**050057 Interviewer:** We'd like to begin these interviews by asking you to just sort of state your name, where you grew up and where you went to school and then we can start talking about your Fernald experience. So …

**050106 Dave:** Okay, I am David Fankhauser. I was born in Indiana, moved to Cincinnati with my family in the early 50s. Uh, went to Central State College in Wilberforce, Ohio for a couple of years and then I transferred to Earlham College for a couple of more years with a chemistry major. Uh, worked for a while as a medical technician at the UC medical school, and then I went to Johns Hopkins University where I got my Ph.D. in genetics, which is where I first became interested in genetic poisons and the effects of mutagens on our genes and our heredity. And I first became interested in Fernald … it's interesting I was living in Clermont County. We moved here in '71. My wife and I were looking for a healthy place to raise a family and we were interested in self-sufficiency and found out shortly after moving here they were building a nuclear power plant just about 10 miles downwind from our house.

**050227 Interviewer:** Zimmer?

**050106 Dave:** Zimmer. And so I became very active in trying to educate the community about the dangers of radioactivity in general and nuclear power in particular. And as part of that educational campaign, I engaged in a number of debates and debated at one point with a doctor named Gene Saenger who was a radiologist at UC medical school, who subsequently got into some serious ethical questions related to whole body radiation exposure to cancer patients, black cancer patients especially. Anyway, towards the end of the debate he leaned over to me and said, "You know, if you were really worried, you shouldn't be worried about nuclear power. But you ought to take a look out at Fernald, see what they got there." I had never even heard of it before and uh ...

**050227 Interviewer:** You think he was sort of saying that half in jest or was he serious?

**050106 Dave:** I think it was not in jest. But I think he had no clue, you know, that it would be like something I would really take very seriously. The interesting thing was I had gone to Earlham College which is the other side of Fernald, another 20, 30 miles, and I've driven by, through Ross, Ohio and saw signs for National Lead of Ohio Corporation without any idea what that was. And then it was several years later, my mother was also a social activist and she had picked up some information that there might be radioactivity out there, and she had gone out with her camper and collected a sample of water out of Paddy's Run Creek which goes right by the plant in her teakettle, and she took the water to the UC med school; she knew somebody there and they … in her words they said it tickled the counter. And I still wasn't really zeroed in on it as much as one might have been, but a couple of years later it became clear that it was a nuclear weapons facility in spite of it being called a Feed Materials Production Center, which feed materials always sounds like food, and of course I think you have pictures, or you will see pictures of it: water tower with its red and white checker just … it's not by accident it looks like Purina. Uh, so I attended a couple of demonstrations out there, more as it related to it being a weapon facility without really understanding the full problem of the contamination. And the

government's party line at that point was there's absolutely no radiation that is going off site (speaker noise). Wait for a minute. (Is that you or is that me?)

**050545 Interviewer:** You said you were at a protest rally.

**050546 Dave:** That's right. I mean, I think it's very important that we remind ourselves that the government said that there was absolutely no radiation off site. I know I said that I repeat that because that's …

**050559 Interviewer:** Do you know what year that was? Whereabouts, before the water … so it's early 80's, late 70's.

**050604 Dave:** Well, it's not before they knew it.

**050615 Interviewer:** So, you went out to join some kind of a protest activity out there in the late 70's, early 80's before press coverage started on this issue.

**050626 Dave:** That's correct, right. This would have been probably 1980 is my guess. And the government was maintaining at that point that there was absolutely no environmental impact, that there was no radiation off site. And these demonstrations were primarily peace demonstrations against nuclear weapons rather than the idea of environmental pollution because we didn't … we weren't aware of that yet. So, I was asked to speak at one of them and I went out a little early with two friends of mine who were in Sierra Club. They were on environmental committee. They said they were interested … I said I was going to do some measurements around, and they said, "Can we come along." So I took a scintillation counter, which is a radiation detector and we drove around the perimeter of the plant and as we drove up Paddy's Run, the counter got higher and higher and higher and higher and then as we continued driving, it started dropping down again and we plotted that; very clear indication that there was a point source of radiation that was significant and this was off site. I mean it was just black and white that the government was lying to us.

**050743 Interviewer:** You drove up the road, west of the site?

**050747 Dave:** Right. And so, we, I went back and found the hottest point. We looked and all we can see was woods. And so, we wanted to get out of the car and see if we could see what it was. And, of course, the sign said "No Entrance, No Trespassing, Government Property" so on and so forth, but I wanted to see what the point source was. So, I went over the fence down through the woods and the counts got higher and higher still on the counter and I could see across the creek, these domes and it turns out what we now know as K-65 silos that contain Manhattan Project wastes, which are probably the hottest materials on the site. Well, I made those public, I published those results and people at FRESH heard about them and invited me come out and present at a FRESH meeting. And a year or two later they said there was going to be a tour of the site, that the government was going to sponsor a tour for FRESH and they asked me if I would come along as an expert. And I said sure. So I took my counter and took my camera, showed up at the gate at 8 o'clock in the morning, preparatory for the tour. And the police said,

"Where are you going?" I said: "I am going inside the plant for a FRESH Tour." He said, " No you're not, you can't take those equipment in there, the camera and the counter." I said: "Well, I insist on taking these. Part of what I am doing here is seeing, evaluating this place." They said: "You cannot go in there with these equipment." I said: "I am not going in if I can't take my equipment." And they said: "Fine." So I turned to some FRESH people and I said, "Well, what do you think about this? " And they talked a little bit and they said well that they insisted that I be allowed to go in, that they would not go in unless I was able to go in. So, the government officials had a little huddle and came back and said, "Okay, take your camera and scintillation counter." So, we went in ...

**051015 Interviewer:** Was that the first time FRESH had toured at the site to your knowledge?

**051016 Dave:** Yes, it was. I think was. I am not positive I think it probably was. This was in 1986. So, I had the counter on the entire time that we toured the plant and we did a walking tour and then we did a bus tour. And there were several places where there were really high radiation readings. Each time I'd said, "Wow what's that? What's that?" And the guide would say, "That's nothing. That's really just our regular processes here." And one of the worst ones was a big silo, looked like a big corn silo, only bigger, about 100 feet tall maybe. And I said: "What's that?" We were very far away from it, but clearly it was very hot. He said, "Well that's thorium." It turned out to be the national repository for thorium, which is much more radioactive than uranium. They thought they going to be able to use it in bombs for a while there. And then another area we were just walking by in a machine shop and there was this rubber blanket on top of something. The counter went very high. I said: " What's that?" The guy lifted it up and said that is enriched uranium. Enriched uranium is much more radioactive than standard uranium they were working with. And we went from throughout the facility and saw some amazing things, including this was built in the 50's. And some of them has brick floors like you would expect to see in ancient factories. Of course a brick floor, this is just …, it's the worst in terms of cleaning up, because bricks, they are not …, it wasn't cemented together, so anything that spills will leak between the bricks and go down and underneath; it's very difficult to decontaminate it.

We were … one of the more interesting things that happened, we were in an area where they have furnaces where they fire a mixture of uranium fluoride, and magnesium powder. Magnesium will burn very, very hot and will pull the fluorine away from the uranium, the molted uranium goes to the bottom of the crucible and when it cools and then they have what they call a derby of uranium. So we saw them loading them, we saw them putting the crucibles into the furnaces. And then the other end after they've been fired, they pull out and air cool, and they would drop them down into a water bath to cool them. So we were standing there watching. And we suddenly hear, "bree, bree, bree bree, bree ..." We were turning around, "What's that? What's that? That sounds like an alarm." The guide said, " Oh that's, we hear it all the time. That's nothing to worry about. Yeah, it may be a little alarm but we're not…" The next thing you know, we see this guy in white coat, he is flailing. "Everybody has to get out, everybody has to get out." There has been a venting, what that means is that these crucibles which have uranium and magnesium and all that, when they actually get hot enough, it explodes inside, there is a kind of like a kind of chemical reaction and they don't have bolted it down, some of the gas is vented and it's radioactive gas of course. So, when that signal goes off, that means everybody

is supposed to evacuate the building because there's now radioactivity in the air. Well, there were a couple of interesting things about that. One is a) the guy didn't even know that he was supposed to evacuate when he heard this signal. And he said, "Oh, we hear that all the time." So it's not an unusual occurrence for him. So, we were all standing outside and waiting for the Claxton to quiet down again and we never did go back in because we went to another building. Went to the machine building where they have a large salt vat. This is where they temper uranium. After they've milled it they put it into this molten salt. It's 5,000 degree centigrade, something like that. Very, very hot, molten. And there was a story that had been apocryphal for a while turns out to have in fact have been true. There was a … in the '60s I believe it was, there was a worker who disappeared. And there had been some suggestion that there had been an argument between him and some of the coworkers and he just didn't come to work one day. And then they say where is this guy and they couldn't find him. And then they found his car parked in the lot. So, we don't know where he is and some months later when they actually turned off the heat to this salt vat at the bottom of this vat they found his keys and his belt buckle. And it's very clear that, either accidentally or on purpose, he fell into this molten salt vat and was essentially incinerated, and the only thing left was the stuff that would not be destroyed by this molten salt. So we saw the salt vat. And in fact they did acknowledge that that had happened. We don't know the full story. I don't think anybody ever knows what happened to the guy except that clearly they know that he died in that salt vat.

We were then given a bus tour of the site. And one of the first things, places we went by was the silos. There were four silos that were built in the early 1950s. The waste products from the Manhattan Project, which was the first nuclear weapon to be built in history, the waste product from that project was stored on site at Fernald in two of the silos. In two other silos had mixed waste. And they turned out to be … they were in fact what I had detected when I first did a survey along the western border of the plant. And one could in fact still detect increased radiation as you drove by in the bus. They still, even on site there were some of the higher sources. These … you probably heard other stories about these silos other people told you but the kind of take-home lesson is that these were built of concrete in the early '50s. They had severely deteriorated over the years. The concrete was crumbling and they were very high sources of radiation and so to support the walls and to also kind of block the radiation they mounded berms of dirt up and around it. So that kind of supported the walls and it also absorbs some of the radioactivity and that's the way they exist tof this day. But the domes, the dome tops of these silos were also deteriorating and they were afraid even, they were afraid to have people walk on them. There are signs say "Do Not Walk on the Dome Because that's Fragile". In recent years, they were even afraid of the heavy snowfall that could cause collapse.

**051821 Interviewer:** What's inside those silos that might be of concern if the domes collapsed?

**051826 Dave:** Well, practically every radioactive isotope you can think of is in there. It's a mixed high-level waste. There's left over uranium, there's going to be some plutonium. There's going to be a whole array of radioactive isotopes. One of the things that is present is radium in particular. A lot of people on site maintain that those were valuable because of the radium in there it was very valuable. They've got that. The radium is also the source of radon and when radium decays radioactivity, it gives off radon, which is a gaseous element. That's where

actually much of the radiation I that was measuring off site was coming from. That and just what they call "Shine," a sort of euphemism. "Shine" in fact is Gamma-radiation. It's in the same family as light except it's a form of radioactivity. And that "shine" was bright enough to shine right through the berms and onto Paddy's Run. Those are the things I was measuring there. We … the tour continued and we went by acre after acre after acre of wasteland where they had buried radioactive waste for many, many years, for decades. Turns out that Fernald was a de facto nuclear waste dump, the third largest in the United States. Even though it was never declared as being a waste dump, but many of the facilities around the nation would send waste there under the pretense of having it processed. But then there was no place for it to go when it was done, so they would bury it under the ground. And the earliest of those pits that were built were completely unlined and this is in the bottomland with very high permeable soil. And it's just guaranteed that that waste would percolate down into the ground. They have a total of I believe six very large pits and the earliest pits are unlined entirely, later pits were lined somewhat with clay. And even the most recent pits that I saw in action when we were there, I was there as recently as the late 1980's, these pits were still filled with water. They are not supposed to be filled with water. It's very poor practice in waste disposal to have the pit filled with water, because if you put the waste in it, it's just as a vehicle for migrating that waste out of the pit. And that was even the most recent pits that were active at that point. We have pictures of all colors of waste that was being dumped and you can tell the uranium waste, because there is yellow uranium, yellow oxide. And there's green fluoride salts uranium. You can see these colors along the banks where they have tipped over the 55-gallon barrels of waste, just onto the ground.

**052140 Interviewer:** So, this waste was produced by on site production and other waste was …

**052146 Dave:** Who … yeah, that waste I think was probably on site because they handed large quantities of uranium hexafluoride which is green sand, large amounts of uranium oxide which is orange, and uh, black oxide, another oxide that's black. All of those various … they are handled in large quantities and you can see some of those wastes being disposed there, too. Then, as we went around the waste pits are on one side of the road and over on the other side of the road was … again, probably I would guess five, ten acres of 55-gallon drums, stacked, I don't know how many drums high, just enormous. More than a hundred thousand 55-gallon drums filled with radioactive waste sitting out in the weather. And those drums gave them really some problems because the ones they would start to leak. And of course the ones at the bottom, they started to leak and how do you do that? Oh … it was just a nightmare, they had no real good solution to that.

**052304 Interviewer:** When the tour was going on, did some one ask what those were or …

**023006 Dave:** Oh, yeah, we did.

**052308 Interviewer:** They didn't give you a guided tour per se or did they?

**023011 Dave:** The… their idea of the guided tour was not to talk about any of those problems but here you can see… they would show us certain things they thought were impressive. "Look

how orderly these are, how these are color-coded so you can tell what kind of waste is in what," "And these buildings, this building is this," but it was a very polished tour. But, people from FRESH they were good at asking questions. The answers they would get, frankly were often more obfuscatory. They are obfuscating as opposed to giving the straightforward answers. Over and over again, they would say there's really no danger of radiation here. Every other, every other time we would turn a corner, the counter would go up. I would say: " What's that?" They'd say, " Oh, that's nothing." Then it turns out that in fact it was something. There was one block, at the corner of Second and D; the facility has street names. At the corner of Second and D, I saw literally thousands of large ingots of uranium sitting out in the open, in the weather, on the street. And I questioned that whether that was wise …They said, "Uh, that's no problem at all, not very radioactive and …". But it was, it is radioactive whether it's high-level or low-level is beside the point, the pictures of that are just phenomenal. I have pictures which you can use sometime of the Second and D Street. Oh, what else?

**052517 Interviewer 2**: I am sorry. You know, uh… do you want to tell us why radiation is so dangerous from a geneticist's point of view because I think …

**052522 Interviewer**: Yeah, just a little background that's good. We've gotten some talk about environmental damage but not so much about human health risks from some of these things. Especially radioactivity and exposure…

**052534 Interviewer 2:** Why is uranium dangerous?

**052537 Dave:** Uh, as a geneticist, I am particularly concerned about radioactive waste or radioactive materials or radiation of any type, because radiation is very effective at altering the structure of our genes. Genes are made of DNA. And DNA, you may know, is kind of a series of code letters just like spelling out words and paragraphs. And what radiation can do is cause a letter to be changed. So it used to be an A and now it's a T. And it used to be a G and now it's an A. And these are called mutations when you change those code letters. And, just like when you change the C in the word "cat" to T, "Tat". Tat doesn't mean anything. But so on, no longer has that meaning. When you do that in our genetic code, we lose the ability, then, for that genetic information to have any meaning, and that often means we can't make a given enzyme. We can't perform a given process. It can alter our developmental processes and cause birth defects. So, as a geneticist, I in fact used radiation in the laboratory to induce mutations in the bacteria. So I was fully aware that that would happen. And there was a very long argument about how much radiation is dangerous and how much isn't, that seem to me to be splitting hairs. Uh, in fact all of the data that had been amassed up to that point said that you increase the dose, you increase the effect. It's called linear dose-response curve. And the government likes to say, the nuclear industry likes to say, "Oh there's a threshold, below a certain amount of radiation, there is no effect." And what that threshold always turned out to be is the lowest level they had ever tested. There was an effect. But they didn't test below that. So they assume that somewhere down there, there was going to be zero effect. Uh, but in fact still to this day is generally acknowledged that there is a linear dose response all the way down to zero. Uh, an example of how little radiation can cause damage; as little as one x-ray in the first trimester of pregnancy can increase the death risk of that, to that fetus when born by a four-fold factor. And

that is due to respiratory conditions, to infectious conditions, to leukemias, of a wide variety of different causes all of which are triggered because of exposure to radiation. Now the first three months of gestation are the most sensitive period in our lives to radiation. But there were people around Fernald that are pregnant, and we have to assume that those children were exposed to radioactivity as a result of living in that area.

**052857 Interviewer:** Going back to the tour, can you talk a little bit about sort of your feelings and your emotions as you were taking the tour. And then what did you do with FRESH to kind of process …

**060020 Dave:** … a long story. I went to Walnut Hills for one year and failed out of there and I went to Withrow for three years and I was absolutely miserable and then I went to a Quaker boarding school for two years and that's where I graduated from and that sort of … I consider that saved my life. So, I graduated from [???] School which is in eastern Ohio.

**060054 Interviewer:** Yeah, you took the tour. Between the walking and the bus tour much of the day, how did you and the residents' group sort of process this information and what did you think of it? What were your steps, next steps after that?

**060107 Dave**: Well, I have to say that the FRESH people were still early on, still in the mode of not believing their government would ever lie to them, of believing their government would not expose them to dangers. And I think they were just flabbergasted. I was astonished at how blatant it was inside. But I had a long history of seeing the government essentially lie about the dangers from activities, from earlier weapons testing, atmospheric weapons testing. I was active in civil rights and I knew the government lied when it came to civil rights and the way people were being treated or not treated. So, I was already very skeptical about anything the government said. But I was astonished to see the extent and the open nonchalance about radioactivity on the site. And, I think what I mainly came away with was I was slack-jawed at how just wide open the place was in terms of radioactive material slopped all over the place; so workers with radioactive dust on their bare skin. And the health physicist that was with us touring said that was no problem at all, uranium was not a health threat at all. Of course that's patently false. It's true that alpha particles don't pass through an intact skin if you don't have that on your skin. And this guy that worked there … it was so interesting, the most dangerous jobs at Fernald were always performed by blacks. This man who was packaging uranium mixed with fluoride, the green salt, with these clouds of green dust coming up from where he put them in a can; he was a black man. Worked in a sleeveless shirt, bare arms and you could see the green dust on his arms. The people from around Fernald, FRESH folks, I think they were profoundly shocked. And I think it still took them a long time to really process that and to realize that the government in fact had been lying to them for a long period of time. It was around in this ... it was shortly before this, I mean they have had indication because they found it very, very late that the groundwater had been contaminated for a long time and they had been drinking it from their wells and the government had not told them about it. They found out about it only kind of accidentally and the government still maintained that it was nothing to worry about. So, they had had some worries about that. I found an interesting thing. When we were, when I first did out study, the survey along Paddy's Run Road with our counter, there was a house, right across the

where we have found the highest levels of reading, and there were children playing in the front yard. And I wanted to ask if they knew what was over there because at that point I had no idea that was a K-65 silo. So I knocked on the door and the man came to the door, I said that, "Do you have any idea what it is across the road? What they do over there?" He said, "Oh, yeah that's over there, it's the government place." I said, "Well, there seems to be a high level of radioactivity right at this spot. Do you have any idea?" He said: "No, there's isn't … they told us there was no problem, there was no danger at all." And I said, "Well, it is something you might want to think about." He said, "Well, I look at it this way: The Russians have nuclear weapons, they are pointing them at us. And we've got to, we've got to have our protection against that. And I think our government is doing a good job protecting us from them Russians." And this was the general attitude. In the interest of protecting the United States, his government was going to do a good job and they were not going to expose them to that, and he was willing to live there next to it because of kind of a sense of patriotism. That was the very widespread feeling throughout the residents around Fernald for a very long time. And frankly when a few residents started questioning how safe this was, there were all kinds of … this was back when you called somebody a "commy" when you didn't like them or you didn't believe them what they were saying. They were called "commies," they were called "pinkos," they were called troublemakers, agitators. And it was very, very difficult for people who lived in that area as a result of that.

**060631 Interviewer:** Were you aware of any uh information-gathering activities in this kind of time period by either Ohio or US EPA? And what if any sort of regulatory controls were either out there and not being followed or put in place?

**060649 Dave:** I know that for a long time we raised issues, raised questions to both the Ohio EPA and the federal EPA and they regularly said, no, that's monitored regularly and it's meeting … it's within the law and it's meeting the guidelines. But this also the same time when they were saying there was no radiation coming off site. And the Ohio EPA essentially was just taking the word of the Federal government at that point, so they didn't, they were doing squat. The federal EPA, I do not believe was actually taking readings themselves, they were just reading reports that were generated from on site. But, when we started pointing out, that these reports actually if you read them and you see that the waste pits are in fact leaking, and the plumes of radioactive water are moving out through the soil. When we started raising those issues, they couldn't ignore them and they started talking about them and they then began to say: "Well, this might be some kind of a problem." But for most of the early years, they were really government fronts, in my opinion. They were saying: "Everything is fine. Don't worry about it. We are the experts, we know these things and it's nothing to worry about." And unfortunately, a lot of people at Fernald kind of still worry and didn't believe in that.

**060821 Interviewer:** Do you remember, uh, any community meetings or perhaps FRESH meetings where you began to see the residents taking a little bit more of an informed perspective and really starting to join the folks asking questions and getting a little bit more empowered?

**060837 Dave:** I have to say I lived about 40 miles from Fernald. So I could not attend many meetings. I think I attended probably 2 or 3 total. The first one I attended was when I gave my

reports on my radiation readings. And they were very interested and began, I mean clearly they had some, they were beginning to develop questions about the believability of what the government was telling them. Clearly the next meeting, which may have only been a few months later, there was a greater sense of awareness and anger at that point. But that was a slow process in which kind of an awakening realization and then realizing that they have literately been lied to by the government and there were a lot of people who were very angry about that, with justification. It is interesting at that point, we tried to talk to the unions at Fernald, and the workers. And they were anything but cooperative. They were very hostile to us. They were making big bucks, and they also believed there were no danger to their health, the government was telling them that there was no problem here at all. So long as the plant was in fact in operation, you could not find a worker to talk about any kind of dangers on site. When they would quit, then they would begin to talk about some of the practices that were clearly bad like throwing radioactive grease, oil, out on the ground and onto the parking lot; that was just standard practice. But it was not until the plant really shut down and the workers were no longer making the money that they suddenly that they had this realization that maybe they have been sold a bill of goods. And at this point they were very, very active in kind of follow up with good reason of health effects of the operation of the facility both on the workers and on the residents. But I will tell you what, in the 80's they were very hostile and there maybe … people in FRESH may know individuals that they talked with and could, were on good terms, but I know the workers that I tried to get information out of, they just stonewalled. I think they did not want, they were on the gravy train, and they didn't want to get kicked off of it and really had no idea how dangerous it was.

**061138 Interviewer:** You went out for a second tour?

**061140 Dave:** Yep, I went … first one in 1986 and second one in 1988. Between '86 and '88, '86 it was in fairly full production and '88 it was nearly shut down, and so we saw a huge improvement inside the plant because it wasn't working any more and it was … it looked cleaned up. It still was radioactive. It was really not much less radioactive than it was previous time we were there. Uh … but the floors were shiny and waxed. It looked waxed and it was shiny. Everything was neat and in order and there were no crucibles sitting around. Everything was really, essentially in late '88 effectively shut down in terms of production of uranium. What happened was among other things, the Cold War was pretty much grinding to a halt. We didn't need any more bombs, we didn't need any more uranium. We didn't have to produce feedstock for the nuclear weapons. So, but there, it was night and day in terms of inside the facility. But outside the waste pits were still there and still hundred thousand drums of waste were still sitting around and all of the thorium, everything, all of that stuff was still there. So, yes, superficially, it looked much better. But there still was a lot of waste and a lot of problems are going to be there for the duration until and unless we are willing to come up with the billions of dollars it's going to take to take care of this business, which I am very … I honestly do not think the government will ever clean it up. They may take the worst of the waste and move it out, but I think they're going to say, "Okay, this it the most cost-effective situation we'll get to and we can't come up more than this and it's safe now," and they'll put a stamp on it. Turn it to a quote "park" or something like that. But they will never get back where people can occupy that land in my opinion.

**061402 Interviewer:** What was the occasion for you trip in 1988? Just another site tour?

**061407 Dave:** It was another site tour. FRESH had set up another tour to sort of see the progress. And they asked me if I would come along and compare the … that one with the … two years before.

**061418 Interviewer:** Were you allowed to take your camera?

**061420 Dave:** Yeah, there was no argument this time. I don't know whether they remembered the previous time or maybe at this point they acknowledged that really, they might have said, well these are secrets, these are nuclear secrets. But in fact, the technology there was circa 1950's, it was not new stuff. So there wasn't anything that they needed to protect from the Russians or whomever. That was just … but in '88 everybody saw the handwriting on the wall, the plant was done. They were finished, they were not going to do any more, make any more uranium. And they were into a mode of thinking of how to decommission the plant.

**061518 Interviewer:** Do you remember when the Time magazine cover story came out in late 1988, or just generally do you remember anything in terms of growing media attention or media scrutiny out there or?

**061530 Dave:** I don't remember a Time magazine article. But what I do remember, I think it was in the late 80s, when for years, we had been having demonstrations and trying to get the word out to the public and Cincinnati Enquirer which was notorious for being right-wing rag, who just would not give us one bit of slack. And they called us names and they said we were troublemakers and all this. And then it was like, one day, somebody, at the Enquirer, flipped the switch and suddenly this was going to be the big story and then, suddenly, there are all these horrors that were going on out at Fernald. And they had all these series, and it was like night an day. I could not believe it. Up to that point, we couldn't get anything in the Enquirer. And from then on, it was like filled the Enquirer with articles about how horrible the government was being to these poor people out there. It was something … it was gratifying to see them have that change in heart. Really, it was amazing to me how they were less interested in public health and welfare, and more interested frankly … they made the decision, this will sell papers and so that was the reason the made this big switch.

There is another, actually, corollary to that and sort of interesting. You may know that at one point Fernald was so busy, they had to farm out projects. And they farmed out a machining project to a machine shop in Oxford, Ohio, a place called Albacraft, and I began to hear stories about this. This was late 80s, maybe 90s by this point. That the machine shop had gotten contaminated with uranium, and that it was radioactive problem out there. So I went there up to Oxford with my scintillation counter and the place was closed up tight, locked. But you could kind of go around the building. And I went around the building and there was one spot along one wall under a window that was quite radioactive. I went completely around the building and found nothing but at that one spot it was very radioactive.

**061806 Interviewer:** From what was inside the wall?

**061807 Dave:** Who knows what? Yeah, who knows what? Actually the soil itself was radioactive. I collected some of that and I still have some in the lab, as a matter of fact. I guarantee it's still radioactive. So, I wrote an article about it and ABC News, national news, network news, wanted me to go up with them. They wanted to do a story on it. And they wondered if I would go up with my counter and stuff. Okay, sure. So we went up there, and I repeated the sort of steps and I showed them how radioactive it was in this one spot. The counter is going wild. They said come over here, we want you to look at the drain, 'cause we think there's much more serious problem in this drain. I said sure, okay. So we went around to the other side of the building and here's a little drain, storm drain outside. I put the counter down and it was practically nothing, deep in, we heard nothing. I said, "I don't think that's a problem." So, they said, "Okay, this will probably be aired in a couple of days." So I think that was on a Friday or Saturday. The next week, Monday or Tuesday, the article's gonna be on the national ABC News. So, on it comes, they talk about Albacraft, they milled uranium from this weapons plant and there's radioactive contamination to this day. And they showed a picture of me testing the sewer. And they used the sound from when I had read on the other side of the building. So, it looked like the sewer was highly radioactive, when in fact … I just … I called the station and they said, "Well that's a pretty serious charge you're making there". I said, "It's true …" I never heard anything more about it…

**102005 Interviewer:** Was that national?

**052005 Dave:** Yeah, national news. But, you know I am a little cynical about that, the news and what they give to us as what is the news, what is real and what isn't and all of that. Even when, I mean in theory that was promoting my cause, if I am trying to arouse, educate the public to these dangers. But it doesn't, it doesn't help to lie. You just have to tell the truth. I was very dismayed that I had been used in this.

**062041 Interviewer:** I'd like to shift to a little more general view for a moment. I noticed that you teach at Clermont, you have a website with some interesting sort of projects, ranging, far-ranging projects that you have either photos or information on. It seems like one of the themes that runs through some of these projects is encouraging students to examine the impacts of human activities on their surrounding environment and how that can sometimes come back and impact human health as well. What do you think are some of the educational messages that if you are teaching a unit or talking to students about Fernald as a case study of human folly or whatever from a sort of biology education standpoint, what are some of the things that you would like see students to take away from studying Fernald?

**062829 Dave:** Uh, one of the things is we need to remember that if you live surrounded by a given environment, you may not immediately perceive what the big issues are, they may be staring you at your face and you may not see it. And I'm sort of reminded by, I took a class on a tour of a sewage treatment plant here from the college many years ago. And we were just going around and looking at the plant and the guy was just explaining sewage, this and that. And one of my students wondered off and said, "Dr. Fankhauser, what's this?" I went over there. And

here was a huge sewer pipe emptying its contents into a big box, and then there was this blade that fell down and had a little slit at the bottom, and a small amount of sewage was passing through, and all the rest was going off to the right. And he said, "What is that?" I said, "I don't know. That's really weird." I mean, clearly, this stuff is going into the plant. Where is the 90% of it going? We looked and followed it and it was going into the creek. And again, here was a sewage treatment plant and we were getting a tour, a official guide was telling us, showing us all the processes and this and that, the sewage comes in and gets aerated and all that. And if the student hadn't wandered off a little bit and asked the question, we would have no clue that 90% of this raw sewage was being dumped into the creek. That's the kind of thing that I love students that ask questions that don't automatically follow the planned-out curriculum, 'cause those questions can sometimes get you quote "outside of the box." The other thing I think that is important is that Fernald can show as a standard is that if teachers make it clear to the students that it's their environment that there are ways that the students can monitor the quality of their environment and to teach those skills of how to do their own testing, how to. Because there's nothing that's more interesting to students that to actually get the data themselves about the quality of their own environment. And that isn't just something as complex as radioactivity, I did not involve my students directly in that although the students heard about it and were very interested. But we did use … we've done a lot of things in terms of monitoring environmental quality and that can be bacteria, it can be oxygen content, it can be simply things in terms of what's the biodiversity in our given creeks. A healthy creek has a lot different animals, a sick creek is dead. And students can … those are the kind of things that students can do at practically any level. If you get students to begin to ask those questions, uh, get them interested, they will be interested the rest of their lives. And the society and the planet will be improved as a result of it.

**062450 Interviewer:** You took some of your experiences and photos and created sort of a road show, public talk if you will, that you've given a number of times. Can you talk a little bit about how often you've done that, and what some of the responses have been to that?

**062506 Dave:** I don't know how many times I've done this. I think it's easily a hundred. I mean before, before Fernald, there was Zimmer, I gave hundreds on Zimmer and on the problems of nuclear power and then … Uh, it is interesting that you see an evolution in society in terms of how friendly they are to you or how suspicious they are. And certainly the first few years when I would speak to groups, there would be people that were overtly hostile and angry and thought I was unpatriotic because I was questioning our government and our nation. It is interesting those same people these days, I mean, think of the kind of right-wing Republican responses, the government is bad, we want to get the government out of anything. But those identical people, same mindset, in the old days were the ones that said, "The government is the be-all and end-all. They're telling the truth, we have to support them, it's a patriotic thing." It's sort of interesting dichotomy. But, uh, my goals of course always were to try to be an educator and try to talk about what the dangers were, why were they nervous like this, what kind of activities were going on at that facility. And I became actually sort of a self-educated expert on the nuclear process, on these steps of producing a nuclear bomb. And I guess by the early 1990s, it was universally positive, and you would go to places that you never would have expected to get a positive response, and people were ready for it at that point. Uh, it sort of like once the Enquirer said this

is a good idea, then the Republicans in Cincinnati all got into lock step behind that or something … There was a major revolution in terms of public response.

**062722 Interviewer:** Do you think that's linked at all to the change from a temporary slow down to a halt in production and also sort of a change in the status of the Soviet Union? Or is it just …?

**062734 Dave:** I'm doubtless that had a change, I mean, was affected by the Cold War and … But there was actually for ten years before that, people began to see, and now this is again something that I was working on... I went on anti-nuclear marches in the '50s as a teenager protesting against atmospheric testing of nuclear weapons. And those days you got brick bats throwing at you and you were in some physical danger just from expressing the concern about atmospheric testing, which we now know was a horrible process. I mean the dangers are just blatant from nuclear testing in the atmosphere. But as we got into the '80s, it was clear that, I mean just endlessly making thousands more, thousands more of nuclear weapons was not making anybody any safer. And I think people began, even the government began to see that well, maybe there are probably other things we need to do with this money besides just making more and more nuclear weapons.

**070024 Interviewer:** … chemical pollution out there as well, which had a effect on major effect on …?

**070028 Dave:** Which could be actually that could be … I mean … it doesn't have a sign on it that says this frog is deformed because of uranium or because of carbon-tetrachloride. I'm just looking to see what other …

**070047 Interviewer:** We are pretty much in the zone now where I have got some good stuff and you can just talk as long as you want. I would like to hear sort of your take as we go to 2001, and you know, entering a new, you know, Presidential administration, and at a time where some of the sites, some waste risks have been characterized. Now it's just some of the question of are we going to have the political will or funding to clean those places up. And what you think the prospects are for that?

**070114 Dave:** Uh, first thing I must say is that we're talking to clean the place up. We're talking about … my guess-estimate is about 20 billion dollars. Uh, and it depends again, that would not be pristine, that would be to a very low level, one that with soil on top of it. And the government's not going to do that. And I think it's very important actually that you point out that we have a new President and a new sort of mindset. And I think the last 8 years, under a Democrat, there's been much inclination to support clean-up. I think that the Republican administration will talk the good talk. But I think they will not want to spend money on this. And I do have faith at this point that they are going to go in and remove the most hazardous materials and remove materials that are easiest to remove. That includes eventually, although how they are going to do it, still the K-65 silos wastes. They're talking about heating that up enough so it turns into glass, making little glass beads out of it, which will be immobilize it and then go ship these beads off. I am very worried about that process. If they do it on site, when

you heat up solid waste like that till it turns molten, gases are given off. You need a perfect retention, all those super hot charged hot gasses that are going to be radioactive and any kind of little leaks is going to wind up having radioactive gases given off. So I am very worried about the process. The engineers—surprise, surprise--are very sanguine about it …"Oh no, this is going to, this is going to work perfectly." I don't know, I don't believe it, to tell the truth. The drums, the hundred and twenty, hundred and thirty thousand drums that were sitting out in the weather, they have been, they've been working on those. Those frankly are some of the easier things to remove. They're above ground. Even if they were leaking they can handle that, they can repackage them. And they have been moving them offsite. I don't know to what extent where they are in that. But I do know they've been working on that for 10 or 15 years. They've started that in the late 80s. So those would be easy to remove, and the above-ground materials, no problem. The worst problem are, frankly, the waste pits, which are A) for most of them are completely uncharacterized, they don't even know what's down under there. B) they've been put in a condition where they're not thoroughly contained. Certainly the early 3 or 4 waste pits are practically non-contained at all. And what has to happen, in my opinion, is you have to go out there and you have to dig, then dredge that stuff up and you have to repackage it in a safe way for transportation. And you have to ship it to some place where there are no people. Now, do I want to them to ship it, if I live in Utah, or I live in Nevada, do I want them shipping it there? Hell, no. But you have to make a decision, in southwestern Ohio with high population density, with extremely valuable bottomland soil, with the largest aquifer in the Midwest, the Miami aquifer underneath there. You've got to get the stuff out of there. So, you have to put it some place where it poses less threat to people. And I would hate to be one to say, we'll move it to where you live, because it's safer for us than it is ... But that has to happen. But it's very expensive. It can happen and it could happen, but it's going to take huge commitment of funds. That I do not see the current administration putting that anywhere near the top of their priorities, I think it's going to be the bottom. And my guess is as the threat, the perception of the threat goes down in the public eye, less and less resources are going to be applied to this. I think they are going to look for the easy way out. And I have already heard them about talking about, "Well clean it up as clean as feasible and then, they'll turn it into some kind of park and declare it safe." Whether it's safe or not, I don't know. The readings may be low on the surface, but that stuff is still going to be underground. And with the percolation that is characteristic in that area, very good soil for percolation. And that just means it's going to carry all that radioactivity down and I don't see but what that aquifer is going to be permanently contaminated unless we do in fact exhume those millions, literally millions of pounds of radioactive material in that area, including you may know, you may have heard about the radioactive bulldozers. There are some amazing stuff has been buried there.

**070700 Interviewer:** I heard story about a golf cart.

**070703 Dave:** Oh, yeah, that … no, I am talking about bulldozers. There … you know, this….(noise) time out. We have a crazy, crazy clock here. Actually I am about done myself, I don't know ….

**070717 Interviewer:** Do you have any follow ups, Andrea? You are really good Dave.

**070718 Interviewer 2:** I would like to hold the photos, the two photos of the silos and point out what that is. Would that be okay? Just want to see what that was.

**070742 Dave:** Well the lighting is not too good here, right? In the early 1950s there were four silos that were built. This is one of the four. And this one you can see quite clearly that two of them actually had dirt piled up around them. This one you can see, it looks like a standard concrete silo. It's got … one of the things you do see, though, is that the concrete is decaying and seeping and this silo has what is called mixed waste. It's relatively low in radioactivity compared to the others. But I find this one instructive because it shows the dimensions and if we look at another one that has the berm, they have the dirt piled up like this around. But when I saw these and saw the discrepit state they are in, I was just astonished at how bad it really was.

**070900 Interviewer:** And you know the silos that are buried are in similar condition, probably?

070903 Dave: Well, at best similar, but I mean they are less likely to … I mean this could fall down. Because it's not held up. But the other silos have been exposed to higher levels of radioactivity and you don't know whether that is going to hasten their decay or not. But it is clear that they've reached the decision long, long ago that those need to be reinforced because of two reasons. A) they are about to collapse, and B) the stuff inside was so dangerous. The stuff inside this is not, supposedly, not that dangerous that if they collapse, I mean it would be, it would be an environmental disaster but it wouldn't contaminate the entire countryside. And these, these pictures are on my website and if you look for David Fankhauser on a search engine, it would come up.

**070957 Interviewer:** I have seen a lot of them.

**070959 Dave:** Yeah. Okay, anything else.

**071003 Interviewer 2:** Do you need to hold that up for a second, Dave?

**071007 Interviewer:** I've got it.

**071009 Interviewer 2:** You've got it?

**071011 Dave:** And if you want, I can show you this.

**071011 Interviewer 2:** Could you hold that still for a second.

**071025 Interviewer:** This was part of your presentation, your first presentation at FRESH based on your hand-held monitoring, breaching the fence.

**071036 Interviewer 2:** Could you show us what you've found?

**071037 Interviewer:** Ready to go?

**071038 Dave:** Yeah.

**071038 Interviewer 3:** Okay.

**071039 Dave:** So, what we have here … this is Paddy's Run along here on a topographical map and Fernald is, the weapon's facility is over here. And these bars indicate the readings on the scintillation counter. This is a radioactive meter. And as we drove up Paddy's Run Road, they are running around 3.2 or 3.5 counts/second. And then when we get to here, it's 4.5, 5.5, 7.5, 12.0, 13.5, 19.0 15, 11 so on and so forth. So clearly, something at this spot is a point source of radioactivity. Much above, much elevated over the background. And I did not have this map with me of course at that time. I was just taking readings on the odometer and recording this. And by the way, the house that the family lived in that I referred to is right here. But when I got out of the car here and went towards the increased radioactivity, uh, through some woods here and across the creek, I could see, and you can see in the map those black dots are the silos. And the two the two that are the closest together are the K-65 silos. Those are clearly the major source of this particular radioactivity that I was detecting…

**071219 Interviewer 3:** So were you exposed to … how many …?

**071222 Dave:** We correspond to two or three x-rays. Now for an adult, maybe that's not a serious effect. If a woman is pregnant during that time and lived here, there would be a significant increase of health risk to that child.

**071246 Interviewer:** Paddy's Run creek is the squiggly line .

**071249 Dave:** Ah … yes. Paddy's Run …

**071250 Interviewer:** It kind of goes between the silos and the road.

**071256 Dave:** Looks like it's right here. And it comes … yes …

**071258 Interviewer 2**: That doesn't sound like that much, two or three x-rays a year and . . .

**071306 Dave:** Oh, yeah. In the environment where you are … this is not by choice, I mean the people didn't have the right to say, "Yeah, we'll take this." It has to do with a risk that someone takes by their own volition or they're exposed to because of what you have done to the environment. Uh, there weren't any of us saying that there were people dying in the streets because of the results of this, what we are talking about is the deterioration of the environment that affects anybody that happens to be in the public domain.

**071354 Interviewer:** This is only one point source at the plant also.

**071356 Dave:** Yeah, but in a sense she is right. There were not any higher … I never got any higher readings off site than that. But this does not talk about the effects of drinking water for unknown periods of time. And you can accumulate it there. But frankly, we are still talking

about relatively low risk. I don't argue that. But it's in a sense that's a different question, the magnitude of the risk. The first thing is: do people, members of the general public, have the right to say "yes, I will take this chance" or "no I won't." It's a little bit like if you are in a room with a smoker and the person is smoking and you say, "I hate that, stop that, that's deleterious to my health." And the guy says, "What are you talking about, deleterious to your health, you are not going to die from inhaling the smoke." No you don't--maybe. But it's the right of a person to say this is the air I breath, this is the water I drink, it needs to be pristine, it cannot be contaminated with poisonous materials in a way that exposes the whole population.

**071527 Interviewer:** What about the issue of sort of informing, informed consent or informed choice, which is often a part now of siting issues, siting controversies. It's the question of will the public know what they are getting into when they agree to have whatever sited next to him.

**071542 Dave:** Actually, an area that I am currently very active in relates to the food that we eat. And what we know we are eating and what we don't. In fact, it turns out that we don't know what we're eating. We're eating food that has been genetically modified. How do we know this? Well we only know this because it's in the food stream but it's not labeled and the government is refusing to label it. And it seems to me like irregardless of whether somebody can prove that it is directly damaging to people, a person has the right to consume food that is of a standard that they want. It's very much like the radioactive environment. Somebody can make a decision that the risk is relatively small and therefore you shouldn't complain, just suck it up. The same way with the current food situation. If we don't, if we prohibit the labeling of food which is actually one of the directions this thing is going in, then we don't allow people to make their own decisions, their own informed decision. Now, if you label it so that you know this food contains genetically modified ingredients, this one doesn't, and you let people choose which one they want to buy. I have less … I have no problem, so long as I don't have to eat it, but in fact you don't know what food contains it and what doesn't. And again, it's beside the point whether it's absolutely certain that somebody is being injured or not. But I mean that's a different question, but the right of choice, the right to do it the way you want to do it, that's part of what I consider freedom to be.

**071732 Interviewer:** Very good.