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FERNALD LIVING HISTORY PROJECT
Transcript

Name: Weldon Adams
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Tape FLHP0234

00:01:18
Q:
We're going to start at the very beginning. Uh, if you could uh, first of all just give us your name and how to spell it to make sure we have it right.

A:
Okay, my name is Weldon, W-E-L-D-O-N, Adams, A-D-A-M-S. Middle initial, J.

00:01:32
Q:
And uh, what is your title in relation to Fernald, or what was your title in relation to Fernald?

A:
I left Fernald as the Assistant Plant Manager. And my basic responsibilities were the operation of the plant. And before that I was the General Superintendent, which meant that I was in charge of all the production operations at the plant.

00:01:55
Q:
Great! Now if you could give us a little background, sort of pre-Fernald, where you went to school, a little bit about your family, those kinds of things.

A:
Well, I'm kind of a self-educated person. I actually finished college going to school in the evenings at the University of Cincinnati. And I have an engineering degree from the University of Cincinnati. I grew up in the area.

00:02:20
A:
I'm a graduate of Green Hills High School. Green Hills High School doesn't exist anymore. They combined it with Forest Park. But I'm a graduate of Green Hills High School, and then I'm also a graduate of the University of Cincinnati.

00:02:33
A:
And uh, put myself through school, and uh, did some work for a little while on a masters degree but didn't see that it was gonna do me that much good so after a year or so I dropped out.

Q:
And tell us a little bit about getting your job at Fernald. How did you first get your job at Fernald?

00:03:00
A:
I saw an advertisement in the newspaper and uh, they wanted an instrument engineer. And I had worked, was working at Champion Papers at the time as an instrument engineer. So I came here and applied for a job and I was hired as an instrument engineer. And my job was to help set up and calibrate all of the instrument and control systems that controlled the processes.

00:03:30
A:
And in many case, cases, to modify those so that they worked better. And you want to remember that this was a new technology, so when the plant was first built, a lot of things didn't work very well. Because people didn't know, you know, exactly how to handle these new technology and these new materials.

00:03:53
A:
Uh, some of the work had been done on the Manhattan Project but there was still a lot of things that needed to be done. And part of my job was to go into the plants. In fact I worked and I, I, I led start-up crews, uh, I actually went into the plants with my people and I would sit up a little place out in the plant.

00:04:15
A:
Usually right in the middle of the plant, and I would lead the crews of people and we would work on these instruments and control systems and try to get them to work better so they would control the processes.

00:04:28
A:
And I did that until about, I don't know, I guess about 1958 or '59, and I became the senior instrument engineer, and I headed up the entire instrument maintenance department. I had about, I guess about 70 people who worked for me during that time.

Q:
Great! And what year did you start at Fernald?

00:04:51
A:
I started at Fernald in 1953, in July of 1953. So, much of the plant wasn't built at that time. So we were still building the plant. And we were starting everything up; almost nothing was started up. And as I say, we went in with what we call "start-up" teams.

00:05:09
A:
And uh, I had a group of hourly people and some salaried people who would go in with me and then we would try to get these plants started up and working.

Q:
What was your very first impression of the plant when you first got here?

00:05:23
A:
Well, I worked at Champion Paper, and this is gonna surprise a lot of people, but Champion Paper wasn't a bad place to work. My father had worked there, and my uh, uh, wife's people had all worked there. My grandfather worked, my grandfather was killed in an industrial accident there, by the way, when I was 7-years-old, in 1935.

00:05:46
A:
And I remember my father, who was the maintenance superintendent of Champion Paper, asking me the question about Fernald. What did I think of it? And I can tell you exactly what I told him. I said dad, I said, it is the cleanest, safest plant I've ever been in. I mean it was so much cleaner than Champion, for example.

00:06:10
A:
And of course, as I explained to him, everybody had to change their clothes twice a day. Everybody got an annual physical examination to make sure that they were all right. And uh, everything was just super clean compared to most industrial plants that I'd been in.

00:06:30
A:
So my first impression was what a clean, safe place it was. And I'm afraid I have to stand by that impression. A lot of people would argue the point. I felt it was the cleanest, safest place I had ever, plant I had ever worked in.

Q:
Are we getting chatter? Okay! That's fine. Excellent, okay, so uh, tell us a little bit about those early years, 1953. What was a typical day like, what was the site like?

00:07:03
A:
Well, it was a very exciting time. And we had the sense of doing something extremely important. You see, after the Manhattan Project, we were the only people that had nuclear weapons. And that gave us a uh, that gave us a great sense of security.

00:07:24
A:
It didn't matter how many tanks and planes and guns the Russians had. They couldn't win the war with us and they knew it. But in 1949 they set off their first nuclear weapon. We didn't have very many nuclear weapons in 1949 and a lot of people don't realize it but we didn't have the capacity to make many nuclear weapons.

00:07:46
A:
The big complex was built in the early '50's, not during the Manhattan Project days. (Phone rings in background) And uh, that's my phone, no it isn't. Uh, so we had to build the entire complex in the early '50's. And uh, there was a very great fear in Washington that the Soviets would build more and better nuclear weapons than we had at the time. (Phone ringing.) Can you shut it off? I have to answer my phone.

00:08:15
Q:
Sure, no problem. Can you hang on for just a second; it'll take about five seconds to roll here. Okay, great!

A:
So, uh, the nuclear weapons complex, almost the major part of it, probably 85 to 90 percent of it was built in the early 1950's. And from about 1950 to about 1955 or '56, and we were part of that.

00:08:39
A:
And there was a tremendous crunch on, a terrible hurry, to get all of these facilities working. So we uh, pressure was continually generated by the Atomic Energy Commission to get the facilities up, and get them running. Just the best way we could. And uh, we could work as much overtime as we wanted.

00:09:08
A:
They begged us to work overtime. I would work double shifts, 16 and 18-hour days. And I would have to beg my people to stay and work with me. And uh, but there was this tremendous sense of excitement at the same time. And we would visit the other facilities to exchange information with them, and since we supplied some of the other facilities with the basic uranium raw materials, we made a number of visits there.

00:09:39
A:
I can remember the first visit to Oak Ridge in 1954. And uh, I can remember being very excited about that, I had never been to Oak Ridge before. But there was this air of excitement, and there was this feeling that you were doing something important. We were saving the free world. We believe that, regardless of what anybody may say about us now.

00:10:02
A:
We believed we were saving the free world. And we were going to produce more and better nuclear weapons than anybody else could produce. And we did. We beat them to the hydrogen bomb, and uh, we produced more and better bombs. And we produced safer, cleaner bombs than they did. That is if a nuclear weapon can ever be called safe.

00:10:23
A:
But compared to theirs, ours were much cleaner, and much safer. And uh, so it, you know, it was a time of great excitement, and a time that we felt we were doing something very important.

Q:
So, uh, if you could tell us a little bit about the political situations in the world, those, in those days too, the types of things that were going on historically.

00:10:48
A:
Well, uh, as Winston Churchill put it, the Iron Curtain had dropped down across Eastern Europe. And we knew that the Soviets were rushing hard to build nuclear weaponry. And uh, in uh, I think it was 1953 or 1954, they had set off a weapon, which, while it was not a hydrogen bomb, we knew it was a precursor of a hydrogen bomb.

00:11:17
A:
And we knew they were well on their way to developing a hydrogen bomb, more properly called a thermonuclear weapon, and that frightened everyone in the government. So there was even more pressure put on us, get the material out. Because you see, we made the basic material, uranium itself is not all that hazardous, it isn't very radioactive, well to give you an idea, radium is a million and a half times more radioactive than uranium.

00:11:48
A:
And plutonium is tens of thousands of times more radioactive. But still it's the basic raw material; it's the place where you have to start. And until we could fill the entire system with uranium, so as to fuel the reactors, the gaseous diffusion plants and all the rest of the system. Then the rest of the system couldn't get up to speed either. So we were the starting point.

00:12:16
A:
And we had to produce the material, because if we didn't produce the material, then Oak Ridge and Savannah River and Hanford couldn't produce their materials. So there was a lot of pressure to get our system up, get it started, get it running. And that's why you'll hear a lot of people say, well, you know, they uh, a lot of this equipment didn't work properly and this is why we had all the emissions and discharges.

00:12:43
A:
And, of course, we did. About 90 percent of the emissions and the discharges from dust collectors, well between 80 and 90 percent, came in those early years of production. Say, prior to 1958, because a lot of the equipment just didn't work very well. Uh, it wasn't designed properly to do what it was supposed to do. Now, we didn't design it.

00:13:03
A:
This was designed by other people and given to us to make work. And all of it just didn't work. That's what I did in the start-up teams. I would go into these buildings and try to make this equipment work. And sometimes it didn't work very well. And I was once in a meeting with a group of people, including some Atomic Energy Commission people, in which I said, look why don't we just shut the whole place down, and just kind of start over.

00:13:30
A:
Take about two years and make sure that everything works. And then start it back up. The answer was, we don't have the time, we can't do that. National security will not allow us to do that. We have to get this place up and running as best we can. And so that's what we did. And that decision came out of Washington, it didn't come out of here.

00:13:50
A:
It wasn't our decision. Had I had my way, in 1954, we'd have shut this place down for about two years, re-engineered, re-designed, re-constructed and started it back up again. And I actually made that proposal. It's a rather brash proposal. Here is this 26 or 27-year-old, young engineer, telling these people to shut the place down for two years.

00:14:12
A:
They didn't like that very well. But, and they didn't do it, they couldn't do it, they really couldn't do it. In the interest of National Security, we had to get the place running and we did. And we did it on orders from Washington – pure and simple. Just that, that's the fact of the matter.

00:14:31
A:
I was there I know what happened. I was in the meetings, I visited the other sites, I saw them having similar problems to the problems we were having. Things just didn't work very well, because the technology was new. Brand new.

Q:
When you first got to Fernald. How much did you know about the process?

00:14:51
A:
Virtually nothing, I had to learn it from scratch, but the problem was, nobody else knew anything about the process either, to speak of. So, we were all learning. We were all basically on a learning curve. We were all trying to learn what had to be done, and do it.

00:15:10
A:
And it was a rather complicated process; it was difficult for us to learn. It was different than almost anything that any of us had ever done before. So, no, I didn't know very much.

Q:
So, how long did it take you to learn the entire thing? And, like, what year did you finally see the big picture?

00:15:36
A:
Probably took me about two years. But, I was unique, you see, the instrument control processes controlled everything. So in order to set up the equipment that would control the processes, you had to know the processes.

00:15:56
A:
So I had to learn the processes more quickly than almost anybody else. Most of the other people, they were only involved with one specific part of the process. Uh, for example, the people around the rolling mill had to learn how the rolling mill worked. And the people that ran the ore refinery had to learn how the ore refinery worked.

00:16:16
A:
But I had to learn how all of the processes worked, because I had to learn how to control all of the processes. And I took start-up teams into each of the buildings in turn. As they started up. And so I had to learn them. So I probably learned the processes quicker than most other, well there were probably some other people up near the top of the heap.

00:16:39
A:
I was a young engineer at the time, so. But there were some people near the top; there was a fellow by the name of Cliff Chapman who probably knew the processes pretty well. He was the superintendent of production, at one time or another. So he learned them pretty quickly.

00:16:53
A:
But I was one of the handful of people who knew all the processes. And not because I was any smarter than anybody else, it was part of my job to learn them.

00:17:06
Q:
And, um, as far as the plants themselves if you could just sort of go through them in order if you can remember (laughing) and tell us a little about each of the plants you were in.

00:17:23
A:
Well, O.K., the first plant was the Ore Refinery and in the Ore Refinery uranium ore and uranium concentrates were brought in. The original ores were brought in from Africa, which is now the Belgian Congo, but there weren't very many of those and I'm going to have a little more to say about those in a few minutes.

00:17:47
A:
But most of the ores we processed were ore concentrates and they were very impure. They contained considerably less than one percent uranium as they were dug out of the ground. But they were ours; they came out of the United States that are accessed to them. But during the Manhattan Project we didn't have time to take ores that were less than some fraction of a percent uranium.

00:18:19
A:
And get the uranium out of them. And at the time there were three very rich; well, in the history of the world there had been three very rich ore deposits. Well, one of those was located in a place called Yokum Stahl in Europe and that is what was called the Sudetenland and if you remember your history of the First World War it was on the border of Germany and Czechoslovakia.

00:18:44
A:
And when the Germans conquered most of Europe they took over the mines at Yokum Stahl and Hitler slapped an embargo on the uranium because he wanted to develop his own programs. The second and by far the richest deposit of uranium in world was a place called Shinklelobe. And please don't ask me to spell that but its spelled in a book I've written but it was a place Shinklelobe and what is now Zaire was then the Belgian Congo.

00:19:19
A:
And it was the richest store of the richest deposit of uranium in the history of the world. Some of the ore deposits were 60 percent uranite that is 60 percent uranium oxidate and it was controlled by the Belgian's but Belgium was conquered by the Germans and everybody was terrified. The Belgian's was terrified that the Germans would lay their hands on the ores from Shinklelobe.

00:19:46
A:
And they had a couple of thousand tons of ores sitting around in Belgium. They were extracting the radium rather than the uranium from them but they then arranged to send that to the United States. Believe it or not it was stored on Staten Island in New York after the Germans over ran Belgium. And then they shut down the mines at Shinklelobe and flooded them.

00:20:14
A:
So that if the Germans would get there it would take them a while to start the mines up. So then the third deposit was up in Canada and it was so remote and out in the wilds of Canada it was difficult to get the material out. Now the British, of course, had more access to that than we had, but they were willing to share except that it was difficult to get the material out.

00:20:39
A:
So when the Manhattan Project started, Colonel Nickels who worked for General Groves went to the Belgian's because the President of Belgium Corporation by the name of Senay or Senaire was escaped

to the United States and he asked him if he could have that material. They found out that there was material on Staten Island and the Belgian's happily gave it to us.

00:21:06
A:
And then we wanted to restart the mines so we did and the mines were, you know, the water was pumped out of the mines and the mines were started up again. And the original uranium came out of those because it didn't take much; it didn't take nearly as much refinement to get it into the pure uranium state.

00:21:28
A:
But there was a limited supply of that and that material was going to run out and we knew it, so we had to develop our own resources. So we only processed a few thousand tons of the Belgium ore and the last of that was processed at Fernald in 1958. But it was a very small percentage of the total amount of material we processed.

00:21:53
A:
Um, but there were concentrate mills set up out on the Colorado Plateau and they would take this one-tenth of one percent material and they would then concentrate that up to where it would be 35 or 40 percent. And that was so they wouldn't have to ship tens of thousands of tons of rock to us. And, but there was very important in one respect, and I'd like to get that across in this interview.

00:22:19
A:
You see while uranium itself isn't very hazardous, the uranium in the ground is hazardous and the reason for that is because it decays into other materials. And there are fourteen steps in the uranium decay process and one of those is radium and then radium releases radon and a lot of people are frightened of radon. More than they ought to be frightened but none-the-less it is a very hazardous material.

00:22:53
A:
So the uranium as it is dug out of the ground contains these daughter parts and each of these are radioactive, so uranium is about 14 times as you dig it out of the ground, the uranium ores are about 14 times more hazardous than the pure uranium. Now the Belgiam material was not processed in any way so all of those materials were there and they came into us and they came into the people at St. Louis at a place called Mallinckrodt Destrehan Street.

00:23:28:
A:
And they processed most of this material. We processed only a small part of it. But it was much, much hazardous to deal with because it had the daughter products. However, when the concentrate mills out on the Colorado plateau when they concentrated the material, the daughter products were stripped out. The uranium was removed and therefore the radon, about 99.9 percent of all the material was removed.

00:23:59
A:
And so the material was much less hazardous and much less innocuous when it came to us. So the great bulk of the material that we processed had the nasty removed. Now there have been people, for example people in FRESH that said, "yes, but that material's built back in." Well, it really didn't because the fourth decay product is a thorium isotope that has a half-life of 80 thousand years.

00:24:24
A:
So for the material to build back in took tens of thousands of years, so it didn't build back in to any appreciable degree. So the material that we processed, the lion's share of it, was innocuous material. Now we did process a few thousand tons of the other material between 1953 and 1958; however, wasn't much of that material.

00:24:53
A:
Now, you've heard, of course of the K-65 tanks. Okay, the K-65 tanks are the residues from that processing of the Shinklelobe ores and they're the nastiest. All of the radium, and the thorium 230 and all of that material is contained there. But most of that material, well over 80 percent of it was processed elsewhere, and was just shipped here for storage.

00:25:19
A:
And, um, am I familiar with that, yes I am. I helped to measure some of the material that went in; by the way I've walked around on top of those tanks. Uh, so yes I know about that material, but most of that we didn't process, that was shipped here from elsewhere and we didn't have any choice but to take it.

00:25:39
A:
When Fernald was built the Atomic Energy Commission said hey we've got to go and do something with that material so let's process it. And, by the way none of that is Manhattan Project material. This is something I tried to tell the newspaper people and they don't listen to me. All, you see the Belgian's wanted those residues back originally and until 1949 all of those were shipped back to Belgium.

00:26:08
A:
Now we weren't operating in 1949, this work was still being done at Destrehan Street in St. Louis, Missouri. But in 1949 the Belgian's, the contract with Leslie Groves, I have a copy of that contract if anybody ever wants to look at it. But the contract between the government, the United States government and the Belgian's was such that the Belgian's could either take it back or they could cause us to store it for 10 years. Ten years was the limit.

00:26:37
A:
And in 1949 they said we aren't, we don't want it back for a while. You have to store as per the terms of our contract except that the government had no place to store it. So they decided to build the tanks

at Fernald and it was supposed to be stored here for ten years. So it was shipped here and dumped into those tanks here on the site.

00:27:03
A:
Now we had to monitor those tanks and take care of them but we didn't build them and we really didn't want this material. It came here because the AEC owned this place and everything here, so if they wanted to build tanks here and store material they could do it and they did. But they were only supposed to store it here until 1959.

00:27:25
But in 1958 they decided they still didn't want it. So it was a big meeting and I can't remember it, it's in my book. I've written a book on this whole business at Fernald. But there was a meeting, I believe it was in New York between the Belgian's and the United States government including the AEC. And the AEC for some inexplicable reason, now I have the minutes of that meeting, but they're not very clear.

00:27:44
A:
The government agreed to continue to keep that material here at Fernald. They agreed to keep it until about 1983, 25 more years. Now that was absurd, it was a terrible mistake by the government because the tanks were only designed for a 20-year life. So it meant that the tanks had reached the limit of their design life by about 1970 and we were supposed to keep the material until 1983.

00:28:22
A:
However, in 1983 the Belgian's decided they still didn't want it. And so there was an agreement made, at the time the State Department wanted to put cruise missiles in Belgium because cruise missiles in Belgium could reach the Soviet Union pretty easily.

00:28:39
A:
So there was an agreement made between the State Department of the United States and the Belgian government and the Belgian Corporation, Union Meneira to keep the material here at Fernald in exchange for the Belgian government's permission to put cruise missiles in Belgium.

00:29:00
A:
I was the assistant plant manager at the time and I was enraged when I heard of that decision. I said what are we supposed to do with this material, what are we supposed to do with the tank. I went right through the ceiling, we protested the decision to the Department of Energy and they just simply ignored us.

00:29:16
A:
They did give us some money and the amount of money they gave us to continue to store the material was pathetic, was about $9 million, most of which never even got here. Um, so you can see this is one

of my grievances of the Department of Energy, they just left us holding the bag on this material. Well, it's kind of a long-winded story.

00:29:44
Q:
No that's okay; we're going to switch tapes.

Tape FLHP0235

01:01:06
Q:
Okay, so I'll just put it to you this way, what do you say to people who say that in K-65 silos there's Manhattan Project material?

01:01:13
A:
I would refer them to an official document, an Atomic Energy document. And the document which is dated April 22, 1949 by a couple of AEC officials, E.C. Sergeant and H.F. Frashard states very clearly that all of this material was shipped back to Belgium prior to April 1, 1949. After 1949 it was stored in this country but unfortunately they had no place to store it until they built the tanks at Fernald.

01:01:51
A:
Now if you like I'll tell you where it was stored. It was piled up in drums; a lot of it in St. Louis at the old airport in St. Louis, just simply piled on the ground in drums. And then a lot of the rest of it was sent to the Lake Ontario ordinance works where it was either piled up in drums or dumped into an old water tower that was converted for the use of that site.

01:02:26
A:
Then most of that material was shipped to Fernald after the K-65 tanks were built. But for several years it was piled up, and by the way the old airport is a part of the St. Louis international airport today. So that's where that material was piled up and the drums began to leak badly. When some of those drums came into here they were in terrible shape.

01:02:52
A:
But we had nothing to do with that. This was the Atomic Energy Commission who had made those decisions. Now why they allowed the Belgian's to do this I don't know. The material should have been shipped back to Belgiam until we had a suitable storage facility to put it in; but while the Atomic Energy Commission was told this they didn't listen.

01:03:12
A:
And so it was stored in a lot of drums that were, had begun to deteriorate badly. Now the material was originally shipped back, in case you're interested and this is all in the official government documents, uh, copies of which I have, all of the copies.

01:03:27
A:
I don't talk about many of these subjects without having documents and other information to support what I say. It was shipped to a place called Olan, O-L-A-N, in Belgiam, and that's near Antwerp. The material came into the port of Antwerp, and came in basically from two places, the United States and Great Britain.

01:03:47
A:
It was shipped in to Olan, Belgium. And then what the Belgian's did with it, I don't know. I assume that they extracted the radium from it. And maybe the uranium as well. I never got into it that deeply. But uh, uh, uh, there is absolutely no question this was not Manhattan Project material, because the Manhattan Projects ceased to exist in 1946.

01:04:11
A:
The Manhattan Project was brought to a close in 1946 and the Atomic Energy Commission was created to take over nuclear weapons production. So, by the time this material began to accumulate the Manhattan Project had been deceased for three years. And by the time they began to dump it into the tanks out here, at Fernald, the Manhattan Project had been dead for five years.

01:04:38
A:
Now, there could have been a few drums that somebody forgot to ship back to Belgium. Or for one reason or another, happened to, uh maybe they were at the bottom of the stack and they didn't get at them. And so there could have, conceivably, been a few drums of material. I don't know that, and neither does anybody else. That may have had an origin in the Manhattan Project.

01:05:00
A:
Now it doesn't make a whole lot of difference whether it was Manhattan Project material or not. It was the same material whether it was the Manhattan Project or AEC material. And it was basically used for the same purpose. There was, however, you know there was a continuing, there were continuing attempts to make everything safer, and to take care of the material better.

01:05:22
A:
And so the material that was generated later was probably safer than some of the material generated earlier. Because the Manhattan Project, you know, was done in a terrible, terrible hurry. And they took a good many shortcuts. We had to do that in order, we felt, to beat the Germans to the bomb. Uh, actually the Germans weren't very far along with the bomb.

01:05:44
A:
But, we thought they were at the time. We were terrified that they were. So we, there's no question there were some gambles and some risks taken by the U.S. government, so that we could have the bomb before anybody else. But no, that material out there is not Manhattan Project material.

01:06:02
A:
I have tried to tell people that over and over again. I have even referred them to the documents, I have told them where to look for the documents, and for some reason they don't want to do it. It's not Manhattan Project material.

Q:
What does K-65 mean?

01:06:19
A:
You know, I really don't know. Uh, but you see back in the early days everything was classified, everything was classified secret or in some cases even top secret. So everything had a codename or a codeword. For example, at Oak Ridge, there were several processes to try to enrich uranium.

01:06:45
A:
The gaseous-diffusion process, which is the one that we originally hit on, was just called K-25. You didn't call it the gaseous-diffusion process because this would have alerted our enemies. The Germans, the Japanese, the Russians, whoever that we were doing gaseous-diffusion. So you didn't say the gaseous-diffusion plant, you said K-25.

01:07:07
A:
Uh, the other plant, the electromagnetic separation, was called Y-12. We didn't call it the electromagnetic separation plant, we called it Y-12. We didn't want people to know what this material was or where it was being stored so we called it the K-65 tanks. The same way, originally at Fernald, the uh, what we did was classify it, after about 1958 or '59, virtually nothing we did was classified.

01:07:38
A:
Uh, some of the materials we produced and what happened to them afterwards was classified, but virtually nothing after about 1958 or '59. But, originally everything was classified, so we didn't talk about green salt, or uranium tetrafluoride, we called it talcum. And we didn't talk about brown oxide we called it cocoa.

01:08:04
A:
And so we had the cocoa reactors and the talcum reactors because a spy reading the report could tell nothing by reading talcum or cocoa. So what the origin was for K-65, I don't know. It was just letters

and number that people literally pulled out of the air to identify it. That's what all of this was all about. The same way why would you call brown oxide cocoa?

01:08:28
A:
Well, it looked a little like cocoa, so you called it cocoa. Now why you would call green salt talcum, I don't know, because I never saw any green talcum powder in my life. But it was talcum.

Q:
So that was Y-12. I've heard people referring to the Y-12 plant and I never knew that that was why they did it.

01:08:46
A:
Here's, here's what, here's, here's what, here's, here's the origin of all of that. And it's again a very interesting story. You see we knew we had to enrich uranium, highly enrich it. If we could get enough enriched uranium and put it together and hold it together, we would have a nuclear weapon.

01:09:04
A:
But ordinary uranium only contains a small quantity of U-235, about seven-tenths of one percent. So there were at least three methods investigated as to how to enrich uranium. One, and the one that the Germans pursued, was called thermal diffusion. Hugh towers were built, oh they weren't that big, but towers were built, and I won't go into all the technical details but they were like tubes within tubes.

01:09:39
A:
And they found that the 235 tended to collect selectively depending on the temperature of the liquids that were pumped through. And these were uranium liquids, uranium bearing liquids. And that system didn't work very well. We had the idea that we could do it the American way to do it was electromagnetic diffusion.

01:10:02
A:
Or electromagnetic separation, not diffusion. We would take these, what we would do is gasify the uranium, turn it into a gaseous compound called uranium hexafluoride. And then we would pump it through filters with the tiniest microscopic holes you could imagine. And since the 235 molecules were a little smaller than the 238 molecules they tended to go through more quickly.

01:10:28
A:
So after each of these barriers, and there were hundreds, thousands of these barriers. The 235 gradually increased. Now that method was favored by the British. Uh, oh that's gaseous diffusion, I got it back, I just described gaseous diffusion. That was the British method. We had what was called the electromagnetic separation method that was favored by the Americans.

01:10:52
A:
The electromagnetic method these were really big uh, uh, uh, well, what they were, they were big magnets. And we, we sent the gas in to those magnets, and we ionized it, and then we deflected it with the magnets. The U-235 because it was lighter deflected a little more than the 238 and we collected it.

01:11:23
A:
Now because we were so rich, and we had so much, we tried all three methods. At Oak Ridge we built the gaseous diffusion plant, as per the British. We built the thermal-diffusion towers, I think about 2,000 of those, as per the German method. And we built our own electromagnetic separation plant.

01:11:47
A:
Now the electromagnetic separation plant was Y-12. The gaseous diffusion plant was K-25. The method that worked best was the gaseous diffusion. So Y-12 was originally abandoned, when I arrived there for the first time in 1954, nothing was going on at Y-12. But later on as the system built up Y-12 was converted to other uses.

01:12:14
A:
There were a lot of things done at Y-12. I could get into great detail on that, the uh, there was, the separation of the lithium was done at Y-12. Many of the bomb casings were machined at Y-12. There was a lot of work done at Y-12; it was a kind of a big catch all plant.

01:12:33
A:
But originally it contained just; these things were glorified mass spectrometers. You don't know what that means, but these were glorified mass spectrometers. And there were thousands of them in there, and we tried to separate the uranium-235.

01:12:49
A:
So we had three methods, we tried them all. We picked the one that worked best. And we built two more gaseous-diffusion plants, one at Paducah and one at Portsmouth.

Q:
Speaking of which, I think a lot of people have a misunderstanding about the entire DOE complex and how Fernald fit into it. Can you explain that a little bit?

01:13:08
A:
Yeah. Yeah. Here is the way it worked. And in my book, that I've written, there is a complete diagram of the whole weapons complex. What happened first of all is that you started with the pure uranium. And we got uranium ores from the ground; we purified them at Fernald and converted them into several materials.

01:13:32
A:
We converted them either into orange oxide or we converted them into what we called green salt, uranium tetrafluoride, or we took it all the way to metal. All right, some of our uranium tetrafluorides were then sent to various other places, usually to Paducah.

01:13:52
A:
Where they were burned in a stream of pure fluoride, fluorine, and converted into uranium hexafluoride. And then they went into the gaseous diffusion plants where the uranium 235 could be separated from the 238. A lot of the rest of our material went into, was made into metal.

01:14:13
A:
The metal then went to, first to Hanford and then later on to Savannah River, where some of it was irradiated, subjected to a neutron flux, bombarded with neutrons and it was converted to plutonium. The plutonium was then extracted and used to make nuclear weapons, because plutonium and U-235 are both fissionable materials.

01:14:38
A:
Now, uh, so we sent materials to the gaseous diffusion plants, K-25, Portsmouth and Paducah. And we sent it to the reactor sites. Now, it got to be very complex thereafter because the materials themselves were first, well let me put it this way, the bombs had the nuclear components, the nuclear explosives, the highly enriched uranium, or the plutonium 239, so those had to be assembled someplace into the basic core of the nuclear weapon.

01:15:25
A:
And that was done at Rocky Flats, and what they called these nuclear assemblies were the pits. So the pits were assembled at Rocky Flats. The pits then were sent to Amarillo, Texas to the Pantex Plant. And in the Pantex plant they were surrounded with conventional explosives, those were mostly produced in Tennessee if I remember, in a place called Holsten, Tennessee.

01:15:53
A:
And they were specially shaped charges, they were set off first and drove the plutonium or the uranium 235 into a very, what we call a super critical mass in the midst of the explosives. And then that went off and created the nuclear explosion. Now that was a straight atomic bomb. So uranium produced at Fernald went to the gaseous diffusion plants where it was enriched and where it was enriched to highly enriched 235.

01:16:25
A:
Or it went to the reactor sites where it was converted into plutonium. The plutonium and the 235 were then shipped to Rocky Flats where they were combined into the nuclear heart of the bomb, the nuclear

explosive. Then those went to Pantex at Amarillo where they were surrounded by the, the chemical explosion. It actually got a lot more complex than that.

01:16:51
A:
And that was the straight atomic bomb. Now there were also the thermonuclear weapons. And the thermonuclear weapons contained, what you do you take two light isotopes of hydrogen and combine them to deuterium and tritium. Now if you get the temperature up to about 100 million degrees, they will combine and set off the nuclear explosion or set off the thermonuclear explosion.

01:17:14
A:
But the, you have to get that temperature you have to set off a conventional bomb first. So the heart of the thermonuclear weapons is a conventional bomb. Now the deuterium, the one isotope of hydrogen was produced at Savannah River. And it was produced in what was called a heavy water plant. Deuterium exists naturally in nature in a very small quantity in water so you can extract that.

01:17:44
A:
And they did that during the Manhattan Project days there was a little plant up in Indiana that did it. But later on it was done at a much larger plant in Savannah River. But the tritium is more difficult. The tritium only has a half-life of about twelve and a half years so it doesn't last long so you have to continue to keep making it.

01:18:04
A:
And furthermore tritium is a gas so it's difficult to contain it in the bomb. You have to liquefy it. In fact, the first weapon we set off weighed about 60 tons and it was set off at the Bikini Atoll and it actually had a refrigeration system in it to keep the tritium liquefied. Well you couldn't carry that in a weapon.

01:18:25
A:
Now tritium was made by taking a isotope of lithium, lithium is a very light metal lithium six, and if you eradicate that you can convert it to tritium. So what actually happened is that in the thermonuclear weapon, the lithium six was put in the weapon. And when the first explosion went off, the neutron bombardment of the tritium, in fact the lithium was combined with the deuterium to cause, to make what was called lithium deuteride.

01:18:59
A:
And the lithium was bombarded, it converted in a, in a, in a few millionths of a second into tritium, the tritium then combined with the deuterium in the compound and boom off went the thermonuclear weapon. Now the lithium six was separated from the lithium seven at Oak Ridge in Y12.

01:19:22
A:
What happened is that if you, if you, if you form an amalgam of lithium six with lithium seven with mercury, the isotopes tend to go with the mercury into different quantities in different rate, different one of them is accelerated. So that's where the big flap about mercury, you probably read that there was, the people at Oak Ridge contaminated a lot of the soil and water with mercury.

01:19:52
A:
They did that in the process of separating lithium six from lithium seven. The lithium, some of the lithium six however went to Savannah River where it was converted directly to tritium and placed in little tiny containers which were inserted right into the weapons right before they fired. And the reason for that was that the tritium accelerated the explosion.

01:20:18
A:
It was what we called a booster. And at one time this was so secret that I can remember being told once that I was never ever to mention the word tritium to anybody. And I said why not, you've got tritium in your watch dials to make them glow. Well you may know that but if, if, if, if you mention tritium somebody might put two and two together.

01:20:42
A:
Now in my opinion both the Russians and the British and the French all knew about the tritium boosters and were using them themselves. But this was part of the DOEs overemphasis on security and they did overemphasize at times. They protected the wrong things and didn't protect the right things and they continue to do it unfortunately.

01:21:02
A:
So, so you can see all of these operations fit together but we were the starting point. You had to start with uranium. Uranium itself wasn't very hazardous, plutonium is extremely hazardous. Enriched, highly enriched uranium is extremely hazardous but we produced ordinary uranium. We had, we did work with some very slightly enriched materials which fed the end reactor at Hanford.

01:21:27
A:
Now we sent slightly enriched material there. It was either .947 percent or 1.25 percent enriched, wasn't very enriched and it was very little more radioactive than ordinary uranium which isn't very radioactive. It's a couple of percent more reactive than ordinary uranium. So that's how the system worked, that's how it all fit together.

01:21:52
A:
From us to the gaseous diffusion plants or to the nuclear reactors, from the gaseous diffusion plants and the nuclear reactors to Rocky Flats where the pits were assembled. The pits then were sent to Amarillo

and the rest of the bombs were put together. Now there were a lot of other little operations for example there were neutron execrators, there were triggers, there were igniters.

01:22:13
A:
A lot of those kinds of things were produced at places like the Mound Laboratories and at Pinellas, Florida uh the little auxiliaries that went in that made the weapons a little more powerful or a little more easier to use, a little easier to detonate. Those were produced, but the main, the central core of it was Fernald, the gaseous diffusion plants, Rocky Flats and Amarillo and of course the reactor sites. I hope that explains it in some reasonable terms.

01:22:47
Q:
That's terrific. That's absolutely terrific because a lot of people don't realize what our product was for (Comment – yeah, yeah). So you know a lot of people have said in very general terms that it goes to plutonium you know all that but they don't really know how it works. That's terrific.

01:23:00
A:
No, they don't know how it works. Now we, there were two kinds of reactors. The one, the end reactor at Hanford used enriched uranium and the enriched uranium actually drove the reactor, made it work. But at Savannah River the reactors were driven by highly enriched uranium drivers. In other words, some of the elements were highly enriched uranium and they drove the reactor.

01:23:29
A:
The plutonium is converted from ordinary uranium 238 and we made depleted fuel cores. Cores with most of the uranium 235 extracted from them at the gaseous diffusion plants. They brought the by-products back to us and then we converted them into depleted fuel cores. And then the depleted fuel cores were put in and they were converted to plutonium.

01:23:52
A:
I won't get into it but there was a great advantage in using the depleted, depleted fuel cores. So, oh roughly a third of our material was depleted uranium which is even less radioactive than ordinary uranium. And you want to remember that most of the ore concentrates we dealt with had the nasties removed. Then we worked with a lot of depleted uranium, so a lot of our stuff was much more innocuous than just plain uranium would be.

01:24:18
A:
So it, it, it, a lot of the fears and the concerns have been overrated because they thought we were working with materials that we didn't work with. Or they didn't understand that our uranium was a kind of denatured uranium, that's the best way for me to put it. And therefore, was a great deal less hazardous than if we were working with say the pure uranium as it was dug out of the ground.

01:24:42
A:
Now we did that with only a small quantity of material. You know I hope I'm not getting way out of, over your head on this because it gets to be pretty complicated. And I'm giving you an overview you know a nuclear physicist could say well he didn't mention this or he didn't mention that. I can mention a lot of those things but they're they get, it gets to be extremely technical complex.

01:25:07
A:
It gets to be beyond most people's even ability to understand it unless you've had a lot of classes in physics and chemistry you're just not going to understand the fine points. So yeah, somebody might say well he neglected to mention such and such. Well I probably did it's deliberate, I just don't want to unnecessarily complicate the matter.

01:25:25
Q:
This is great though 'cause a lot of people don't understand the difference between you know the materials that we worked with. If you could just tell us again what the difference between the more enriched materials than depleted (Comment – okay) and why did we work with depleted.

01:25:42
A:
Okay, in the gaseous diffusion plants the uranium 235 was gradually concentrated as it went from barrier to barrier or through each barrier, that's what we called them, barriers. It was gradually enriched. But remember the other material was left behind. So the material that went through one end of it, came out from one end of it was enriched.

01:26:09
A:
The material that came out of the other was depleted of the uranium 235. But when you convert uranium to plutonium in a reactor you really only convert the uranium 235 or 238, the plain ordinary garden-variety uranium. You don't want to convert the uranium 235, in fact if you do you create other materials notably uranium 236 but some other materials as well which are tends to bother the efficiency of your weapons.

01:26:45
A:
So really the best way to do it is to convert the depleted uranium to plutonium. Get the uranium 235 out of it or most of it and we did. We got it down to about two tenths of 1 percent. So the most advanced plutonium reactors were the ones at Savannah River. And the ones at Savannah River were fed with depleted uranium. And we produced all the depleted uranium.

01:27:15
A:
Now we didn't produce the dryers. The highly enriched dryers were produced at Oak Ridge and then shipped to uh in other words the highly enriched uranium came out of Portsmouth, was shipped down to Oak Ridge. They converted it into metal then the metal was shipped to Savannah River. And it was

extruded, heated and then pushed through dyes into first long tubes and then those were cut off and made into the dryers.

01:27:48
A:
I've actually seen that done. I've stood right by the extrusion drums and big pieces of highly enriched uranium go through. They were very hazardous to handle. This was an extremely hazardous operation. We had nothing to do with that. We produced only the depleted fuel cores and they were even less radioactive than ordinary uranium.

01:28:12
A:
In fact, considerably so because uranium 235 is six times as radioactive as uranium 238. So if you strip most of the uranium 235 out it becomes less reactive. Now there's only seven tenths of 1 percent to begin with so it's only a couple of percent less radioactive but it is a little less radioactive. And of course none of the nasties, the radium and the other stuff, that was taken out way out on the concentrate mills out in the mines.

01:28:41
A:
And where's the stuff from the concentrate piles, well that's what's called the tailing piles. And people have been all upset over those tailing piles. You see the material that so many of our critics think came here to uranium and threatened our workers and our residents never got here. It's in those tailing piles piled up out on the Colorado plateau. It never got here.

01:29:04
A:
And no one seems to understand that in spite of the fact I tried to tell everybody it just never got here. So out of the million tons or so of uranium that we processed, about 98 percent of it was material that had all of the nasties removed and about a third of our material on top of that was depleted uranium. So a lot of our material was, it wasn't completely innocuous, in other words it wasn't harmless.

01:29:29
A:
You had to take a great deal of care around it because uranium is slightly radioactive and it is chemically toxic so you don't want people breathing it in. And you don't want people drinking it down. It can do a lot of damage to the kidneys, chemical damage not radioactive damage. In fact long before you would have suffered any real radioactive damage you would have been if you had ingested it in the say soluble form you would have been dead from kidney poisoning.

01:30:04
A:
You would have had to taken much more uranium, so much uranium into your system to suffer any ill effects from the radiation that you'd have died from chemical poison long before. That's why we were always so careful to monitor people's urine and their kidneys all the time to make sure they didn't ingest too much.

01:30:22
A:
Now breathing it in your lungs is a different story.

Q:
Before we get into that I think we have to change tapes.

TAPE FLHP0236

02:01:04
Q:
Now we were talking a little bit about uh, before we get into the submarine stuff, we were talking a little bit about uh, um monitoring workers (Comment – yeah) and uh let's talk a little bit about the safety culture of Fernald while you were here and what types of steps uh the management took to make sure that people weren't breathing too much uranium in or ingesting it and those types of things.

02:01:26
A:
Okay, let me, let me, let me try to explain a concept that most people do not understand and has never been discussed properly here. There is a great difference in how you handle the soluble and the insoluble uranium compounds. One of them presents an ingestion hazard and the other one an inhalation hazard.

02:01:54
A:
And we had both soluble and insoluble compounds. Now you've heard people say and oh the union people go berserk and they complain because some people have made this, I never made this statement, I've been accused of making this statement but I've never made it at any time. That you could take a tablespoon full of uranium oxide in your mouth and swallow it and it probably wouldn't hurt you.

02:02:21
A:
Now I never made that statement but the truth of the matter is it probably wouldn't do you any damage or at least not much damage and let me explain why. Insoluble compounds just pass right through your digestive tract regardless of how toxic they may be. Now I wouldn't want to eat them, a tablespoon full, I wouldn't do it.

02:02:45
A:
There was a guy at work at one of the sites who did it just to show that it could be done but I wouldn't do it. Because you know there's always the possibility that there might be a little soluble in there or maybe the stomach acid is a little stronger some day and I might dissolve a little bit of it, not much but there's not that much danger.

02:03:02
A:
But it's like this, have you ever heard of a general intestinal series where they examine your gut and you drink barium and they give you barium enemas and the rest? Okay, barium is a very toxic material. If you took a few grams of barium chloride and drank it you would die very quickly. But what you take is barium sulfate and you can drink a gallon of that down if you want to.

02:03:30
A:
But because it's insoluble your body can't take it in and it won't kill you. Okay, uranium oxides are insoluble. If you got those in your digestive tract chances are almost all of it would pass right out through your digestive tract and it wouldn't do you much damage anyway. I wouldn't do it; I want to make that clear. I never said that and I wouldn't do it.

02:03:51
A:
People have said that but I haven't. Now, but the danger of the insoluble compounds is that if you breathe them into your lungs they stay there. And they're not very radioactive; they're very, very mildly radioactive, a million and a half times less than radium. But if they stay there long enough and there's a continual bombardment there is a possibility of damage to the lungs.

02:04:20
A:
Not nearly as much as from smoking a half pack of cigarettes a day but there is some damage or can be some damage. So one of the things we did where we were dealing with oxides, the danger was the inhalation danger. Where we were dealing with a soluble compounds is in the ore refinery, one of the dangers was from the ingestion hazard.

02:04:44
A:
Now we tried to monitor our workers and even when you inhaled a little some tiny bit of it is eventually going to be dissolved into your lungs. So one of the things we did is to, is to, uh run urinalysis on a regular basis, until at least the middle '60's the techniques, what we call a whole body counter wasn't sensitive enough for us to put somebody in it and find out whether they had any uranium in their bodies.

02:05:20
A:
'Cause uranium is such a very weak emitter and it's mostly an alpha emitter it can't come through the layers of tissue and you can't read it outside. You could do it with plutonium, you could do it with radium you could put these people in a whole body counter but you couldn't do it with uranium because it was just too weak radioactive.

02:05:39
A:
So what we did, we would make the employees give urine samples. I've given many, many of those myself and then we would measure those to see if there was any uranium in them. And, and, and we

knew from the way the body handled this just about where and from where the worker worked, we had a pretty good idea of what his exposure must have been by measuring the amount of uranium in his urine.

02:06:05
A:
So we did that because it was the best way to do it. Now after about the middle '60's we could use, they had developed the whole body counters to the point where we could use them. And in one of the lawsuits they made a great point of oh they had this wonderful technology for the whole body counter but they never used it and most of the workers weren't monitored.

02:06:27
A:
Well, it didn't work for uranium. Worked fine for plutonium, worked fine for radium but it didn't work for uranium 'cause it was too weakly radioactive. So after the 1960's we used to do, they weren't really whole body counts, they were chest counts because we were interested more than anything else in what was in the lungs.

02:06:44
A:
So we, we, we uh, uh did all that. Now it was impossible certainly with the technology we had and with the AEC's demand that we get this plant on stream as fast as possibly, it was impossible to stop some leaks from occurring. You know, things would leak and when they leaked there would be some dust in the air.

02:07:04
A:
Now we insisted, it was in all of our procedures, that the workers put on dust masks if they worked, and we set monitors out in the plants to measure the dust to make sure that it was safe. And if there were places and times where they had to work in levels that were too high, they were supposed to put on their dust masks.

02:07:27
A:
And we, we used the best dust masks we could find. And if you go back and look at our records you'll find that we bought literally thousands of those and we made them available to everyone. And we told them they had to use them. If, I can remember on several occasions threatening to fire people who I found in areas that were dusty who didn't have their respirators on.

02:07:52
A:
So the first line of defense was to just make sure that there weren't dusty, dirty conditions. Since that was not always possible, remember we ran for over 32 years. So these people can always go in and find records of where somebody says it was terribly dusty in this plant on this day and you add all of those together after 32 years, you come up with a hundred different incidents that say look at this horrible dirty filthy plant that these people ran.

02:08:22
A:
Huh-uh. When we had those conditions, we put them in dust respirators. And if the situation was bad enough we had special air hoods that they wore that we fed the air in from the outside. So we, we, we, we and then there was, and then there was one of the most misunderstood terrible things we were accused of was grave robbing.

02:08:50
A:
What we tried to do, particularly if there was an autopsy of one of our workers run after he or she died we would ask for tissue samples of those people. We didn't usually ask for whole organs although we may have on occasion I don't know. But our Health and Safety people would ask for little tissue samples and then we would take those into our laboratories and analyze them for uranium.

02:09:18
A:
To my knowledge, we just never found any. I mean it just didn't get into the tissues, they didn't have enough exposure to get into the tissues. And then of course we gave everybody an annual physical every year. Now in addition to that everybody wore a badge with a, with a, with a monitor attached to it and that little monitor measured any external radiation that they got.

02:09:44
A:
But they almost never got any because uranium is so weakly radioactive. So nobody ever came close to getting anything like too much external radiation. So our main concern, the biggest concern we always had was what did they breathe in. And if they took reasonable precautions they shouldn't have breathed anything in.

02:10:09
A:
Now people are people and those dust respirators are not very comfortable to work in. I mean you put one on and you have to work in it for a couple of hours, it's hot and it's, it's breathing is a little more difficult so you, you, you and you can't have any facial hair, you have to shave off your beards and your mustaches or at least enough that they fit tight.

02:10:33
A:
But uh, if you use the respirators and if you follow the rules and if you did what you were supposed to do, no one should ever have gotten overdosed even internally. But the internal is what we worried about mostly and it was the inges- or inhalation not the ingestion, we never found anything much from that. And but we would occasionally find a worker who we thought had breathed a little more in than he should have breathed in.

02:11:04
A:
But there were such huge safety factors built into that, that I do no remember ever seeing a report on any worker that I would have been seriously concerned about. And by the way if, if you went above a

certain action level, we had action levels established, for example I personally was above the action level for the week once, it's all in my records.

02:11:30
A:
I was looking into a hopper filled full of orange oxide, uranium trioxide and it was little hydrogen explosion, blew it all out in my face and I got it in my mouth and my nose and my throat and I blew it out orange and I spit it up and coughed it out and the rest. And I mean just right in my face. So they checked me every day for about a week, for about a week or ten days I was above the action level.

02:11:55
A:
Well, I never got cancer from it, I'm 71 years old, I'm still here. I never suffered any ill effects. In fact some of the people who complained the most never came close to having as much exposure as I had. But yeah, we tried to take extraordinary precautions with these people. And uh I thought the tissue sampling was wonderful.

02:12:18
A:
But they claimed you know that we exhumed bodies, we dug these people out, we didn't get their permission, we didn't get their family's permission. They called us ghouls and grave robbers. We were only doing it to try to protect them. In fact one of the union people said that the reason we did it was so that we could destroy all of the evidence. A lot of it is still there.

02:12:39
A:
I got some of the files. I got a number of records of what was done and these records are all over. They weren't destroyed; they're there. And of course they accused of us falsifying the records, of lying, now that's not true, it just isn't true. Now we took those tissue samples to try to make sure that we were running a safe plant.

02:13:04
A:
So we had as I say, just to reiterate for a moment, we had the little monitors which were, and sometimes we would attach these to the workers. Because we wanted what was called a breathing zone monitor, a BZ as you'll see in some of the reports. Where you would attach that right to the worker so it would breathe in the same air that he breathed in and we could use that to better monitor the workers.

02:13:28
A:
And then we had the film badges and then we had the urinalysis and then later on after the '60's when the instruments got sensitive enough we had the whole body counters. And then we had the annual physical examinations and the other thing is any worker could go any time he wanted to, to Health and Safety and he could get, he could, oh God any time one of them got a cold they ran up and got cold medicine.

02:13:54
A:
That was probably the medicine we gave most of. Now were some of them ever covered with uranium dust? Oh, absolutely, covered with it, I've been covered with uranium dust. For example, if you had to go in and repair this piece of equipment that handled all this material like a dust collector or big conveyor and this thing broke down it had to be repaired.

02:14:16
A:
So you put the people in their work clothing, then you put them in their air hoods or their respirators and all the rest and you sent them in to work. And when they came out they were covered so then you sent them over to change their clothes and shower. And then we monitored them to make sure that they were safe. I've been covered with uranium dust myself.

02:14:35
A:
This is nothing unusual, but I never worried much about it 'cause it's so mildly radioactive and I always wore my respiratory protection so I didn't have any problems. Uh, only one time and that, and to tell the truth that was my own fault. When I looked inside that hopper I should have had my mask on. If a worker who worked for me had done something stupid like that I'd have called him into my office and read the riot act to him.

02:15:01
A:
But I did it, I never did it again, but I did it once. So yeah, those are some of the things we did. And as far as the radon from the K-65 tanks, we had monitors all around the outside of the project to make sure that we could measure the radon. Which by the way was very low. Uh, the radon measured at the boundary of Fernald at 60 percent, is only 60 percent of the EPA action level.

02:15:30
A:
Now how could people die of cancer from that I don't know. Because if that's true than the EPA ought to reset their action level. It was 2.7 picocuries per liter; the EPA action level is four. And some people have a heck of a lot for than that in their house. For example, the State of Ohio has done radon surveys all over the state in every county.

02:15:56
A:
In Franklin County, the second most populous county the average indoor radon level, geometric mean, I don't know if you know what a geometric but it's like an average, is 6.7 picocuries per liter. It's two and a half times higher than it was at the boundaries of Fernald and these people in Columbus breathe it all the time and guess what they have a lower lung cancer rate than the state as a whole.

02:16:18
A:
So why all the concerns about 2.7 picocuries per liter, I don't know. You know it's just another one of those uh strawman that they've set up. But the radon levels were always safe unless you got right on

top of the tanks of course. And I did on occasion just to make sure that everything was being done right. I've actually walked on those tanks and there probably aren't a dozen people alive who've done that. And I'm still here and reasonably healthy as far as I know, okay.

02:16:53
Q:
Now something also that came up was uh there was some monitors that was set up down at City Hall in Hamilton, are you, did you know about any of that?

A:
I didn't know there were any monitors set up at City Hall.

Q:
They just did that to see what kind of levels they were getting radon and well not radon maybe but because of naturally occurring uranium in granite they were higher levels at the Hamilton City Courthouse than they were at the perimeter of the site.

02:17:19
A:
Well any time, let me explain that a little to you. We had some of our trials in the Federal Courthouse in Cincinnati and the Federal Courthouse was made largely of granite and, of course you're always going to get a higher count. You're going to get an above average count if you're around granite. So if they went to the city building in Hamilton which has a granite exterior as best I remember, I think it's granite not sandstone, you're going to get a higher level.

02:17:48
A:
You're going to get, it's not going to be much, but it's going to be higher you're going to measure it higher and of course various places in the country are going to measure higher. The higher you get above sea level you're going to measure higher levels because it's coming in from the cosmos. Its called cosmic radiation and its practically the same thing as gamma radiation.

02:18:08
A:
And it's coming in from the, coming in from the stars and from outer space, so if you live in Salt Lake City, which is 6,000 feet above sea level, you're going to get more radiation. Plus the fact that Utah has a lot of uranium mines and it's downwind of the Nevada Test Center. Gee, those people ought to have horrendous cancer rates. They have the lowest in the country.

02:18:34
A:
So yeah if you set one up, I didn't know they set one up in the city building in Hamilton but if they did they would get higher readings. They would get higher readings in the Federal courthouse in Cincinnati. I don't know if it proves anything.

02:18:46
Q:
Well let's get into a little more about that kind of stuff that happened. In 1984 there was a lot of media attention at Fernald, mainly because of some dust collector releases in Plant 9. Can you tell us exactly what was going on from your point of view?

02:19:07
A:
Yes, I think I can. Um, I was intimately involved in that. Dust collectors are like big vacuum cleaners huge vacuum cleaners. They have bags, they have cloth bags and they are made differently, different manufacturers make them differently. This was a dust collector in Plant 9 that handled slightly enriched material.

02:19:33
A:
That's where the ingots the .947 and the 1.25 percent ingots were cast. And there was a dust collector there. It was not my idea the very best dust collector. We opposed buying that particular collector because we didn't like the design of it. But we had to confirm to the government's low bid procedures and we bought a collector we didn't want.

02:20:00
A:
The reason we didn't want to buy that collector is that it had, it had a lot of small bags in it; the bags were suspended from top from bottom and every shift we inspected dust collectors to see if there was break in a bag or a bag had become dislodged. Now most of our collectors the ones in Plant 5 for example had only a small number of very large bags and you could see them very easily.

02:20:28
A:
This was a circular collector and it had, gosh, I don't remember exactly how many bags it's in my book I won't take time to look it up, but its in the neighborhood of 60 or 70 bags. And you couldn't inspect it very well; you couldn't get around and see in the back and maintenance people had rebagged that collector and apparently one of them had not done a good job of attaching the bag to the top nipple.

02:20:55
A:
They had a top nipple and a bottom nipple and the bags were suspended in between and one of those bags came loose and when it came loose that meant material could bypass the dust collector and leave via the stack. Now uranium is very heavy, uranium oxides, and as far as I was able to determine and I personally headed up the investigation of that at the beginning.

02:21:23
A:
As far as I was concerned most of the material fell right on the site, so to make sure that nobody was harmed we took all the workers in the general vicinity and we whole body counted them and checked their urine analysis and we didn't find anything. The material had apparently, we recovered some of the material it was in the gutter and on the roof and that sort of thing.

02:21:42
A:
And we went up all along the peripheral of the project and we had instruments out there and we didn't see any appreciable increase, a slight increase in the amount of uranium. So some tiny amount of it probably got out, probably left the project, we'll never know how much. But only a small percentage of it left the project.

02:22:09
A:
So, um, we had had other dust collector incidences over the years particularly in the early years of plant when I was talking to you before because the dust collectors were poorly designed; they didn't work very well. We had dust collectors that emitted five times that much material maybe ten times as much and we had dozens of incidents of that kind.

02:22:30
A:
So at first we didn't take this all that serious, we reported it to Oak Ridge, we said look we've had a dust collector incident with the first one of these I think in about five years we had had. But the DOE people insisted that we report this to the newspapers. And I said I don't think we ought to report it until we thoroughly investigate it because we can't talk about it intelligently.

02:22:55
A:
All we can say is we had a little leak we don't even know how much material we lost yet we've got a lot of work to do. They insisted that we report it and then they insisted that we hold a public meeting and they insisted that they conduct the public meeting instead of us. And that was a disaster because they couldn't answer the questions.

02:23:15
A:
And so the people at the public meeting immediately concluded they were being lied to. Because they would ask these people from DOE questions and they couldn't answer them. Now we couldn't of answer all the questions either at the time because we hadn't completed our investigation. And it would have been stupid for us to try to answer questions before we knew the facts.

02:23:34
A:
But they couldn't answer any of the questions. Well we were compelled to be there and I sat in the first row and I was aghast of what was going on. These people were just going berserk they had been irradiated; dozens of kilograms of uranium had been dropped on them and their children. And every time they tried to ask these DOE people; and we were told we were not to discuss unless they ask us.

02:24:03
A:
Well the meeting got completely out of hand. People got hysterical they started screaming and yelling and finally the DOE people said to us okay, you answer the questions; refer your questions to

Mr. Adams and Mr. Spenceley. Well by that time it was completely out of control. Nothing we said could do anything.

02:24:23
A:
Now did any of that material get out; such a tiny, tiny quantity that it couldn't have possibly damaged it anyway. Of course, compared to me for example got a whole face full of it. I mean how could somebody a mile away have possibly have gotten uranium to do them any damage. And I tried to explain this to them but they would not listen.

02:24:42
A:
And then we had the incident of the well water and that's something I'd like to talk to you about the well water at some length. But if you would shut the camera off for a minute and then I'd like to take a break and come back and talk about it.

02:25:00
Q:
Sure. That's no problem let's go ahead and roll. We were discussing, uh, the well water issues if you care to go ahead and get into that.

02:25:04
A:
Yeah, okay, the way that all came about the in 1982 the Ohio Department of Health found some contamination in the water in the area. Now they found the contamination, we didn't. But, and the contamination that they were concerned about was coming from a plant down the road, not from Fernald.

02:25:38
A:
But because the plant handled a number of potassium compounds they thought there might be some naturally occurring isotope of potassium in the water; called potassium 40. So they then came to us, in fact, on November 3, 1981 the district geologist for the southwest district of the Ohio EPA called our chief of Health and Safety and he wanted to discuss the matter of beta contamination; beta from the potassium 40.

02:26:15
A:
And Heatherton replied, he was our director; he said that he didn't believe that the beta activity could come from Fernald because Fernald didn't process any potassium. So they had a conversation and then on November, well let me go a little farther. We did some sampling with them and lo and behold we found some alpha contamination.

02:26:48
A:
Now the alpha contamination couldn't come from potassium it had to come from uranium. So we found this in what was called the Henry Knollman well; that was the place where Lisa Crawford was

living at the time. And on December 8 we tested ten additional wells. The only significant amounts of alpha we found were in the Henry Knollman well, the well at the Crawford's.

02:27:20
A:
So then we had meetings with the Ohio Department of Health; now they took the sample where the alpha was found. They originally found the alpha count we verified it; this is all in the Ohio Department of Health records. Now, uh, the fellow, who was running the show for them was a fellow by the name of Jim Pilino and he was the district geologist.

02:27:47
A:
So they analyzed that and they came to the conclusion with, and this is in my book I put this in I bubbled this, "An investigation by ODH radiologist Ben Wilmoth and Bob Quillan;" Quillan was the head of the department for the Ohio Department of Health; the Radiation Department "found that alpha levels while high were not a significant short-term or probably long-term health problems."

02:28:16
A:
"The radiological experts from the Ohio Department of Health reviewed this data and stated that although high, the radiation did not present a health hazard." It was their judgment, not ours. They found it they judged and I have what their documents. In other words I have what they said in writing. They said it's not a hazard.

02:28:41
A:
And Pilino did state that he thought nevertheless the agency that is the Ohio Department of Health should take immediate action to clean up this problem. But remarkably enough neither the agency nor the OEPA, nor the ODOH, nor any other state agency took any further action until 1985. They found it, we confirmed it and they said it isn't a health hazard; forget it.

02:29:06
A:
And I have the documents that prove that. So the people who say we found it we hid it that's just absolutely not true. We didn't find it first of all, we didn't hide it, we had two possibly three meetings with the Ohio Department of Health in which the whole thing was, was discussed and discussed at some length.

02:29:38
A:
So at that time the uranium content was below the standard. Now people say the standard was set too high. Well, maybe it was but we lived by the standards. We had to live by the standards. Now it certainly wasn't hidden until 1985 as Ms. Crawford has stated over and over again because there was actually an article written about it written in the Hamilton Journal News on the 31st of August 1983 and the title was, "NLO, is NLO the source of uranium in the well water," it was written by Bill Elder.

02:30:16
A:
A Journal News writer. So this was not only was it discussed and well known to the Ohio Department of Health it was actually written up in the local newspapers.

Tape FLHP0237

03:01:09
Q:
In regards to the water problems, if you could tell about, you stated that it was the Ohio Department of Health who had done the well testing?

03:01:22
A:
The Ohio Department of Health and the Ohio Environmental Protection Agency, ODH and OEPA worked together on this project.

03:01:26
Q:
So, um was Lisa Crawford justified in being angry that nobody had told her about the well?

03:01:34
A:
Perhaps she was, but she certainly should have been angry at her landlord, who was told immediately and she certainly should have been angry at the Ohio Department of Health and the OEPA, because they knew all about this, they were in on it from the very beginning, in fact they discovered the contamination ahead of us.

03:01:57
A:
We only verified the contamination. And at the time we weren't sure that the contamination was coming from us because it could have come from naturally occurring uranium. Now how did we finally figure out that it came from us? Well, uranium that has been processed has certain distinguishing marks in that you remember I told you that the nasties had been stripped out.

03:02:26
A:
So whenever you see uranium that doesn't have the right amount of radium present with it or the right amount of certain other decayed products present with it you can assume that that maybe it's purified uranium, maybe it came from somebody like us. But when you're only dealing with parts per billion in the first place it's very difficult to get that information.

03:02:45
A:
You have to do some very exhaustive scientific work to determine it and it took us a while. But we did eventually determine that it was what we called athropogenic uranium. In other words, antropogenic, in other words it was man processed uranium and it had to come from us. By that time though we had told everyone the DOE and of course the OEPA and the ODOH knew about.

03:03:18
A:
And as I say there was an article written in the Hamilton Journal on the 31st of August 1983 which discussed the entire problem. So if she didn't know then and I have to take her word for it that she didn't; I'm sure she didn't I certainly wouldn't accuse her of being a liar. But the basic responsibility I'm not sure was ours.

03:03:40
A:
If the Ohio, well Ohio Department of Health apparently didn't tell her because they didn't think that small amount uranium was a problem and they said as much and I have that documented. I have the actual documents where they make the statement that it isn't anything to worry about. So, yeah, it did come from us.

03:04:09
A:
Not it only, there's a deep aquifer and shallow aquifer and to my knowledge no uranium ever got to the big deep aquifer which is the one we would be most concerned about. Only a few people ever drank from that shallow aquifer. Now the workers at Delta Steel down here did and we told them immediately and they went to bottled water even though the Ohio Department of Health assured them the water was perfectly safe to drink.

03:04:33
A:
They went to bottled water. Now where did the uranium come from how did it get out of here? Well, we would occasionally have leaks and pipes and tanks would overflow and that sort of thing and we had a big, everything fed into big general sump where we could contain everything unless there was a great gully washer of a rain.

03:05:03
A:
And if there was a great gully washer of a rain we couldn't handle all the rainwater so it overflowed over a weir and it went out something called an out-fall ditch and the out-fall ditch eventually drained into Paddys Run. Now my belief, and no one's ever been able to prove or disprove this belief, one way or the other, is that the uranium, a small amount of uranium, got into the, the out-fall ditch during heavy rain fall was trapped around some of the clays around Paddys Run Creek and gradually released into the shallow aquifer.

03:05:40:
A:
I think that's where it came from, but I will not deny that it came us and I will not deny that I wish that it hadn't. In fact, Ms. Crawford made a great point of the fact that I said it was regrettable that the uranium got into the water. It was regrettable to me I wish it had not.

03:06:01
A:
But it was below the standard the Ohio Department of Health and the Ohio Environmental Protection Agency said it's nothing to worry about. Everybody knew about it. The Journal News even wrote an article about it so I can't understand the hard feelings; the terrible accusations and certainly the accusation that we discovered it, and we hid it are just absolutely false.

03:06:32
A:
We didn't discover it, we only verified it and we didn't hide it. I mean, would we have discussed it with the Ohio Department of Health and the Ohio Environmental Protection Agency. Would we have sent letters out to the people in the neighborhood? Would we have informed all the landlords if we were trying to hide it?

03:06:50
A:
I mean, the whole contention is absurd. We didn't try to hide this at all. In any way. Nor did we try to hide any of the dust releases. The dust releases were a matter of record. Anybody wanted to know what kind of dust was released from here, certainly by the 1980's, could have used the Freedom of Information Act and gotten all the records.

03:07:08
A:
I personally, turned all those records over, myself. I said here is what we lost. As best we can determine. Now, I want to talk a little bit more about these, these uh, these uh, a terrible allegation. They say we lied about the uh, dust releases, the emissions. They said we reported them as zero and they couldn't possibly be zero.

03:07:40
A:
Now let me try to explain that, and again that is an absurd allegation. What we had was a little sampler in every stack leaving every dust collector, and it brought in, drew in, a small sample of the air leaving the dust collector. And it passed through a filter; it was like a paper/cloth filter that was inside the collector.

03:08:03
A:
And if there was any dust it would be collected on that filter. All right. Now we inspected the filters periodically, usually once a month, but not always, particularly if maybe the operation wasn't running during that month. And we would inspect those. Now there was a limit to what we could measure.

03:08:21
A:
In other words, in other words, if, if, in any scientific measurement there's a limit to what you can measure. Now if there was no discoloration on that filter paper, then we just left it in and reported it as zero. If there was a slight discoloration on there we reported it as zero.

03:08:45
A:
Now, you can, if you want to split hairs, say it can never be zero, there always has to be some uranium going out. So when you reported zero, you were lying. And this has been said over and over again, we lied about it. What we said was, it was below the limits of our abilities to measure it, therefore we reported it as zero.

03:09:08
A:
Now let me give you an example of, that I think anybody can understand, every day the weather department reports on how much precipitation there has been. Now here a week or so ago the paper that I get reported no precipitation. But I was out in my yard when a few drops of rain fell. Well the rain gauge wasn't able to measure that, so they reported it as zero. Was it zero?

03:09:35
A:
No, there was a little rain that fell in the Knoxville area. Therefore it couldn't have been zero, could it? Did the paper and the weather department lie about it? No, it was below their limits of detection, so they reported it as zero. That's what we did. If it was below the limits of detection we reported it as zero. That's not a lie. That's scientific convention.

03:09:57
A:
When you were in the fourth grade and you studied math you learned to do round figures. If it was 21½ you called it 22. If it was 21 and four tenths, you called it 21. This is what people have always done, and that's what we did. There was no attempt made to lie. Now if you want to split hairs you can say, there must have always been at least a few molecules going out there.

03:10:20
A:
So, you people never had a right to report it as zero, and you lied to us. Well, that's just not true. So I felt we were completely above board on all of these matters. I still think we were completely above board. I never lied to anyone about anything concerning Fernald. I'm not lying about anything now. Do I believe the water; the uranium in the well water came from us? Yes.

03:10:46
A:
Do I believe that some small quantity of uranium escaped through the dust collectors and landed on the area out here? Yes, I do. And I wouldn't deny that for a moment. Do I believe that every industrial plant in greater Cincinnati sends out emissions that go in the atmosphere that lands on somebody's property? You betcha. And some of them have a lot more emissions that we do.

03:11:09
A:
And I discuss this in some extent in the book that I have written. And I take the emissions from most of the plants in Cincinnati. There was a big article in the Cincinnati Enquirer back in uh, uh, 1988. Thalchem emitted 3,678 tons of atmospheric emissions; GE at Evendale emitted over 700 tons into the atmosphere in one year. And some of those things are carcinogens now.

03:11:44
A:
Hilton-Davis was over 600 tons. Monsanto was about 575 tons. How much uranium did we emit from Fernald in the entire history of the plant? I think less than 200 tons. Over 32 years. If you take the worst emissions estimates you come up with about 300 tons. So over 32 years we emitted some place between five and nine tons a year.

03:12:15
A:
Some of these other plants emitted as much as 3,500 tons and many of them pumped hundreds of tons of emissions, of emissions, many of which were carcinogens, in the words of the Cincinnati Enquirer, carcinogens into the atmosphere. So what made us so terrible? Do I wish we had never admitted anything? Yes, I do.

03:12:37
A:
But I was there in 1953 and 1954 when most of these emissions came out, 80 percent. And the Atomic Energy Commission told me and everybody else, you have got to get this plant on stream, even if you have to take some emissions. Because this is a matter in the national interest, it's a matter of national security and you've got to do it. And we did it.

03:13:00
A:
Now, should we have done it? Well, that depends on your perspective. If you think the Cold War was a bunch of nonsense and the Soviets were never any threat to us, and we should have quit making all these nasty weapons, and let the Soviets have all they want. Because they were really nice people anyway. Then you can believe that. I don't believe it.

03:13:18
A:
We did what we had to do under the circumstances. Were we any worse than anybody else? We were better. When we built this plant everything that left this plant went through a sewage treatment facility. The sanitary waste and the other wastes. Now did some of it go out? Yeah, we had standards. I will admit that we put a few pounds of uranium in the Miami River every single day.

03:13:42
A:
No question about that in my mind. But compared to what the other plants were dumping into that river, and we did something else too, of all the major industries in the Miami Valley we had the first good sanitary sewage treatment system. When human feces were floating in the Miami River, all

through the 50's, 60's and early 70's, they didn't come from us. Because we were scrupulous to make sure that they didn't.

03:14:09
A:
And the amount of uranium that we allowed to go into the river was within the government standards. Now were those standards wrong? Well you can argue all you like. Mrs. Crawford, and her critics, are fond of saying hey, the standard were all wrong, you guys ought to be prosecuted because you didn't follow the good standards. The ones we think were instituted later. But if you change the speed limit from 70 to 65 would you go back and prosecute everybody who did 70 miles an hour?

03:14:39
A:
That's what some of our critics want. We were the bad guys because our standards weren't right. We didn't set the standards. And, by the way, where did the standards originate? This is another interesting thing. The standards didn't even originate with the AEC.

03:14:54
A:
There was an organization headquartered in Brighton, England, called the International Commission on Radiation Protection, the ICRP, they're the ones who created all the standards. Which the AEC adopted. It's an international body, just because it's in England, I mean, there are people from all the major countries who send representatives to it.

03:15:15
A:
They set up what they thought were safe standards. We lived with those standards, almost all the time. Now were there times that we emitted more than we, than we wanted, yeah, there were. But we did I think the best we could do under the circumstances. We didn't lie, we didn't hide, we didn't cover anything up.

03:15:34
A:
That's a fact. I never lied to anyone. When I was in a meeting with Lisa Crawford I said yes it's regrettable, that water. And it is regrettable; I regret it every day of my life. But there really wasn't much I could do about it.

03:15:57
Q:
And in the following years there were two lawsuits that came down too. I'd like for you to address that too if you would.

A:
Okay, I was the, I was the principle consultant for the, the uh, for the defense. I was also the principle witness in the only case that really went to trial. I helped defend those lawsuits. I was paid for that. Now my critics and the critics at Fernald say well the only reason Weldon Adams told all these lies is because he gets paid so well.

03:16:40
A:
I was paid pretty well. But remember I had a very good job here. I wasn't paid any more than I would have made here. And I chose to leave this place, I was not driven out. I was asked by the Department of Energy to remain but I left. But I had to earn a living and when these people came to me and asked me would I consult with them and help them in the defense of the lawsuit I said yes.

03:17:05
A:
Now I also worked for other people as well. I worked for a huge consortium of insurance companies and their lawyers out of Chicago in matters that had nothing to do with Fernald. They were private plants and I worked for a number of years. In fact my last contract just ran out last year. I gradually slowed down in the amount of work that I did.

03:17:28
A:
Now how much was I paid? Well I was paid about $100,000 a year. Is that an exorbitant money? That's what I would have made if I stayed here. That's what I would have made if I had gone and worked for another company managing a big industrial plant. Let's face it, people that manage big industrial plants, 1500, 2000 people probably today make $100,000, $125,000, $150,000 a year.

03:17:52
A:
That was my earning capacity. So I worked for $100,000 a year, I didn't make that much money. And I had to earn a living like everybody else and I felt passionately about this because I felt most of it was true. So rather than take another job with another company and leave my home and move away and all the rest of it and still be summoned back as a witness in these trials anyway.

03:18:14
A:
Because I knew I was going to be the principle witness in most of these trials. So I accepted the contracts and I was paid. I was paid from $55 to $100 an hour for my various contracts for whatever I did. That's not a lot for a consultant these days. Uh, and the DOE paid me less than anybody else. The DOE, they're pretty niggardly in what they want to pay consultants so I, I, I got $55 an hour from them.

03:18:43
A:
Some of the other people paid me as much as $200 an hour especially if I had to testify in court. And I only accepted the DOE offer because I felt passionately about Fernald. I should have told 'em go sit on a tack; you're not paying enough money. But I said no, I'll do it for a cut-rate price for you and I did it for a cut-rate price.

03:19:06
A:
So in one of the trials they introduced the fact that I had been paid like $600,000 for this over a yearly basis, over six years, yeah, sure. Lots of people make that much money. And if I'd stayed here, if I'd

gone on to manage somebody else's industrial plants I'd have made at least that much money, probably more. Now the trials, well as you know only one of the cases ever really went, well two of them went to trial.

03:19:34
A:
One of them involved a, a fellow by the name of Larry Hicks who they claim he died of uranium poisoning. We won that case hands down. He didn't die of uranium poisoning; he died of a potassium deficiency. And we had, we had some of the best heart specialists around who, who, who made our case and it convinced the jury. And then there was this statute of limitations trial that went, that actually went to trial.

03:20:08
A:
And then of course and here, here's the thing that, that uh many of our critics will, well there was this summary jury trial and we lost the summary jury trial. Let me explain to you what a summary jury trial is. A summary jury trial is not a trial it's a, it's a settlement device. We, you put on a mock trial and you're not allowed to call any witnesses.

03:20:35
A:
I was not allowed to appear on the stand to refute these accusations. Nor, to be fair, was the other side. Our lawyers presented what we were going to say and their lawyers presented what they were going to say. We were given exactly the same amount of time, which was very unfair to us. Because you can accuse somebody of something in ten words or less but you can't defend against it in ten words or less.

03:20:59
A:
So the verdict came out against us but it was a very poor verdict. In fact, one woman in the jury interviewed afterwards said she wanted to send a message to Washington. Well, we weren't Washington. Why find us guilty if you think Washington is guilty. If it had been an actual trial we would have appealed and they'd have thrown it out.

03:21:18
A:
Now they keep saying well they held a trial and they found that National Lead was guilty. Well, they didn't, it was a settlement device. Now I was very much opposed to that. I said absolutely I am opposed to it. I was so opposed that when they tried the same thing in the worker's trial and they tried to have a summary jury in the workers trial I told the lawyers from Kirkland and Ellis, you hold a summary jury trial, I walk out.

03:21:42
A:
You'll have to subpoena me to put me in court; I will never go through one of those fake, mock trials again. And they then appealed to the sixth circuit and the sixth circuit said oh no, they don't have to go

to a summary jury trial and we didn't. So, but were the trials interesting? Well in the, in the uh statute of limitations trial I was on the stand for eight and a half days solid.

03:22:08
A:
Eight hours a day, eight and a half, well about six actually counting all the breaks. I was on the witness stand for eight and a half days and we effectively won that trial too. And for the first time these people I think got a chance to see that the people around Fernald, we're not monsters, we're not Nazis, we're not horribly greedy men and we weren't.

03:22:33
A:
And uh, we won that. And we forced the settlement on the worker's suit for a lot less than they were asking, for about 5 percent of what they were asking. So the trials were interesting. I had uh, a lot of interesting experiences. I met a lot of people and I traveled a bit and I made, I made some money, about what I'd have made working for other people at my level of skills and expertise.

03:23:02
A:
And by the way, the jury paid no attention to the fact that I was paid that money. As the foreman of one of the jurys said, well Mr. Adams is entitled to make a living like everybody else. So it didn't do them much good. So uh what do I think of the trial lawyers? Well Stan Chesley was doing what Stan Chesley is paid to do, win these kinds of suits.

03:23:23
A:
Do I think he was right? No, I think he was terribly wrong. But he was doing his job. I don't think a lot of lawyers really believe often in what they're doing. Now whether Stan believed in this or not, I don't know. But I, every now and then see Stan Chesley and I wave and he waves and we know one another. I don't think he's a horrible man. I don't think he thinks I'm a horrible man.

03:23:45
A:
Although he attacked me, he personally done the cross-examination for eight and a half days and we wouldn't. Because Stan didn't know what he was talking about and I did. He was asking me questions that he didn't know the answers to and he shouldn't have done that for his own case so that's the trust.

03:24:04
Q:
Now, a lot of people say that the government actually admitted that they were "guilty" because they settled with the community and they settled with the workers and money went to the workers and to the community.

03:24:23
A:
Well, in this day and time in our very litigious society most of the big suits are settled and they're settled for one reason because it's so expensive to continue to fight those suits that it's cheaper to settle.

Now if they were paying me $100,000 a year they were paying other experts a lot of money, the lawyers were making far more than we were making.

03:24:56
A:
It was costing millions of dollars a year to settle to fight the law suits. So when a chance came to settle the workers lawsuits for $20 million they settled. I was opposed to the settlements; I still am because I think we were right, I do not think the workers had a higher incidence of cancer or any other disease than the general population.

03:25:19
A:
We had the man who I thought was the best epidemiologist in the world Dr. Jeffrey Howell of the University of Toronto who run a study on these workers and he found no higher incidence of cancer among our workers than in the general public. And so I don't believe that the settlement proves anything. I was aware of course if we settled some people would take that as an admission of guilt.

03:25:44
A:
But I never took it as an admission of guilt in fact that's why I opposed the settlement I said I don't care how much the truth is that important for its own sake and I felt we would have won both of the lawsuits in court. I still feel we would have won and I think we would have won hands down. I think we had so much evidence on our side that we would have won.

03:26:09
A:
But the public never heard the evidence. For example the water I was talking to you about, they never heard that. All they heard is what the Cincinnati Enquirer said poor Lisa Crawford's well was poisoned, they never told her, they lied to her, they hid it, they covered it up; that wasn't the facts at all.

03:26:21
A:
And in court all those facts would have come out there was no way to suppress them. We would have introduced all of those facts and many others as well. We would have introduced all of the epidemiological studies. We would have pointed out that uranium was a million and a half times less radioactive than radium and tens of thousands, hundreds of thousands less times radioactive than most of the other nasties that you hear about plutonium and the rest.

03:26:49
A:
We would have even introduced evidence that even plutonium probably isn't as hazardous as they say it is. Not that it isn't hazardous, it's extremely hazardous not as hazardous as they tried to say it was. Um, we would have and this would have been scientific evidence and we would have introduced into that court the most horrendous battery of scientific experts that you would probably ever see.

03:27:13
A:
We would have produced world class scientific experts and they didn't have them. They had Argen Mark and Dr. Burnfrauki who were not experts and um we would have blown them out of the water. We would have won those lawsuits. But the government decided to settle and it's the government's money. And I don't resent the workers getting a little extra money, that's okay with me.

03:27:34
A:
It doesn't bother me. I mean after all the money that government throws away what's another $20 million here or there. Um, so no, it was not an admission of guilt, never. The fact that we settled was not an admission of guilt. Most lawsuits are settled the bigs ones. That doesn't mean a thing it just means that, hey, it ain't worth continuing with all this and grief and all this expense.

03:28:00
A:
I know that's why this lawsuit was settled because I was told that it was. I opposed settling the lawsuit we had a big meeting and they said, "wait a minute we can't go on and on with this forever look at what it's costing us. The best thing to do is to settle it and get out of it." That's what I was told twice.

03:28:16
A:
So, you know that's what I was told. I didn't settle the lawsuits; I was opposed to it. The people who did settle it said we're going to settle it not because we're guilty but because it cost too much to continue.

03:28:33
Q:
If you could address for me a little bit too the way the media covered the whole story in your opinion. Did they, were they biased?

03:28:46
A:
Incredibly biased. Um, some of it was so bad for example in the statute of limitation's trial when their witnesses were on the stand the local newspapers and local TV had people in the courtroom. When we put on our case they all went out. They only talked to the people on their side they rarely ever talked to us.

03:29:11
A:
Early in the game I talked to them. After a while a quite, the deciding factor was a Channel 9 news interview that I gave. I was interviewed for an hour and a half by Channel 9 news. When I saw what they presented they took a little snippet here, a little snippet some place else and they fit them together to suit themselves and I said never again.

03:29:36
A:
I just will not talk to these people because they do not they take things I say out of context, they do not quote me properly or fairly so it's senseless for me to talk to them. The media was extremely biased. Now that doesn't mean that I never received fair treatment from the media there were a few times that I did.

03:30:00
A:
But probably 95 percent of the time, 19 out of every 20 interviews were biased and slanted and when I would read them or see myself on television I could hardly believe them because they would take the most damning thing they could find and put it in the papers.

03:30:17
A:
Uh, that's the way the media does, that's what sells newspapers, horror stories sells newspapers, tell everybody that they're dying of cancer and they've all been killed and that there's a great government conspiracy to do them in and they love it. Tell them everything, gee we found a lot of stuff that says most of this isn't true; nobody reads the papers.

03:30:36
A:
Can't only blame the media you got to blame some of the people themselves that read the papers, some watch the TV. But no, they were extremely biased. The body snatching things I tried to explain to them about the tissue sampling they just ignored me. The emissions I tried to explain to them there's almost nothing left at site they ignored it.

03:31:00
A:
Um, I tried to explain how the contracts were established, they ignored it. I've sent them documents; I've sent them information even here I have explained over and over.

(Tape end)

Tape FLHP0238

04:01:08
A:
Well and I don't remember the exact date but I can look it up in my notes but I received a call from *Nightline* the CBS documentary, I guess you can call it that, although it's not a very good documentary at times; asking me if I would consider appearing on *Nightline*. The Secretary of Energy was going to appear and Senator John Glenn was going to appear.

04:01:29
A:
And I told them I would certainly consider it; within an hour I got a call from Washington from DOE's chief legal counsels or some of their top legal counsels asking me not to appear and I said, "well I'm

going to appear if I want to. I'm seriously considering it of course I don't have the full flat out invitation from it yet but I expect it." They said please do not appear.

04:01:58
A:
And I said, "well I'm going to ignore your advice, you can fire me, cancel my contract but it won't matter that much anyway." DOE was one of my lowest paying clients anyway. And they said what would it take for you not to appear, and I said, "you must tell the Secretary of Energy that he may not appear because if he appears I will appear if it's possible for me to appear."

04:02:23
A:
And they said, "okay, we'll see what we can do." So then in about an hour I received another telephone from Washington they said, "we can assure you that we have it directly from the President's office that the Secretary of Energy will be forbidden to appear on *Nightline*." And I said, "who in the President's Office" and they said, "Marlin Fitzwater." Marlin Fitzwater was George Bush's, um, I guess chief pressman at the time.

04:02:57
A:
So I did not appear, the Secretary of Energy did not appear. They were very unhappy when I told them I wouldn't appear but they were enraged when the Secretary of Energy cancelled and they made a big deal of it on the *Nightline* program that night.

04:03:09
A:
So the government on occasion tried to suppress information as well as the media twisting and distorting it. Um, my experiences with the media were not very happy, my experiences with many people in the DOE were not very happy either. I don't believe the American people ever really learned the truth about many of these issues partly because of the media and partly because of the government.

04:03:35
Q:
Great, wow, that's incredible. In all of these years, um, what has been your greatest challenges dealing with issues related at Fernald?

04:03:54
A:
Well, the greatest challenge was just trying to get someone to listen. Just to get someone to sit down and listen and look at the real facts and the real documents. So many people pop off and they make all kinds of statements that they cannot possibly support and they have absolutely nothing to back it up. Well, they just say I know it's true, I know those people lied to me, I know they killed me, I know they did this, I know they did that.

04:04:22
A:
They don't have any evidence to support it but they keep saying it. I have lots of evidence; I have a huge stack of documents that I can use to support what I say. And nobody listens to me and you can't get people to listen to you because they've already made up their minds long time ago and they don't want to change them; that's the biggest challenge.

04:04:47
A:
There is one other thing that I did want to discuss with you though, this accusation that we made huge amounts of money, my company did. And I want to explain why that just isn't so. This gets a little involved but its something you should know.

04:05:13
A:
The way the government traditionally, historically obtains its weaponry is to go out to some company and say here is the specifications for a airplane or a new rifle or a new 150 mm _____ we want you to bid on it and you tell us how much you'll sell it to us for.

04:05:38
A:
There have been a number of those on the big fighter plane contracts. I remember Northbrook and Lockheed going head to head to try to sell fighter planes. So the company then makes those and in effect sells them to the government and if they can make them a little cheaper then they can pocket the difference.

04:05:54
A:
If it cost them more then they have to go back to the government and say hey, you have to give a cost over run on this, which they do frequently. Now the Department of Energy's contractor contracts were not established like that at all in any way. Now our critics think they were and they keep repeating all of this nonsense about how we pocketed money that should have gone to make our plants safer and to upgrade and we pocketed and took in profits.

04:06:28
A:
That not only did not happen, it could not happen. And I want to explain why. You want to remember that the government had to use private industry to build nuclear weapons but it couldn't tell these people how these nuclear weapons were built and then write specifications for them because they were too secret.

04:06:48
A:
So what they had to do, the government had to retain control over all these facilities so they built the facilities and they owned everything in the facilities all the materials in process everything. So how could the contractors make any money out of this? Well, the government said we will pay you a fee and they would establish the fee in advance.

04:07:21
A:
We'll pay you say $300,000 a year to perform the management functions in this plant. That's all we can make. How is, were the plants financed. How, for example, if we at National Lead, if we wanted to buy some nitrite acid to make urinile nitrite, how would we do that?

04:07:38
A:
Well the government established the letter of credit at a local bank and then they gave us a big book with a list of allowable expenses. Now we could write checks on that letter of credit for anything that was in that book that was an allowable expense, raw materials, other materials, we could write a check on that. That's all we could write a check for.

04:08:06
A:
We couldn't write a check and just stick it in our pocket for profits or anything else. Then at the end of the year government would hand us a check for our fee; whatever that was. Now you can see the enormous difference in that in say buying a fighter plane or a rifle or something. If we didn't spend as much money as we expected to spend we just didn't spend it; we didn't write as many checks on the letter of credit.

04:08:31
A:
So we didn't spend the money. So we couldn't pocket any of the money. The only way we could have pocketed the money was to have committed deliberate fraud. In other words said we bought something we didn't buy and write the check to someone who was in collusion with us we never did that nobody's ever been able to prove that we did that and we never did it.

04:08:54
A:
So we didn't, the only way we made anything out of this in a real sense of the word there was no profit it was just a fee in other words we'll pay you so much. The rest of it all came out of the government's letter of credit and we couldn't make any money out of it. Now originally until the late 70s the fee was fixed in advance usually the contracts ran two or three years and you would sign a contract and that was it.

04:09:27
A:
That's all you could get. The only way you could get more money from the government would be to appeal to them because they had the sole discretion of increasing the amount of money. Of course they couldn't decrease it either because we had a contract so it couldn't be increased by us and it couldn't be decreased by them.

04:09:48
A:
We had a contract, we will management this place for so much every year and that's all we can get. Now in the late 1970s they established a new contract called a CPF contract and on that particular

contract what they did was to give us they paid us a fixed base amount and then over and above that they judged us on how we did in various areas.

04:10:15
A:
And they would send teams of their own people up to evaluate us. Most of whom I'm said to say didn't know much how to evaluate us, they were a bunch of other government bureaucrats but they did and then they would pass, they had a curve and they would plot these figures on the curve and decide what our final payment was.

04:10:39
A:
Believe it or not our payments went up when they did that because they thought we were doing a marvelous job, so our payments actually went up under the CPF contract. A couple of years later they turned around and said you guys are doing a lousy job and we're going to kick you out of here. Kind of inconsistent behavior on their part but for people who didn't know what was going on anyway I can't say it was inconsistent as all that.

04:11:00
A:
But there was no way that we could have cheated; there was no way we could have dipped our hand in the public till short of deliberate fraud. Now if someone has evidence of deliberate fraud I'd like to see it. I've said over and over again you show me any evidence of deliberate fraud and no one has ever met that challenge.

04:11:21
A:
So the contracts were entirely different. Now, some companies, some companies didn't want to accept anything. They did it as a patriotic duty, the DuPont Company ran Savannah River for $1 a year. We originally got the contract because we agreed to run it for nothing and the first year we accepted $10,000 which were incidental expenses the first year we ran the plant and those were just for our incidental expenses; people traveling back and forth expenses connected with the plant.

04:11:59
A:
Now a couple of years later our board of directors said wait a minute a lot of these other companies are getting a lot of money for this why don't we ask for a fee and we did. Now how much money did we make over the years? Well that's all a matter of government record; you can look it up if you like. You just go through the freedom of information act.

04:12:24
A:
We made an average of 3.61 percent of the amount of money spent; now that's hardly an exuberant return. Now true there was no return because we didn't have anything invested; indeed we were forbidden to invest anything here. We were not allowed to bring anything of our own in here not only we but the other contractors; everything on this site belongs to the government still does for that matter.

04:12:52
A:
You don't own anything on this site, Fluor Daniel's doesn't own anything on this site, Fluor Daniel's doesn't own anything. Every desk, every piece of carpet, every light, every light fixture, every piece of equipment is owned by the government. And the contractors may not bring their own materials into the site.

04:13:12
A:
Furthermore any new things that the contractor wants to buy have to be approved by the government. We had to submit an annual budget of what we needed to buy and the government would approve or disapprove that annual budget. We, we would then, but even when they approved it sometimes originally any expenditure any capital expenditure over $5,000 had to have their absolute flat out approval.

04:13:44
A:
And so anytime we spent anything over $4,000 or $5,000 they had to approve it, even though they had approved the budget earlier so they maintained a very tight control. And they had an auditor here even when there was no other DOE presence on this site and there wasn't for a number of years there was an auditor. And the auditor checked on everything that we spent.

04:14:08
A:
And he made good and doggone sure that we didn't spend any money on anything that wasn't on that list of approved expenses. So these accusations that we made huge amounts of profit and when you stop and think about it, how could it have been any other way. One of the other complaints is that the DOE indemnified the contractors.

04:14:32
A:
In other words the government agreed to pay any damages lawsuit awards or anything. Now ask yourself how else could you have done it. How can you insure a plant where everything was classified where the government had the final control? See companies get insurance we couldn't have bought insurance.

04:14:56
A:
Nobody would have sold it to us; nobody would have sold it to any of the contractors. How could they, we didn't have control, ultimate control over the facility. So if a terrible mistake was made because the government wouldn't give us money to do what we wanted to do as for example in that dust collector.

04:15:13
A:
You know we proposed putting HEPA-filters on dust collectors in the '70s, ten years before that happened and were turned down because according to the government it cost too much money. So

should we should my company have to pay the damages because the government refused to put HEPA-filters on the dust collectors.

04:15:34
A:
Absolutely not, it makes no sense, yet some people in government most notably Senators Glenn and Metzenbaum have ranted and railed on the floor of the Senate that you ought to stick it to these contractors because they're the ones who ultimately do the bad things. How could we, we couldn't insure ourselves, we did not have ultimate control.

04:15:53
A:
Over and over again I personally made recommendations to the Department of Energy that were turned down because they cost too much money. This plant would have been 100 percent, 500 percent safer and more emissions free if only the government had only listened to us and given us the money to do what we asked to do.

04:16:13
A:
And I have literally dozens of documents where we made the submissions and turned down. It's just that simple. We did not make any money to speak of out of this, we certainly didn't swindle anybody, we could not, should never have been held responsible for some lawsuit award or settlement.

04:16:40
Q:
So why did NLO want to run the site?

04:16:47
A:
Well it was, I don't know the exact story but I only, I used to go to New York every now and then I can only give you an anecdotal account. There were two reasons basically; first of all we had the chairman of the board was a fellow by the name of Joe Martino. And he was the son of some poor Italian immigrants and he'd started out as an office boy and he'd worked his way up to the top of the heap.

04:17:10
A:
And Joe Martino was one of those hard working immigrants who believed that this was such a great country and by golly I need to do something in return. Plus the fact I was told was a personal friend of Dwight Eisenhower's. So when this opportunity came up, Joe said hey we'll do this for the government and we don't even want any money for it.

04:17:40
A:
Now later on the board of directors reversed it and we got a little 3.61 percent. The second reason, there was a second reason, the second reason is a lot of companies got into this field, you people aren't old enough to remember. But in the 1950s nuclear held this enormous promise of power was going to

be so cheap you wouldn't even have electric meters you wouldn't even be billed for it, it was going to cure all these diseases, it was going to do all these wonderful things.

04:18:07
A:
So everybody expected the nuclear industry to take off and boom but how did you get experience in the nuclear industry. Well since the government controlled all of it, you're going to have to work for the government. So a lot of companies bid for this to get into the business because they thought they were getting into something that was really going to expand and eventually it would make a lot of money.

04:18:29
A:
Now it proved to be a terrible disappointment, but once the anti nukes got control, ah, everything nuclear was bad. So eventually all these companies got out, for example there is not a single company that runs these, well maybe one or two, maybe AT&T is still in and Sandia, I don't know I haven't looked at those contracts recently.

04:18:51
A:
There is hardly a company that was originally in the program or was in the program as late as 1985 that is still here. Every one of them has left and I will guarantee you while they won't say it publicly none of them would ever come back. There was Union Carbide at Oak Ridge, there was Dow and later on Rockwell International at Rocky Flats, there was DuPont at Savannah River, there was General Electric and then a whole series of other companies out at, ah, Hanford.

04:19:25
A:
You'll never guess who originally ran Pantex where the final bomb was assembly, was done, hardly anybody know this; I'm going to tell you something you don't know, Proctor and Gamble. Proctor and Gamble ran Pantex originally; Proctor and Gamble assembled the big bombs. Does that shock you a little? Mr. Clean ran Pantex originally.

04:19:48
Q:
Yes. Actually it doesn't really shock me. It shocks me to know that, but I'm not surprised. You know as far money goes.

04:19:58
A:
But all of these people have gotten out and nobody will ever come back again. You, you know, it's all now being run now by big defense contractors, people who have made their whole living on defense. Lockheed, Martin Marietta that's all they do, they're literally government companies. They're the only people who want anything to do with this anymore.

04:20:18
A:
Nobody in private industry's going to touch this never again after the way the government has treated these companies. They won't say so publicly, but after the way the government has treated these companies, they will never again do a thing like that. And that scares you a little bit, because what happens if this country really gets in desperate trouble again. And they have to go back to these companies and say hey, come and help us again.

04:20:41
A:
I guess, you know, I guess sheer patriotism would take over. But after the way the government has treated its contractors. Now if the DOE will try to say well we really didn't blame the contractor, we accepted part of the, share of the blame too. Pardon my language, but like hell they did. They dumped as much on us as they could. Yeah, they paid the cost of the awards and the settlements.

04:21:05
A:
They had to by legal contract, they had no choice. But they, there's no question. To use a terribly vulgar term, they just dumped on the companies. And some of these people have long memories. So, you know, people like me will be gone in a few years, I'm 71. So it won't matter to people like me. But some of the corporate memories are long, and they'll be around a long time.

04:21:29
A:
If it sounds like I'm a little bitter over this, I am. You bet I am. Cause I'm gonna tell you, I knew so many of these people who managed these, these facilities. Not just here but at Rocky Flats. I knew the plant manager of Rocky Flats personally. I knew people at Oak Ridge, at Savannah River, at Hanford. These were some of the greatest people I ever knew.

04:21:56
A:
They were wonderful people. Now, one other subject I want to talk to you about because it's been in the news recently. And that is the plutonium-laced material. There was another article in the Enquirer the other day. Now first of all I'm gonna tell you how the plutonium got there.

04:22:14
A:
As I told you before, we sent depleted cores to, to Savannah River, and we sent enriched ingot out to the end reactor at Hanford. Those were irradiated in the reactors and some of that uranium was converted first to neptunium and then to plutonium. That's how we got our plutonium. That's the only way we could make it.

04:22:40
A:
Now only a small part, a very small part, of the uranium was converted to plutonium. So the fuel cores were removed, they were taken out and dissolved in nitric acid to make urinayl nitrate, plutonium

nitrate and whatever else was in there. And then there were, and then they separated the plutonium from the uranium. That was a very difficult thing to do.

04:23:12
A:
And it involved a process called Purex process. And it was carried on both at Savannah River and at Hanford. It was carried on in one of the biggest, some of the biggest things you ever saw. We sometimes called them Queen Marys. They were, I've got the exact dimensions in my book, but I don't remember them off the top of my head.

04:23:37
A:
These things were constructed out of concrete with walls up to eight feet thick. And with ceilings on them that were like six or seven feet thick. They were over 500 feet long, and inside those were material that operated by remote control. Because the material when it came out of those reactors was so radioactive no one could get near it.

04:23:59
A:
They stripped out the plutonium and uranium and separated it. The plutonium went into the weapons, in fact there were really three streams, the plutonium, the other nasties were in the second stream, and then the uranium. But the uranium that went out to Hanford was enriched, not very highly, but very, very valuable. So they had to recycle it, send it back, first it went to Paducah and then it came back to us.

04:24:27
A:
Now no separation process is absolutely perfect. You cannot remove every atom of everything, every impurity from everything. It can't be done. I mean there are limits to what we mortals can do. God might be able to do it, but we couldn't. So there were a couple of parts per billion, per billion, not per million, of plutonium left in that recycled orange oxide.

04:24:54
A:
Uranium oxide. To be exact, and there are a number of reports on the subject, some of them I personally asked for. There's a big DOE report on the subject. Which I'm gonna have to try to get to the media. They'll ignore me again. But uh, we measured the plutonium, we a plutonium spec of ten parts per billion, and we measured the plutonium, it averaged slightly less than three parts per billion.

04:25:21
A:
Now did that make the uranium more hazardous to handle? Just slight. But we took a little extra precautions. Did the workers know about it? Well yeah they did, because I know I told them about it. So those who say they didn't know, I don't know why they didn't know. Maybe they forgot. At the time most of them didn't care what plutonium was anyway.

04:25:46
A:
Now there was one incident though, that was, that did create more of a hazard, that was thoroughly investigated. And I could, I don't think I covered that in the book, I'm gonna cover that in the new book. But what we did uh, or what the system did, when they re-introduced the recycled oxides into the gaseous diffusion plants, they had to convert what they called green salt, which we made here, uranium tetrafluoride into uranium hexafluoride.

04:26:25
A:
And they did that by burning it. In a big flame of fluorine. You can burn things in fluorine just like you can in oxygen. In fact more so. Fluorine is more active than oxygen. But the problem was this: uranium hexafluoride was volatile, in other words it was a gas, it would go on. But most of the other stuff was not. And so it dropped out in the fluorine burner.

04:26:48
A:
And that enormously increased the concentration of plutonium. Now instead of being a couple of parts per billion, it could get up to as high as a couple of parts per million. Now usually they let that accumulate for a long time. And they did, and I don't remember exactly when it was, but I think it was some time in the late 70's, I can look this up for you to, but, we got a call from the AEC or the DOE I don't remember who was in control at that time.

04:27:22
A:
And they said we've got some burner ash that we want you to process. Wait a minute. We don't want to process burner ash. Because it's much higher in plutonium. Well, you've got to process it. You work for us; you're our plant. Well how much is in it? I personally had these conversations. How much is in it? Well it runs up to two or three hundred parts per billion.

04:27:46
A:
Well that's still too high. But if, I went back to the Health and Safety Department and I said to them, can we process it? They said, well as soon as we get it in we'll mix it with a lot of other virgin material and we'll blend it down to where it's less than ten parts per billion. Which is our spec. And then we'll put placards all over the place informing the workers, and we'll have meetings with the workers and tell them about this, and give them special instructions.

04:28:14
A:
Just so they know. We don't think there's any great hazard. Well, lo and behold, when the material got in here and I insisted on having it analyzed, it was about three or four times as high as they said it was. So I went back to Health and Safety and they said we'll just have to intensify our precautions a little bit. But we still think we can handle it. So on that basis we handled it.

04:28:34
A:
Now the newspapers got a hold of that and they went crazy in 1986. And, of course, there are the stories that, that, that the tiniest piece, a millionth of a gram of plutonium taken into your body is instantly, well not instantly, but eventually fatal. You will get cancer on down the line.

04:28:57
A:
Well it so happens there was a big study done by people out at Los Alamos and Rochester University in New York. There were 28 workers back in the Manhattan Project days; we didn't know how to handle a lot of things, who got some pretty appreciable plutonium exposures. And it so happened that every one of those 28 people was still alive.

04:29:18
A:
Some of them in their early 80's, all of them 70 or older. And the critics, a fellow by the name of John Gothman, said that seven nano; a seven nano-cure exposure of plutonium is invariably fatal. Some of these guys had 25 or 30 times that high of an exposure. And they were all still alive. And this was 40 some years later. The cancer death rate was lower among these people than the average population.

04:29:48
A:
Now I tried to get that written up. I tried in the Cincinnati Enquirer. But it did finally get written up by Atlantic Monthly. And in the April, I think it's April 1995 edition of the Atlantic Monthly and see if you can find a copy. You can read all about it yourself. But I have the original study. So uranium, uh plutonium, is at least 20 times less hazardous than these people say it is.

04:30:15
A:
Now, doesn't mean it's not hazardous. I don't want to, I mean it's terrible stuff. It scares the hell out of me to even get near it. But it's not as dangerous as they say it is. And now I read about plutonium, laced orange oxide that was sent back to Fernald and we have to have an investigation. Because the paper said sonny there were hints, hints that there was plutonium in some of the material that went back to Fernald.

04:30:40
A:
Hell, pardon my language, they ran an investigation, the Department of Energy did, in 1986, it's in your files down here, you can look it up anytime you want to look it up. They ran a thorough, going investigation, it's that thick. Hint! We knew exactly what was here. And I had Bernie Gessen, Gessen.

Q:
Before we get into that let's go ahead and change tapes.

05:01:00
Q:
Okay!

05:01:07
A:
To determine how much plutonium was actually on site I had our chief of nuclear materials control prepare a report for me. That report is in the files, it is B. Gessiness , and W.J. Adams, subject: Plutonium Content of NLO Feed Materials Revision 1, dated April 10, 1985. You can read exactly how much was there.

05:01:29
A:
And then there are all kinds of other, there's the U.S. Government memorandum, uh, John D. Wagner, Manager Richland Operations Office to Charles J. Baers, Jr., Acting Deputy Assistant Secretary for Military Applications, and stockpile support – subject: Plutonium Produced in Production Reactors, and you can find, you want to know how much plutonium was produced. It's here. They de-classified it.

05:01:52
A:
I don't think they should have but they did, so I put it in my book. Then the Atlantic Monthly, yep, April 1955, it was written by Jeff Wheelwright. You can read it. But I have, well the complete report is listed. A 37-year-old medical follow-up of the Manhattan Project plutonium workers by George Volts and Robert S. Greer, of the Los Alamos National Laboratory and Louis H. Hempelman of the University of Rochester Medical School.

05:02:16
A:
It's all there. Then there is another report that I didn't put in here, but uh, I can tell you what that is if you really want to know. And it's a complete, they set up a committee, they came in here and investigated our plutonium, but they also investigated Paducah's, Portsmouth's, the whole works. The report is about that thick. I have that too.

05:02:37
A:
I didn't put it in here. It will go in the revised edition of this book. But all of this business that nobody knew it was here, they hid it, we're just now finding out about it. That is utter garbage. It just isn't so and there are documents to prove that it isn't so. And as I say, I'll give you this list and you look up the documents for yourself.

05:02:59
A:
Don't take my word for it. So, yeah, there was a small quantity of plutonium on this site. Probably less than an ounce, all told, in the whole history of the plant. Mixed in with maybe a 100 thousand

tons of other material. And uh, if you consider that a horrible hazard, if you believe the people that say well, any exposure to plutonium will get you. Well, we should all be dead. And we're not.

05:03:27
A:
So it just, you know, it's just another example of the hysteria, and the distortion, and the manipulation of the information. But you can't tell people in the media this; they won't listen to you. Nobody picked up on the Atlantic Monthly's report. On atomic over-reaction. It's like the down-winders; you will hear how all these people down-wind were dying of cancer at horrendous rates.

05:03:53
A:
And the state with the lowest cancer rate, the two states with the lowest cancer rate, are right directly downwind. Why didn't they all die of cancer? They didn't. They're the lowest cancer rates. Not highest. But you can't, you just can't get anybody to listen to you. They only want to hear the bad news. They want to hear that these terrible things happened. Well, what else do you want to discuss?

05:04:12
Q:
Well, something that we haven't talked about yet was the special projects. (Comment: Oh yes, special projects) The uh, penetrators.

05:04:19
A:
Okay, let's talk about that. Uranium was used for other purposes other than making nuclear weapons. And in the 1970's, I can't remember the exact time frame; the British developed something called Chaubaum Armor. There are a lot of ways to penetrate armor. One is to just blow a hole through it. Hit it so hard that you knock a hole in it. That's the way bullets normally penetrate.

05:04:43
A:
Another way is to put a little explosive charge and try to explode a hole through it. Another way is to try to burn a hole through it. Well, the British in a laboratory, near a little town called Chaubaum, England, developed a composite armor. It had steel in it, but it had ceramics, it had plastics, it had a lot of things in it.

05:05:02
A:
And it would defeat almost anything you could shoot at it. But in the meantime, we were developing what we called the long-rod kinetic energy penetrator. The long rod kinetic energy penetrator was made out of uranium. The reason we made it out of uranium was that uranium was the densest material. It _____.

05:05:24
A:
Now if you want to poke a hole in something, you want to drive a hole through something with a bullet or anything else you make it as heavy as you can and you make the frontal diameter as small as you

can; the problem with making the front take it to point like an ice pick. But the problem with that is that there's a practical limit to how long you can make this thing it gets aerodynamically as it flies through the air.

05:05:50
A:
So somebody came up with a brilliant idea of making these things out of uranium, either uranium or tungsten. Tungsten was a crazy idea because we didn't have much tungsten and most of the world's tungsten's supply was in Red China. But uranium worked just as well if not better it was just a little less dense than tungsten.

05:06:14
A:
So we figured if we could make a projectile out of uranium we could blow a hole in almost any tank that there ever was, just punch a hole right through it. And so we began to work on it most of the development work was done right here at Fernald. We did much if not most of the developmental work on those penetrators.

05:06.37
A:
There were two kinds there was the Gow 8, which the Warhog plane used and a specially designed cannon; it was a 40mm projectile. But the big projectiles the ones that could go through even the frontal walls of a tank, frontal armor with a big chunk of uranium very carefully very precisely machined that was maybe that long (gesturing with hands about 2 feet).

05:07:01
A:
And it fit inside of either 105 or 125 mm shell and as the shell left the barrow the rest of the shell peeled off; we called the rest of the shell the sbot. And that peeled off and it let this big chunk of uranium flying right at the enemy tank and when it hit it took it out. I've seen the movies the pictures it was nothing left of those tanks.

05:07:25
A:
In fact, in the Gulf War and I'll come back to that later, we once killed two tanks with one bullet; that's how good they were. But somebody got to worrying then up in the Defense Department that would the long rod connective energy penetrator go through Chaubaum armor. Because our tanks were armed with Chaubaum armor and what if the Russians came up with similar penetrators.

05:07:52
A:
So somebody came up with a bright idea that if we punched holes with it the uranium what would happen if we incorporated uranium in the Chaubaum armor. Now the uranium is not just a big type plate or uranium people think that but it's not true. It's plates of armor that are strategically placed in the Chaubaum armor.

05:08:13
A:
Sure enough we tested it and the long rod connective energy penetrator couldn't penetrate it. So we could destroy any other tank in the world but if we could introduce that armor into our tanks nobody could destroy ours; they would become invulnerable.

05:08:30
A:
Now that would become astoundingly important because the Russians boasted about their 30 thousand tanks and we only had ten thousand and every now and then they would flex their muscles and say you bother us and our tanks will roll into Germany and that will be the end of you. Uh, uh, no more because we could of sat there and just blown their tanks apart one right after the other and they couldn't have hurt us.

05:08:53
A:
Because our tanks were so well-armored with this new armor, but that was a tremendous secret. That was maybe the most closely guarded secret that I was ever involved in. They came into me and asked if we could fabricate the uranium and I said yes we can we'll cast the main plates and then they fabricated the rest elsewhere.

05:09:14
A:
Well I got taken into a little room and the military security people came in and I got a special super clearance and then I got a special little red phone which sat on my desk scrambled so I could talk to other people in the program and then to make sure that nobody could overhear what I said, and that office down there still has it on the walls; go down at look at it.

05:09:36
A:
The office down at the extreme end of the building of you may known where I sat but where I was that office has a special material on the walls that's soundproofing and our security people would stay outside to see if they could hear anything that I said and they couldn't. So not only three people to my knowledge even knew what that uranium was for on this site.

05:10:03
A:
Um, me and Bob Spenceley and well four people one fellow who worked for me and Larry Devir the chief of security they knew nobody else knew. They knew they were casting slabs of uranium but we'd cast those for years; we didn't try to hide them they were stacked up all over the place.

05:10:21
A:
Um, but when we shipped them out to fool the Russian satellites they would be shipped one place and then held there and then reshipped so that they couldn't see even where they went so that the final fabrication wasn't known. When we got all done we were supreme. The giant Russian tank army was worthless. I feel to this day that it had a significant impact on ending the Cold War.

05:10:50
A:
Our planes were so much better with all this new electronics and then we killed the last of their pride and joy, their tanks. And there is this interesting story it's in Tom Clancy's "Armored Cab," you should get that book and read it sometime because it's not a fiction book it's more of a narrative, more of a documentary book.

05:11:08
A:
One of our tanks one of our M1 A1s; the M1As didn't have uranium armor the M1A1s did got stuck in a depression in sand and they couldn't get it out. And over the hill comes two T72s Russian built T72s, now this is not my story this is Clancy, we couldn't get out we couldn't maneuver but the tank merely aimed its turret and the two T72s were coming one behind the other one.

05:11:45
A:
One, one shot killed both tanks went completely through the turret of the first T72 and destroyed then hit the second T72 and destroyed it. Our tanks were hit at least six times because my friends in the army sent me a copy of the Army Times. Hit six times dead frontal hits by the best Russian guns didn't even slow them down that's how good the armor was.

05:12:09
A:
So yeah, did we have significant impact on ending the Cold War you betcha we did. And everybody should thank us for it and not tell us what horrible, and you know it's a funny thing our lawyers tried to bring that up at one the trials but Chesley objected violently he said, "Your Honor, he's waving the flag, he's trying to show how patriotic they were."

05:12:32
A:
You're damned right I was waving the flag but the judge wouldn't allow me to discuss it in the trial. He forbid me to discuss it, I was never allowed to tell that story at trial. Incredible, you betcha its incredible one of the most significant happenings in recent history and I was not allowed to say it because I was waving the flag. (Comment: so was the Gulf War)

05:13:04
A:
Oh yeah it was proven in the Golf War. I used to sit and watch the Gulf War because I wanted to see what happened to the M1A1s. Everything I looked at I would try to see how did the M1A1s perform because boy that was the acid test if the Russian guns couldn't penetrate it because the Iraqis got all their stuff from the Russians and we did the job and believe me we did the job.

05:13:29
A:
Well, you know, I've led an interesting life done some interesting things and I've got a lot of enemies lot of people hate my guts. Lisa Crawford will tell you what a horrible man I am but I did things I want to know what she did. So, well.

05:13:57
Q:
How do you feel about Fernald now as far as the cleaning up?

05:13:58
A:
It's costing too much, taking too long. Too many mistakes are being made. I told them the pelletizing wouldn't work. I knew it wouldn't work because I had examined the material many times. They were going to pelletize the material out of the K-65 tanks and I tried to tell them. I used to play golf with them. I said, "hey you guys, you're going to waste tens of millions of dollars and isn't going to, you can't do it."

05:14:24
A:
It's because of the nature of the material for one thing it contains sulfates. The pellets if you could actually pelletize them wouldn't be stable; and I said what are you going to do pelletize them and they all fall apart in a few years. Furthermore, the material is valuable it's a national resource it shouldn't be put in some form where you can't get at it.

05:14:48
A:
Because there are some of the radium isotopes in there that may eventually on the line prove to have incredible medical value. Um, one of them particular has such a short half life that you can give somebody a big dose of it for cancer treatment and by noon the next day it would all be gone, decayed away yet it would zap the cancer.

05:15:13
A:
So you know some of that stuff is valuable it shouldn't be thrown away. It should be put somewhere a lot safer than it is. But it's taking too long. It's costing too much money, partially because of the exaggerated fears and the exaggerated concerns that have been raised by the FRESH people and other people and by the court lawyers.

05:15:38
A:
And you can't go near anything because it's too dangerous. And um, so I still don't know how they're going to get the material out of the K-65 tanks. We studied that at great length how to get it out we thought we knew how to get it out, I'm not so sure I like their methods very well.

05:15:54
A:
Um, I don't know how safe they are, of course I don't know all their methods but there isn't any question the whole cleanup is costing too much and taking too long. By the reason is you run everybody off that knew anything about it. The people here don't know how the material got there; they don't know what it is.

05:16:10
A:
It's like, it's like what we talked about before they still insist that this material out there was from the Manhattan Project and it wasn't. They don't know where it came from, they don't know the characteristics of it as they should, they tried to run tests they made a lot of mistakes there. And they've come to all kinds of judgements that if they knew there subject matter better they wouldn't make and the won't listen to any of the rest of us.

05:16:37
A:
You know, I could have come out here and done consultant work, but Lisa Crawford and her people would've gone berserk. I wouldn't do it anyway but I know more and I don't mean to brag but I know more about Fernald than any man alive. I would be an invaluable resource but because of the political and I'd do it and probably for almost nothing just to get it done and save the taxpayer a lot of money.

05:17:03
A:
But because of the politics of the situation I would never be permitted to do it. And not only me but many, many other people throughout the whole system who knew it and knew what had to be done and had conducted studies on this. We conducted studies in the 1970s about getting this material out of the K-65 tanks and we made proposals to the DOE.

05:17:31
A:
We had a whole series of laboratory studies on how to handle this material; DOE wouldn't do it because it cost too much money. Nobody even knows where to find the results of them and if they did they'd probably ignore them. And unfortunately a lot of these people feel they know a great deal more than they do and they jump to all kinds of conclusions that are just flat out dead wrong.

05:17:54
A:
And it's like anything thing else the best people to do it are the people who know the most and its not these people and they will not listen to the people who do know and they certainly won't use them because of the politics of the situation. Hell Lisa Crawford would make a call to John Glenn and he'd make a call to his friends and he'd say what'd you mean you're going to let that criminal come out there, that, that horrible guy who made all these problems come out there and try to solve the problem.

05:18:22
A:
No, no, never. And that's just as well because I don't want to come back but as my patriotic duty I probably would, I would have probably come back and told them to do a great many things that they don't know how to do. But it'll never happen and that's just as well I'll play golf two or three days a week and relax for the rest of my life, whatever or whatever I have left. And um, no I don't like the way the cleanup is proceeding at all.

05:18:50
Q:
How about future land use. There's about 1,050 acres here. What would you like to see done with the land once the buildings are gone?

05:18:58
A:
Well, the most significant hazard here are the K-65 tanks. The K-65 tanks are really a hazard. Now they drive almost everything else. As far as the uranium is concerned it just doesn't present that much of a hazard. You, you could use this land for almost any purpose you wanted to. Dig up some of the worst contaminated spots, put a couple feet of dirt over the rest of it.

05:19:28
A:
And hell build a golf course on it for that matter do whatever you want to do with it. Now the K-65 tanks are a different story. You've got to address them. And here's the other thing point I want to make those should have addressed first not last. We left here in 1986 and at the time I was saying and I don't know how to be to emphatic about that, those tanks should have been the first thing addressed because they present the most hazard by far.

05:19:57
A:
And they're still not really addressed. Oh they tried to fill them with foam, you talk about a stupid dumbest idea that was maybe the dumbest thing that anybody every came up was trying to inject plastic foam on the top of those tanks. The very, you should have addressed the most hazardous things first. What were they doing, running around addressing uranium concerns that couldn't have possibly injured anyone and leaving the big concern sit there.

05:20:25
A:
Here we are now it's 13 years later and the K-65 tanks are still sitting there and yeah they've done a few things you know they've done a few little things here and there. But that material should have been gone ten years ago. But you see they addressed the things that would give them, and I'm going to be very blunt about this, the people who tried to clean this place up from Westinghouse on addressed the things that would give them favorable publicity and that meant addressing the easy things.

05:21:00
A:
If you'd gone in and addressed the hard things it was too much risk, so you go out here and sweep off the roads, dig up shovels full of gravel and dirt and then invite everybody out for a bus ride and say put a rose on me mother, see what I have done. And the most significant hazard by far is still sitting out there and has been sitting there for 13 years.

05:21:18
A:
In fact, has been sitting there since 1958 when the Belgian's should have been made by the government to remove all of the material and take it wherever they jolly well please because it belonged to them.

And it's still there. Address the tough things first, address the dangerous things first and they haven't done it. They don't even know how to do it.

05:21:43
A:
Everything they've tried has failed and they don't listen to anyone who does know. So yeah, it's how I feel it that sounds a little bitter, it sounds a little dramatic but it's a fact.

05:22:01
Q:
Let's, let me ask you a little bit about waste shipping too because they're shipping some low level waste out to Nevada test site for some time; how do you feel about that?

05:22:13
A:
Fine, go ahead and do it. If that bothers these people go ahead and do it those wastes are not very hazardous. Um, I'd probably be willing to, well they're just not that hazardous, they're some hazardous there's always some hazards associated with anything. I wouldn't want to live on a dump of old ice cream cones for that matter, but, but and I don't mean that ice cream cones are as hazardous as this material, please don't misquote me.

05:22:37
A:
I'm just saying they're hazardous they should be disposed of properly and I wouldn't dispose of them here on site and I'll tell you why. Because the aquifer comes too close to the ground here. There's too much chance; the site should have never been located here in the first place. It should have been located up in the hills away from the aquifer. The aquifer is too close to the site here.

05:23:04
A:
Now, is any of this material going to get in the aquifer, probably not, if it does is going to have any significant effects, probably not. But I wouldn't leave them here package them up and ship them out. Get rid of them best thing to do with them and there's plenty of room out in Utah to put them and besides Utah has the lowest cancer rate in the country so ship them out there (laughing).

05:23:29
A:
Um, yeah. Now all of this hysteria every time there's the slightest little leak and an ounce of material leaks out that is just that just incredible that's just bologna; a few ounces of this material aren't going to hurt anything. Again, address the real problems, the real problems are those K-65 silos and always have been.

05:24:01
A:
I have been asking that those K-65 silos be taken care of since the 1960s. For 35 years I have tried to say you got to do something about them and for 35 years everyone has ignored me. And I can produce documents to support that I don't have to rely on my memory.

05:24:31
Q:
Was there anything that we didn't cover that you would like to cover?

05:24:32:
A:
I don't think so. Yeah if you can leave that with me that would be wonderful. We're going to roll of nat sound real quick that's just to get room tone. So if you just want to sit still for 30 seconds. This is nat sound