutonium in the lungs that exposed personnel was one of the major criticisms that can be directed against the program with justification."

Would you comment on that for me?

A I must have been awfully righteous in those days because we still don't have a really satisfactory method of detecting plutonium in the lungs.

We can measure a half-M.P.B.B. and--I forget how many nanocuries--but George Voelz can tell you the period. It isn't a very sensitive test, even 30 years later.

Q We have been referring to M.P.B.B. Would you state, for the record, what that is?

A Maximum Permissible Body Burden.

Q In your article, you also made a statement, "We cannot say whether or not those persons have breathed dangerous amounts of plutonium in their lungs. This is serious since inhalation

of plutonium dust or spray is one of the most important means of exposure to many project personnel."

That is true, isn't it?

A Yes.

See, one of the things that saved us--I mean--we had tremendous luck because plutonium is very insoluble. It just wasn't absorbed from the intestinal tract. The particles that were produced were of such a size that they do not seem to have lodged permanently in the lungs.

They are coughed up, and then swallowed and passed through the intestinal tract.

If this had been radium, which forms very soluble compounds, everybody who had anything to do with plutonium would be dead by this time.

Q From some kind of lung contamination?

A From breathing it or swallowing it.

Q In your report--and we touched on this briefly before--you said the facilities to safely process plutonium handled in the Lab were inadequate to meet the demands during the early part of 1945.

That is when they got the big influx of plutonium?

A I think it was about ten times what we were prepared to handle.

Q You just didn't have adequate safety measures?

A Right.

That ten times figure may not be accurate. It is just what I simply recall.

Q You also stated in the history that it was often necessary to rely on monthly questionnaires to group leaders and information from the Safety Committee or chance conversations to determine where many health hazards existed.

Is that true?

A Yes. We had to depend upon the group leaders because we didn't have a monitor that we could put with every person. So there is some problem there because the group leaders were mainly academic people who were used to operating on their own.

They didn't like to be regimented like that. They were pretty casual.

Q In your report you stated that "the records of dosage received by persons exposed to external radiation were incomplete could you comment on that? What did you mean by "incomplete," and how were they incomplete?

MR. ESTES: Would you give page reference of the report ther

MS. WHITEFIELD: I didn't document it. It is the History of the Health Project, I believe, Nick. These criticisms and comments are directed towards the last couple of pages.

MR. ESTES: I see the one you are referring to.

THE WITNESS: Sometimes we didn't know where the radiation

hazards were. We depended entirely on being informed by the group leaders, you see. But somebody would give a radium source to somebody else, and then not tell us.

As I say, these group leaders were not organization men, really. They had been individual chemists, and they hated to be regimented or told what to do. So they were sort of casual sometimes.

Also, if we did anything that interfered with their work, they didn't like that at all. They were used to operating completely on their own.

Q Just off the record--

(A discussion was held off the record.)

Q (By Ms. Whitefield) If you would find out that somebody might be exposed to external radiation, would you provide them with a film badge; is that primarily what you would do?

A Yes.

Q The external radiation sources may be handed down, and there would be no record, no film badge, if they didn't tell you they were passing on the radiation?

A That's right. Also, if you know physicists--we'd better make that off the record.

(A discussion was held off the record.)

Q (By Ms. Whitefield) In your report, you state, "Hematology records of persons exposed to radiation or radioactive material

were incomplete."

Could you comment on that, too?

A Some of the people were uncooperative, and we would tell them that they were due for a blood count, but they just wouldn't report to the Laboratory.

Q From what you tell me, there was a serious problem in getting cooperation, sometimes, in monitoring and testing?

A There were a bunch of individualists.

Q In your report, you noted that there was a serious breakdown in the health program both in Los Alamos and Trinity for eight weeks in the fall of 1945.

MR. ESTES: Where do you find that in the report?

MS. WHITEFIELD: Off the record.

(A discussion was held off the record.)

MR. ESTES: Why don't we go back on the record and say that you are referring to statements on Page 13 of the Health History.

MS. WHITEFIELD: History of the Health Group written by Dr. Hempelmann.

THE WITNESS: The first thing that happened just before the Trinity Test, Dr. Nolan, who had been in charge of that, the health and safety at the Trinity Test site, he was ordered overseas to accompany one of the atomic bombs going by ship to Tinian.

So we had to make up that. I mean, that was a severe loss to us.

Then, after the test, all of the military people in my group, both doctors and SED boys who had been working on monitoring, they were all sent overseas to Hiroshima and Nagasaki. It was a group of about 12 people or something like that.

We were hard-pressed to keep things going.

Fortunately, after the test, everything quieted down. But, I mean, to suddenly be without a staff is a serious blow.

Q Were you able to maintain any health records, the testing, the monitoring, and the swipes?

A We did the best we could. I don't know how good a job we did.

Q Was it done in approximately the same frequency?

A I would guess so, although maybe not, because as I said, the level of activity declined so that there just wasn't as much work to do as there had been.

Q Who from the Health Group went out to the Trinity site?

A I was in charge.

I don't know. Does it say in there?

MR. ESTES: No.

THE WITNESS: We had gotten a lot of physicists to do some of the monitoring at different sites. All the members of the Health Group except Captain Nolan were there.

Then, these remote sites were manned by other physicists.

So it was all covered pretty well.

Q Do you have any recollection of Daniel Lasovick being there at Trinity?

A No. Was he?

A Not according to his personnel records.

Were there trips made to Trinity after the test, to your knowledge?

A Yes.

Q How many?

Were several trips made?

MR. ESTES: By "Health Group people," you mean--

Q (By Ms. Whitefield) By Health Group people and by SED personnel?

A Yes.

It was opened up, and I think almost anybody from the Laboratory could go down there.

They were provided with badges and booties.

I wasn't there during that period, and I don't have any idea how many people visited the site.

Q Is it your understanding there was some informal visiting

as well as projects?

A I suppose so.

Q Are you aware that a box filled with trinitite was taken from the soil at the test site at Trinity and was brought back to Los Alamos?

A I have heard that story, yes.

Q Have you heard that it disappeared, also?

A I'm not surprised. There was somebody who was making rings out of it.

Q Here at Los Alamos?

A Yes. I don't know who it was.

Q Between 1944 and 1946?

A 1945 and 1946.

Q Was that a source of external radiation, that rock?

A Yes. It depends on what they did with it. If they had it on the outside of a metal band, it was perfectly safe. The danger there was primarily beta rays, which are not very penetrating.

If they had the box sitting in the middle of the room and it stayed there long enough, it could have caused late effects.

Q How about just having a chunk of stone on your coffee table or something? How hazardous would that be?

A I don't think very hazardous. I have a chunk on my desk, but it was obtained legally and embedded in plastic and placed

on the stand. This was done by the Laboratory.

Q Dr. Hempelmann, did you have the chance to go over Mr. Lasovick's health records?

A Yes, but very rapidly. I just sort of flipped through them.

Q I want to ask you if Mr. Lasovick's hematology records are complete, to the best of your knowledge?

If you would like to go through the medical records again and just check, that would be fine.

A Incidentally, I was the first person to examine him, so I must have known him.

Q That is the beginning?

A This is my writing. I didn't sign it.

You want to know his blood count, you say?

Q Yes. Are his hematology records complete?

A They go from July, 1944, to what? Is that 1946? I have a hard time reading this.

Yes, they are. The blood counts aren't a very good indicato of radiation damage. They are done much less frequently now than they were then.

Q What is whole body counting of plutonium?

A There are these counters, crystals, which detect individual gamma rays. They are placed around a person's body. There are several of them, usually. They measure the amount of radiation emitted by the lungs or the liver or a contaminated wound. They

can pick up the presence of plutonium that way.

But it isn't very sensitive because plutonium only emits a very weak gamma ray. Compared to the alpha particles, they are very infrequent.

Q Was this method of counting around in 1944 and 1946?

A No, probably not.

I should state that I am not an expert on this subject.

Q Were there any other tests besides film badges that were used to detect exposure to external radiation?

A There were materials that were put in the film badge to detect neutrons. I think there was red phosphorous. I have forgotten what else; metals.

Q I don't know if I asked you this before or not, but are there any film badge records on Mr. Lasovick that you know of?

A I don't know. I don't think they wore them in the D Building or the D site because they weren't working with penetrating radiation. I mean, this is just my recollection.

Q That is what we want to know.

Based on Mr. Lasovick's work history, can you say whether or not he was exposed to radiation from the cyclotron, the Van de Graf, or the DD source?

A I would doubt it.

Q These things were in places other than the D Building?

A Oh, yes. They were completely removed.

Q Was Daniel Lasovick ever involved in a critical experiment?

A No.

Q What is Omega?

A Omega was a site in the Los Alamos Canyon which is to the south of town. This was used originally for experiments like the water boiler and the early efficiency and chain reactions; variations above that, also.

When we had plutonium in a subcritical form, it was used for these criticality experiments. That is where the first accident occurred on August 17, 1945.

Q Do you have any records of Mr. Lasovick being at Omega or involved in that accident?

A No. I have just been reviewing the accidents that occurred down there, and his name was not mentioned. I feel quite confident of that, because I have been pulling out all the old records.

We have also been real cooperative. I have not seen his name there.

Q You examined the records?

A Yes.

Q What is Pajarito? Was that another criticality accident?

A Yes. That is where the critical assembly experiments were moved after the first accident, the first fatal accident.

Q Did you examine their records?

A No. Just the records at the time of the accident of the people who were there.

Q And Daniel's name didn't come up at all?

A No.

Q Do you have any knowledge that he might have been at Pajarito?

A I would doubt it. I was never there, as I recall. Maybe I was.

Q What is Bayo Canyon?

A That is a canyon to the north of us. That was used for testing the implosion method of setting off the atomic bomb. There were large amounts of radioactivity which were blown up with T.N.T. with that.

Q Are there any records that Daniel Lasovick was in Bayo Canyon or worked down there?

A I have not seen any of the records, really.

Q You may not be the person to ask, but on a personnel record, what is meant by the statement "never at Trinity"? What does that mean? Does that mean he was not at the Trinity test, or he was never at the Trinity site?

A I would assume that it would mean that he was not at the test and had never gone down there afterwards. But I don't know for sure.

Q For people that went to the Trinity site after the test that

you have knowledge of, would you give them film badges to wear with them when they went to visit the site?

A As I recall.

Q Unless it was one of these unofficial visits or a visit where they did not report it to you, they would have had a film badge record?

A I think so, yes. I know that we were trying to keep this under control, but we may have failed on some occasions, because this is when so many of our staff had been ordered overseas.

Q When we were talking before, you said that occasionally you would excise cuts that were contaminated with plutonium. Do you have any recollection of the number of cuts that you did such excision on? Was it a large number?

A I would have to guess at it; I don't know. I would say maybe five or six, something like that. But the most memorable one was Wright Langham. He was trying to inject plutonium into a rat, and he stuck the needle into his finger. He came over to see me, and he was the most embarrassed person I think I have seen in my life.

Q Can you give me any idea how many you might have excised?

A Half a dozen.

Q Are you aware that Daniel Lasovick suffered a cut in April of 1945?

A No. I didn't know that.

Was it in a contaminated area?

Q In April of 1945, he was working in Room 301.

MR. ESTES: I don't think we have any record of where it was; whether it was at home or at work.

MS. WHITEFIELD: That's right.

MR. ESTES: We have no idea.

MR. HUGHES: We are not sure. He might have been cut at the barracks, for all we know.

THE WITNESS: Was it excised?

MR. HUGHES: Yes, I think so.

MS. WHITEFIELD: Let's just go off the record a second.

(A discussion was held off the record.)

THE WITNESS: It doesn't say anything about the tissue being sent to be assayed.

Usually when these wounds are excised, the tissue was sent over to Wright Langham's group for assaying.

Q That was usually noted in the record?

A Yes. This looks to me like an ordinary wound which was not excised; it was just cleaned.

MR. ESTES: I think the record ought to reflect that he is looking at Mr. Lasovick's hospital record; the notes from April 21 to 25, 1945.

Q (By Ms. Whitefield) But the fact that there is no statement about excision in there doesn't mean that the wound wasn't

contaminated?

A No. But if there was any thought that it might have been contaminated, it would have been excised. That would have been so indicated in the record rather than just to say the wound was cleaned.

Q What is a shot?

MR. ESTED: I beg your pardon?

MS. WHITEFIELD: Off the record.

(A discussion was held off the record)

THE WITNESS: There were T.N.T. shots all the time. I don't quite know what you are talking about. There were tests with T.N.T. many times a day.

There was also a shot at the Bayo Canyon area. I guess you would call that a shot when they were testing the implosion system with T.N.T.

Q (By Ms. Whitefield) A shot could refer possibly to either the T.N.T. or this test down at Bayo Canyon?

A Yes.

Q Can radiation exposure result from a shot?

A In the case of the Bayo Canyon where there was radioactive material involved, in the case of the T.N.T. explosions, no.

Q Do you know what a bomb firing is?

MR. HUGHES: Chemically or militarily?

Q (By Ms. Whitefield) I thought it might have been the name

being a bomb firing?

A No. I would think it was a general term. Although, in the usual test shots, I don't think the word "bomb" was connected.

Q Would Trinity be--

A That would be a test.

Q A likely candidate for the term "bomb firing"?

A Yes.

Q What kind of tests or monitoring did you do at Trinity besides the badges?

A We had very elaborate systems down there. We had monitors with radiation meters there with every party. I think everybody had film badges.

Quite early after the test, parties would go into the crater; one party went in a modifying tank, and each of these groups had their own; had several radiation monitoring devices.

I think they were all covered pretty well.

Then, at the end of the test, the procedures that were involved after the test, everybody's radiation badge was measure

Q Are you familiar, Dr. Hempelmann, with the different kind of protective clothing that was worn in the CM Groups?

A Yes.

Q Did that protective clothing vary much from group to group?

A I don't think so. I can't be absolutely sure of these

things because I wasn't over there, for one thing. But I think they just had standard clothing.

When you went into a contaminated area, you would put on these things like hospital pajamas; then a gown over that; then the mask and a cap and booties.

I think they all did it.

Q Later on, the face mask or the mask that covered the head was worn?

A Yes.

Q What kind of warnings were given to technicians regarding the dangers of plutonium, the dangers of uranium, and the hazards of external radiation?

A I remember in 1944, going around to every group and talking to the whole group, including the janitors, and telling them what the hazards were; what measures should be taken, and I would just give them a total briefing.

Then we developed these health safety--what are they called?

MR. ESTES: Handbooks?

THE WITNESS: Handbooks, yes. The first one I saw in the exhibit was in August of 1945. But I'm sure there were handbooks earlier than that.

But the hazards and recommended procedures were described in great detail. On one page, there was a statement saying,

"I have read the above and agree to abide by the recommended procedures," or something like that.

Then they would sign and send it in. I don't know who collected them, but I suppose the CMR did.

MS. WHITEFIELD: Reggie, would you check to see if there are any earlier handbooks to see if there are others than those which he has identified?

MR. HUGHES: There are. I may have even gotten a copy in the last two weeks. It would be the CM Division Handbook.

Q (By Ms. Whitefield) Could you tell me, Dr. Hempelmann, what you remember were the hazards you instructed them about in 1944 as to plutonium?

A They shouldn't eat it or breathe it. They should wear the protective clothing, masks, follow the procedure of showering when they left the contaminated area, and putting on their own clothes.

Q Did you warn them of any risks as you saw it, of ingestion or breathing plutonium?

A I don't think we spelled out too clearly what we thought might happen; what the worst situation was. We just indicated that it was bad, and they should follow the rules.

Q Were daily rem counts made?

A No. The film badges were collected every week or every month, depending on the hazards that were involved. Then, from

the blackening of the film, or in the case of neutrons, you could calculate the rems.

Q What kind of warnings did you give as far as the hazards of uranium?

A I think the only thing I could have said and probably said was that it is not a radioactive poison. It is a chemical poison with the kidney.

Q How about external radiation hazards?

A The external radiation is almost immeasurable; even if you were standing beside a huge block of uranium bricks.

Q What was done to protect people from external radiation hazards?

A Do you mean people not working in the D Building?

Q That's right; those that were exposed to external radiation sources?

A We would, of course, keep a careful record of what the radiation levels were, say, around the cyclotron. The areas where the radiation was the strongest, we would block those off, rope them off. Then we would indicate what the levels were and how long people could be there.

They all knew what the hazards were and what the dangers were. Then, we would check on their actual exposure by means of the film badge.

I'd better not say what I was going to say.

Q Are you sure?

A I was just going to say they would abide by the recommended procedures unless they were really very anxious to get the experiment done.

Unfortunately, the more scholarly and inquisitive the person, the greater the tendency to ignore the recommended procedures. The janitors, I am sure, always did what we told them to do.

Q Do you know exactly what kind of compounds of uranium Mr. Lasovick was working with?

A No.

Q Did Dick Baker?

A He didn't know the specific--

MR. HUGHES: Can we go off the record a minute?

MS. WHITEFIELD: Sure.

(A discussion was held off the record.)

Q (By Ms. Whitefield) Dr. Hempelmann, if you would like to, I have some questions concerning the health safety rules for the CM Division.

I guess they are here in the Answers to the Interrogatories.

MR. HUGHES: Exhibit M.

While you are looking, let me talk to the doctor again.

Let's take another quick break.

(A recess was taken.)

Q (By Ms. Whitefield) In the health safety rules, it says basically if a room count if over 5,000, work must be stopped.

Are you aware that in Room 301 A and B, between March 22, 1945, and August 29, 1945, the counts in that room registered infinite on some particular occasions?

A Yes.

Q Are you aware if those rooms were closed and decontaminated?

A I don't remember that specifically, but the procedure was to close the room and keep people out until the levels were down to what we considered tolerable.

Q Would a count of over 5,000 be one of those counts which your group would be called over on?

A Maybe not me personally, but with the Health Group, somebody would.

Q Would they, in turn, write a report or record of what happened?

A I wouldn't be surprised, particularly if the readings were infinite.

Q Would Mr. Popham's group also keep a record?

A Yes.

MS. WHITEFIELD: Reggie, could we check, or could you check and supply me with any records of decontamination during that period, and what notes were made?

A MR. HUGHES: Unless I am mistaken, you have the daily room

readings before and after the decontamination.

Q (By Ms. Whitefield) Was any records other than counts made such as positive explanations of why the count was so high?

A If there was an accident, or something like that, these were always written up.

Q (By Ms. Whitefield) Could we check and see if there are--

MR. HUGHES: You also have all the accident reports, or if there are any I haven't given to you yet, I will find them and give them to you.

I don't find anything written up about an accident in 301. The stuff you have had for nearly two years would cover that.

Now, if, especially 301, were counted over 5,000, then the team went in to decontaminate that room.

Here I am testifying. There is no particular report written up just because it got contamination because of what they were doing in the room; it was routine.

THE WITNESS: If the contamination was caused by an accident or something like that, that was written up.

MR. HUGHES: It was, but to the extent that accident reports are still available, I have given them to you, or there may be a few more things in the stuff I am about to give you.

Q (By Ms. Whitefield) If the room kept reading infinite because it was just an overload and the safety procedures were not adequate to handle the safe, proper testing of plutonium,

would any reports be written up explaining that that was the situation as opposed to an accident?

A I don't recall. I'm sure that during the period we are talking about, just before the end of the war, everybody was so overloaded, the CMR Division was so busy cleaning up places and marching that they may have overlooked the procedure. There were 40 people in that division working on that, and they were just as busy as they could be.

Q When an infinite count was measured, were the people in the room notified that that was the count in the room?

A Sure. I think they would have been shut out of the room until the levels were brought down.

Q In your History of the Health Group, you state that in August of 1944, following an accident in which plutonium blew up in the face of Donald Mastick, a research program was begun to study the biological problems related to plutonium.

Was that research program undertaken? If so, what were the results and who were involved in it?

A I think we hired some people to try to assay plutonium in the urine.

When was that?

Q It was August of 1944.

A They weren't particularly good chemists. Then, we finally

were able to get Wright Langham, who had been the plutonium assayer.

The group had another man under Norman Potratz, and we were able to get him transferred to take over this program.

After he took charge, things moved right along.

Q The urine test was the eventual result of that program?

A Yes.

Q In your 27-year study of the 25 plutonium workers, three were dropped from that program. What were the body burdens of the three that were dropped?

A I can't tell you offhand. As I understand it, I know the figures 27, 26, and 25 were used differently. Of course, what I think happened there is that there were 27 men, and one fellow who lived in Albuquerque was uncooperative.

I forgot what his name was.

At this time--I am not quite sure when it was--but his latest urine counts were much lower than the earlier ones. He had a much smaller body burden than we originally thought. Because of this, and because he was uncooperative, we dropped him.

So that left 26.

At the time of that, the report that you are talking about, one person had died. So we dropped him.

We were talking about the 26 living.

In the last report, I think we went back and one more person had died. But I think we went back to the 27.

Q On Page 12, it said that you had originally started out with 29, and that three were dropped. I imagine one of the three might have been the uncooperative one?

A Yes.

Q Do you have any recollection about the other two?

A No. I don't even recall writing this.

Q Or why they were dropped?

A No.

Q In your study of the 224 plutonium workers, you found seven deaths from cancer and five persons that were still living with cancer. Have there been deaths of those five?

A Not that I know of. I might tell you what happened there.

I am a self-taught epidemiologist. I have been doing this sort of population study for 25 years. I have also been lucky in that people have guided me. But I have never had any training in it.

So George and I were doing this on our own. We were just extending the study of the 27 people. We were sending out these questionnaires. I think we developed the roster in 1973. Then, we sent out about two questionnaires.

Then a trained epidemiologist was hired, a fellow named Jim Stebbing. I think he thought our methods were very

amateurish so he sort of dropped the study in 1975. Now he is interested in it, and he is going back to it.

But I think the reason he dropped it is that he was in charge of following the 15,000 people; you know, people who had been exposed or potentially exposed to plutonium.

He felt if we took this group out and treated them differently, then that would bias the whole study.

I think that was his reasoning.

But he didn't want to continue that at the time. Of course, I was only a consultant. I couldn't do it on my own.

Q Dr. Hempelmann, isn't it true that 12 cancer victims, this seven dead and the five living, had body burdens of less than 20 nanocuries?

A I don't recall. But does it say that in there?

Q Yes. There is a table in there.

MR. HUGHES: Is that the 224-worker one?

MS. WHITEFIELD: Yes, the 224-worker one.

THE WITNESS: Here. I can get it very easily.

MR. HUGHES: Exhibit N.

THE WITNESS: I think Table 2 or 3, or something like that--maybe it is the other one now.

Q (By Ms. Whitefield) I can't seem to find it, either.

A That is the expected number of deaths.

MR. ESTES: It doesn't tell what body you are on.

THE WITNESS: This must be it.

I saw it today. It is not that one.

MR. HUGHES: These two are the same.

THE WITNESS: No, they aren't, really. Maybe I didn't bring it with me.

But there is a paper on these 224 that George Voelz presented at Oak Ridge in October. I got a copy yesterday.

If it isn't here, it is in my coat.

MR. HUGHES: It isn't that one?

THE WITNESS: No. Maybe it is in my car; I don't know.

MR. HUGHES: That is a more recent one than we have, I think; is that correct?

THE WITNESS: Yes. You can get copies from Mary Jo.

Q (By Ms. Whitefield) Okay; that is fine, Doctor. I will get copies of that myself.

A Table 2.

Q But you don't remember?

A No.

Q On your 32-year follow-up, have there been any efforts to update that on those men since March, 1978? Was this October paper that you are referring to an update of the 32-year study?

A No. It was an update of the 224.

Q Has there been an update of the 32-year study of your origina group of 26 workers?

A Yes. That has appeared in Health Physics.

Q Is it authored by you?

A George Voelz is the author.

MR. ESTES: You are speaking that the 32-year study appeared in Health Physics, in other words?

THE WITNESS: Yes.

MR. HUGHES: You had it? I didn't know you had that one.

MS. WHITEFIELD: Yes.

Q (By Ms. Whitefield) What I am asking is: Has there been any follow-up since this study?

A No. We have been doing them every five years. We have been updating them every five years.

Q Have you been getting medical records on these men in the years that have passed since this came out?

A No, I haven't. I am ashamed to say I was supposed to write a letter to them, and I just haven't. But I'm sure that if there are any new symptoms the men thought were serious, they would let us know.

Q You haven't heard from them?

A No. We assume they are all right. That is what I will do during this period that I am here. I will draft a letter and send it to them.

Q Could you inform me if there are reports of any new cancers in the group?

A Yes. We would have heard of that.
Q I suspect so.
A This is a very close group, really. Wright Langham used to send out newsletters. Then, we would know what we were looking for, and they have been very cooperative.
Q Have more cancers developed in the group of 224?
A I don't know. We have not followed them up. But I think Stebbing is going to.

MS. WHITEFIELD: That is all the questions that I have.

Thank you, Dr. Hempelmann.

MR. ESTES: I will ask you a couple more for clarification, Doctor.

EXAMINATION

BY MR. ESTES:

Q You left Los Alamos in 1948; is that right?
A Yes.
Q You have done research at the University of Rochester Medical School on radiation-related matters; is that correct?
A Yes.
Q This particular question that has come up on measurement of plutonium deposited in the lung, is that something that you specifically have done research on since 1948?
A No. This work has been done by the men who build whole

body counters.

Q Is this something that George Voelz is involved in?

A Yes. His group is, but there also has been some work done by somebody on developing a small counter which would be put down the esophagus to the level of the tracheal lymph nodes in the hope of picking up something there.

Now, I haven't heard anything about that for the past two or three years, so I suppose nothing came of it. George Voelz would know.

Q If we want to know progress in the lung, George Voelz and his people are the world's leading authorities, as far as you know?

A They are among the world's leading authorities.

Q There was some discussion of a period of time during which the amount of plutonium being processed was greater than the equipment they had to handle it, I guess, was the thrust of the thing.

The reference, the discussion on Pages 10 and 11 of your History of the Health Group, and specifically on Page 11 where it says, "The facilities were adequate to meet the demands for handling plutonium as what it sets acceptable for a short period during July of 1945, when the Recovery Group (CM-5) handled the amounts of plutonium which exceeded the capacity of its safety equipment."

Is this generally the period and the incident that you were discussing?

A That is the time when these high urine counts were discovered.

Q It indicates, following the text, that four persons were exposed to amounts in excess of a safe amount.

Was any one of these four Daniel Lasovick?

A No. These were the people in the Recovery Group. I would think you could pick them out from that 27-year study.

Q These would be people that are in the 27-year study of the 26 or 25 people; whatever it is?

A Yes.

Q Lasovick is not one of those 25 or 26?

A No.

MR. ESTES: I think that is all I have.

Thank you, Doctor.

MS. WHITEFIELD: That's it. I have no more questions.

(The Deposition was concluded at 3:30 P.M.)

* * * * * * * * * * *

Transcribed by: Nan Adamson

Proofread by: Irene Moore

STATE OF NEW MEXICO)
: ss.
COUNTY OF BERNALILLO)

I, the officer before whom the foregoing Deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing Deposition was duly sworn by me; that I personally recorded his testimony; that said Deposition is a true record of the testimony given by said witness; that I am neither attorney nor counsel for, nor related to or employed by any of the parties to the action in which this Deposition is taken, and that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in the action.

Notary Public

My Commission expires:

4/28/91

Cost of the original to the Plaintiff: $137.00

DALE H. ELLIOTT
Court Reporters

00130840.072