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Title: INTERVIEW OF JIE SHEN

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ADDENDUM/ERRATA SHEET

Page	Line	Correction and Reason for Correction
25	17	add "I can't" after the coma since it was not very clear
25	21	add "who could have done this" before the period — affirm it was not clear

Page _____ Date _____ Signature _____

54A

UNITED STATES OF AMERICA

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NUCLEAR REGULATORY COMMISSION

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INCIDENT INVESTIGATION TEAM

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INTERVIEW OF JIE SHEN

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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THURSDAY, OCTOBER 19, 1995

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INTERVIEWERS:

BETSY ULLRICH

ALAN L. MADISON

THOMAS O'CONNELL

P-R-O-C-E-E-D-I-N-G-S

(11:36 a.m.)

MS. ULLRICH: Okay, it is 11:35 on October 19th, and this is an interview with Jie Shen. My name is Betsy Ullrich, and I'm a health physicist with the Nuclear Regulatory Commission. We'll do some formal introductions in a few minutes. There's a couple of things I just want to go through and make sure that I tell you before we get into the interview.

You know that we're here with an incident investigation team to look at the contamination event where an individual apparently ingested P-32. And our purpose here is to try to establish what happened to see if we can identify any probable causes of that ingestion and to provide appropriate feedback to the academic research community about how this kind of thing could have happened and how it could be prevented, or lessons learned about these types of incidents.

The reason that we're conducting interviews is that we want to try to get some direct information from people who worked in the laboratory and knew the individual and may know information about the event. We're recording them in order to transcribe them so that we don't have to worry about taking notes while we're talking to you and we can go back and refer to that information later.

The transcripts will be available for you to review later. And at the end of the interview, I'll give you a document which describes what you need to do if you want to look at the transcripts. At the end of our review of the incident, we will be writing a report. The report and the transcripts that support the report will be made available in the public document room.

And at that time, you could get a copy of the transcripts if you wish them. I guess at this point let's do introductions of everybody else who is here.

MR. MADISON: I'm Alan Madison. I'm also with the Nuclear Regulatory Commission out of Washington, D.C.

MR. O'CONNELL: I'm Tom O'Connell, and I'm with the Massachusetts Department of Public Health with the Radiation Control Program.

MS. ULLRICH: Let's just start with you and ask you if you would introduce yourself. Tell us what your title is and what job you do in the laboratory over there -- what work you do.

MS. SHEN: Okay, I'm post doctoral fellow, and I starting working in Susumu's lab in April. But since the lab is so crowded, I didn't get a bench until like July. So actually, --

MR. MADISON: That's 1995?

MS. SHEN: Yeah, I started working this year.

And so, actually I share a bay with Eugene.

MS. ULLRICH: Okay.

MS. SHEN: And so, this is -- I mean, I guess I don't know too much about like, you know, the things in the lab because I haven't been in the lab long enough.

MS. ULLRICH: Okay.

MS. SHEN: Since I do share a bay with Eugene and we do share quite a few things together, so I guess I may be able to answer some questions.

MS. ULLRICH: Okay. What I'd like you to do initially is just tell us what you know about the event. You said you started working in the laboratory, actually getting a bay in July?

MS. SHEN: Yes.

MS. ULLRICH: So, if you could just tell us a little bit about --

MS. SHEN: Well, I don't remember exactly, because that day, Saturday, I came to the lab, then I went home, then I came back, and then I was told Eugene was contaminated.

MS. ULLRICH: Do you know about what time that was when you came back and found that out?

MS. SHEN: 6:00, something like that.

MS. ULLRICH: Okay.

MS. SHEN: And then I actually -- when his wife

called, I actually told her about it because I think he didn't want to disturb her. Actually, he didn't tell her right away, just kind of called her to the lab and checked her to see if she's hot as well. So actually, I told her and then she came to the lab.

But Eugene was with the radiation safety people for like hours. About 9:00, he came back.

MS. ULLRICH: Okay.

MS. SHEN: And once he came back, I talked with him briefly, and I asked whether they could do anything, and he said nothing could be done. And so that was the first day he found out. In terms of them just checking, you know, the contamination of his clothing, they could trace back to Monday. Monday I remember the Saturday very clearly, because it was, you know, very shocking experience for me.

MS. ULLRICH: Sure.

MS. SHEN: And then once it's Monday, it's not as clear. But I try to recall. And when I knew it was Monday --

MR. MADISON: Monday, August 14th?

MS. SHEN: I don't know. Some Monday.

MR. MADISON: The Monday previous to the Saturday?

MS. SHEN: Yeah, yeah. Monday I think I came

to the lab like around noon, and I don't remember too much afterwards. I think most of the time I was in the lab that day. So I -- the reason I try to recall the details of that day, I was thinking if anybody came to our bay did something to, you know, there, I might be able to see it.

But the thing is, I'm not so sure because that week my boyfriend was in town visiting me, so I didn't spend as much time in the lab as usual. And that's -- I think most of afternoon I was there.

MS. ULLRICH: Okay.

MS. SHEN: But I can't be, you know, that accurate as that Saturday. And so, then basically -- well, in terms of Eugene's working habits, I think that probably because, you know, you probably wonder to whether it's, you know, self contamination or what. I would say honestly he's not a most careful person in the world. But after I came to the bay, I bought a shield.

I know for sure he was working behind a shield -- I mean, every time when I saw it.

MS. ULLRICH: Okay.

MS. SHEN: And he was using the shield I bought. So if he's using a shield, it's unlikely this thing got splashed out.

MS. ULLRICH: Okay.

MS. SHEN: Because it is not possible. And as

far as I'm concerned, I cannot say every time he's using the shield. But as far as I'm concerned, he does use the shield. He did use the shield after I bought the shield. And also, I remember, you know -- I mean, often I see him, you know, checking his hands.

MS. ULLRICH: Okay.

MS. SHEN: You know, on the geiger counter after he has done anything. You know, touching radioactive materials. So this is all I can recall just from his habit of working.

MS. ULLRICH: Sure.

MS. SHEN: And because I -- when I first went to the bay, I didn't raise a question because he used to -- you know, probably not the -- because I'm from Virginia. We have much, much, you know, like a rigorous way of, you know, dealing with radioactive materials than at MIT.

MS. ULLRICH: Okay.

MS. SHEN: And so, something -- you know, I mean, I didn't like because I was also sharing the bay -- I did tell him, and he immediately changed. And so, we sort of using the little space on the side, and I put the hood -- you know, the shield there so we could work there so nobody would get, you know, the radiation.

MS. ULLRICH: Okay.

MS. SHEN: So I think -- I mean, as far as I

can recall, he was doing that in August. I don't know, you know, previously.

MS. ULLRICH: Okay.

MS. SHEN: So, this is all I can think of related to that incident.

MS. ULLRICH: All right, now after you found out about this on Saturday, what happened in the following week?

MS. SHEN: The following week it was kind of very upsetting experience because, you know -- I mean, this is happening to somebody in the lab. And so, Sunday -- I guess Monday and -- the MIT radiation safety people came over and confiscated all the isotopes. And then they had a meeting. Then I guess at this end -- well, my direct contact -- I mean, everything else I would be, you know, like heard from Eugene and the other people.

The direct thing I heard from the radiation safety people was -- I guess we had two meetings.

MS. ULLRICH: Okay.

MS. SHEN: And so, you know, they were trying to basically, I guess identify like what happened and all of that. But that's like strictly my personal feeling -- I felt like Eugene should have been sent to emergency room on that day -- should have been advised. Because I think Eugene -- what Eugene did, I would have done, just

contacted MIT radiation safety people.

But I think once you contact them, and then he should have been advised to go to emergency room right away. Although, nothing could be done. But still, --

MS. ULLRICH: Okay.

MS. SHEN: -- I think -- that's my personal point of view. I think he should have been sent. And also, I think investigation should have started right away. But that's all my -- I don't know all the official, you know --

MS. ULLRICH: Sure.

MS. SHEN: -- things going around and all that. Just seems to me this investigation has been delayed for so long. It just started now.

MS. ULLRICH: Okay. You said that there were two meetings that they held with people in the laboratory. Were they early in the week, late in the week?

MS. SHEN: Somewhere in the middle. I think -- I'm sure you can get a more accurate date from somebody who --

MS. ULLRICH: Okay. What did they discuss with you at the meeting or what did you see radiation protection people doing over in the laboratory?

MS. SHEN: Well, they -- Saturday they came over actually check the lab, see whether there's a general

contamination or not. Well, during the meeting, I don't remember exactly. It was kind of just, you know, -- from the beginning, I knew there was this argument between Eugene and the office.

MS. ULLRICH: Okay.

MS. SHEN: Because, you know, on the dosage. So I guess many of the information I couldn't give or was indirect. And because I heard too much.

MS. ULLRICH: Okay.

MS. SHEN: So my opinion could be inferenced, you know. And so, I felt like, you know, somehow Eugene try to get an accurate dosage.

MS. ULLRICH: Okay.

MS. SHEN: And I'm sure -- you know, this is just -- I'm just using my, like, common sense. I mean, Eugene probably just want to get an accurate dosage. He didn't want to get it higher, he didn't want to get it lower. And -- but it seems like, you know, they had this big argument. One thinks it's this, 700, or whatever. The other thinks -- you know. So in the MIT report, it was getting higher and higher. But somehow, they just said it's okay, it's about 500.

That's what I heard. But I mean, I normally -- in the meetings, I don't really, you know -- honestly, I don't try to remember every word that's said. I just get

an impression, seems like.

MS. ULLRICH: Now, did anyone -- do you use radioactive material yourself?

MS. SHEN: Yeah, yeah.

MS. ULLRICH: Okay. Were you asked to do any kind of assessment of your own work area?

MS. SHEN: Oh, yeah, yeah.

MS. ULLRICH: What did you do?

MS. SHEN: I went back to my notebook and so I try to, you know, figure out exactly how much I used as possible. And -- well, fortunately I do keep detailed notes, and I could say I could, you know, probably get at least 90% accuracy.

MS. ULLRICH: Okay. Do you actually record the amount that you would take from a stock vial?

MS. SHEN: Well, unfortunately this is one of the shocking experiences I had. We don't -- you know, we don't have a log sheet. Because what we used to have is -- in my older lab, we have log sheets by the fridge. And my over all feeling -- I mean, since I'm in this lab, we don't have it. So there's no place to record it.

MS. ULLRICH: Okay.

MS. SHEN: And so, everybody was taking it. So all I could say is like my impression of MIT overall environment is much more relaxed --

MS. ULLRICH: Okay.

MS. SHEN: -- then at UVA. At UVA, the collect last bits of, you know, radioactive materials.

MS. ULLRICH: Okay. When -- you said that you were able to go back to your notes and account for -- you're fairly certain 90% of what you had used. How did -- what did you base that on?

MS. SHEN: Well, because every time I use radioactive isotope, I -- that means I made a probe.

MS. ULLRICH: Right.

MS. SHEN: If I made a probe, I would have some notes saying I used a probe and had like a standard amount I would use for each probe I make.

MS. ULLRICH: Okay, okay. Were you restricted at all from using radioactive material?

MS. SHEN: Before that incident?

MS. ULLRICH: No, after that incident.

MS. SHEN: Oh, definitely. Two weeks we could not use it.

MS. ULLRICH: Okay.

MS. SHEN: Which is like really inconvenient to my work because I'm doing a very competitive project. And so, it would slow me down then two weeks. And afterwards, and we had to, you know, find the people to get isotopes.

MS. ULLRICH: Okay.

MS. SHEN: But I guess that's just reality.

MS. ULLRICH: Could you describe that a little bit more what you have to do now then?

MS. SHEN: What I have to do now is basically -- only like a few people in the lab are authorized to dispense isotopes now. So every time whenever, even day and night, I have to use isotopes, I have to try to find one of these people and get aliquot of it.

MR. MADISON: How many people are there?

MS. SHEN: Four.

MS. ULLRICH: Okay.

MS. SHEN: But even that, you know -- it's kind of difficult to find them sometimes. It is inconvenient.

MS. ULLRICH: And do you work weekends? Is this a problem then or all the time it's a problem?

MS. SHEN: Well, since, you know, the kind of work we do, we work -- I mean, so far I've been working seven days a week and, you know, into late nights.

MS. ULLRICH: Okay.

MS. SHEN: All the time.

MS. ULLRICH: Typically how many people would you have in your laboratory at any one time when you're working?

MS. SHEN: Well, could be down to, you know, very few people to a full lab.

MS. ULLRICH: Okay.

MS. SHEN: I mean, it's just -- you know, because our schedule, nobody controls our schedules, so it's very random.

MS. ULLRICH: Okay. In terms of knowing who's in the laboratory, who's working there, who's not, how do you know who's supposed to be there and who isn't?

MS. SHEN: The only people that are supposed to be there -- normally technicians are supposed to be there 9:00 to 5:00. But everybody else, whenever.

MS. ULLRICH: Okay.

MS. SHEN: I mean, we don't have --

MR. MADISON: I think your question is how would you know that the person was not supposed to be there -- was unauthorized to be in the laboratory?

MS. ULLRICH: Visitors -- well, that would be a second part to this, yes. But how would you -- how do you know if people are visitors or new workers or strangers or -- what kinds of people do come through the laboratory, I guess?

MS. SHEN: Well, since the lab is like four small rooms, it's very difficult to tell. And all I could notice like often other people from other labs came to borrow things because our lab almost have everything.

MS. ULLRICH: Okay.

MS. SHEN: So people just coming through and borrowing things. And the lab is quite a mess, I have to say. And after one month I stayed in the lab, I left my purse on the desk, but not that room, another room. It was actually a very isolated room. And somebody just came and took all the cash from my wallet.

So, that's -- you know, I mean, no way of knowing it -- who did it or somebody from outside the lab. It's just impossible. People do come through the lab. And delivery people and -- it's very difficult. Especially everybody's so busy, and we just --

MS. ULLRICH: Okay.

MS. SHEN: -- don't pay attention to this any more.

MS. ULLRICH: Are there any particular security procedures in the building, locked doors or key cards?

MS. SHEN: Yeah, yeah. So I guess after -- five or six, and I don't know exactly. And you're supposed to enter the code. I mean, but often, over the weekend, after hours, you can still find a door which is still open.

MS. ULLRICH: Is that a main door that has a key code?

MS. SHEN: Main doors, yeah. Both E25 -- normally I use the E25 entrance or E23 entrance. And there's a code there, and you have to enter the code. But

it's pretty easy to get in, because if always people coming in and out, you can always just get in without knowing the code.

MS. ULLRICH: Okay.

MS. SHEN: And also there are so many doors -- you know, side doors. And often they're not locked.

MS. ULLRICH: Okay. How about on the laboratory floor itself? Is there any way to secure individual rooms?

MS. SHEN: It's impossible.

MS. ULLRICH: Okay.

MS. SHEN: Basically, you know, we are in and out all the time, and it's basically very inconvenient to keep doors locked.

MS. ULLRICH: Okay.

MS. SHEN: And we do work off hours a lot.

MS. ULLRICH: Okay. How long have you been working with isotopes all together?

MS. SHEN: Six years or so.

MS. ULLRICH: Six years? Have you ever come across another incident similar to this or a major spill of any type?

MS. SHEN: No.

MS. ULLRICH: Okay. In terms of work in the laboratory, what are the -- you've described that you used

a shield. Do other people tend to use shields or other --

MS. SHEN: I think most people do, yeah.

MS. ULLRICH: Okay.

MS. SHEN: I mean, the lab is so big, we don't have really designated area for using isotopes. We do, under the hood, but it's impossible for everybody to fit to work. And so most people just kind of put, you know, two shields on their bench and working on their bench. And --

MS. ULLRICH: In terms of film badges, pipetters, gloves, are those kind of -- what kinds of safety -- other additional safety equipment is available for you?

MS. SHEN: Those are all available.

MS. ULLRICH: Are they?

MS. SHEN: And I believe most people do practice that.

MS. ULLRICH: Okay. Is anybody mouth pipetting or --

MS. SHEN: No.

MS. ULLRICH: -- I mean, into the laboratory?

MS. SHEN: I don't think people mouth pipetting isotopes.

MS. ULLRICH: Okay. How about in terms of the radiation protection office? How often do they come

through?

MS. SHEN: I didn't really pay attention to that. I only notice they came to -- I mean, often, you know, my schedule is probably quite different from theirs. If they came in the morning, then I wouldn't have been there. So I can't give any details on that.

MS. ULLRICH: Okay. That's fine. Now you say you share a bay with Dr. Li?

MS. SHEN: Yeah.

MS. ULLRICH: Okay. Are you frequently working there at the same [illegible]?

MS. SHEN: Yeah, yeah.

MS. ULLRICH: Okay. So you feel that you know him fairly well?

MS. SHEN: Well, we don't know each other all that well since, you know, I started working there in July. And, you know, this incident was one month later.

MS. ULLRICH: Okay. Was he there frequently during this time? Was he doing a lot of work in the lab?

MS. SHEN: He's very regular. So it's much easier, you know, to like track down his schedule and whereabouts than I. He's a very regular person. I think he works 8:00 to 8:00.

MS. ULLRICH: Okay.

MS. SHEN: And he's very kind of -- he's just

an extremely organized person. Extremely, you know, just very different from me. And just, you know, he probably knows where he's going to be, what he did. He knows exactly.

MS. ULLRICH: Okay. Now I know a lot of people in research laboratories will go off for a week or two and maybe work somewhere else or go on a visiting trip to another university for some particular reason. Was he away at all?

MS. SHEN: No.

MS. ULLRICH: Okay. All right, and you were there working most of the summer?

MS. SHEN: Since July, yes.

MS. ULLRICH: Okay.

MS. SHEN: Middle of July, then I was there every day almost.

MS. ULLRICH: Okay. In terms of the laboratory work environment, we talked about some of the safety habits that people have. How about in terms of conflict? Is there good working laboratory --

MS. SHEN: Well, as competitive as, you krow, this kind of lab can be. And certainly this lab -- well, you know, in terms -- ones involving personnel conflict, those are not very common because I think most people there are -- in the lab are very ambitious. They just want to

get their work done and get out of there.

But in terms of project conflicts, yes. And I experienced some in the beginning, and then basically I chose a project that had nothing to do with everybody else.

MS. ULLRICH: Okay.

MS. SHEN: So -- but I don't know the history of the lab all that well since I haven't been there all that long.

MS. ULLRICH: Okay.

MS. SHEN: But this is definitely not sort of like a laid back environment, no.

MS. ULLRICH: Okay, okay. Do you know if there is anybody who had any particular problems with Dr. Li?

MS. SHEN: I heard, which I should not say. But you know, I haven't observed any conflicts he had with anybody.

MS. ULLRICH: Okay.

MS. SHEN: You know, so he had been nice to me. So, I mean -- but since I again haven't been there that long to know any of that.

MS. ULLRICH: Sure, okay. I'm at an impasse myself. Alan, you --

MR. MADISON: The event or the time that Dr. Li noted that he was contaminated has been established as August 19th, a Saturday. So the Monday before would be the

13th. Were you in the lab Sunday, August 12th?

MS. SHEN: I think I was only in the lab very, very briefly at night. Because again, I said I had a friend in town and my boyfriend was also in town. So Sunday, I think we -- Saturday I worked -- yeah, they came Saturday, so I work until 2:00 or 3:00. And then Sunday, we just kind of tour around Boston, and I had to do some work at night, so I brought both of them to the lab like probably around 11:00 or something.

So we worked probably two hours and then left.

MR. MADISON: Did you notice anything out of the ordinary at that time?

MS. SHEN: No. Besides that time, I was distracted. You know, I had two visitors, so I really didn't notice anything.

MR. MADISON: What kind of safety training do you get -- radiation safety training do you get here at MIT when you started?

MS. SHEN: Well, I came here, you know, and I was given a lecture.

MS. ULLRICH: Here, you mean to this building?

MS. SHEN: Yeah, in this room.

MS. ULLRICH: Okay, in this room.

MS. SHEN: So -- and they just -- you know, all the usual thing.

MR. MADISON: Usual thing meaning?

MS. SHEN: Well, how to handle things. Since every -- almost every year I think we have to go through that at UVA. I mean, where I'm from. So, it just, you know, they just lecture you how to handle things, you know, afterwards give you a quiz, this kind of thing.

MR. MADISON: Do they give you a manual for emergency response?

MS. SHEN: Yeah, yeah, yeah, yeah. Actually, in fact, that Saturday when I went to the lab, I saw the manual -- orange manual, you know, booklet with some -- Eugene's bench. So I presume he contacted them immediately.

MR. MADISON: Okay. Does the number 600 microcuries mean anything to you?

MS. SHEN: It's a lot. Probably more than I use all together in graduate school.

MR. MADISON: Is that a key number to you for any reason?

MS. SHEN: What do you mean key?

MR. MADISON: Is there -- does that specific number mean anything in particular to you?

MS. SHEN: Well, this number is the number like we have to report if there's a contamination beyond this number.

MR. MADISON: Was that part of the training, that number?

MS. SHEN: That, I can't recall specifically. But I did learn that I guess over the time.

MR. MADISON: Okay. I don't have any further questions.

MS. ULLRICH: Tom, do you have anything?

MR. O'CONNELL: No, I don't.

MS. ULLRICH: What is the level in your surveys or activities in laboratory that would prompt somebcdy to call radiation protection for assistance? Is there a particular radiation survey meter reading that if you get something above this, you would call radiation protection?

MS. SHEN: I would imagine if you have a major spill, which I have never experienced.

MS. ULLRICH: Okay.

MS. SHEN: And you should call. Normally the most I have experienced -- you know, if you have like a tiny, tiny spill on the bench paper, you know, behind the -- - is sort of what -- and I always handle it myself.

MS. ULLRICH: Okay.

MR. MADISON: Can you quantify what you would mean by a major spill?

MS. SHEN: Well, first, I guess, you would just use a geiger counter. If it's blazing hot, you know it's

really bad if the area is big. And then I guess the contamination --

MR. MADISON: Does "blazing hot" have a number associated with it?

MS. SHEN: Well, using a geiger counter, it's normally for background check use 1X. And if that would go off the scale and all just -- you know, very hot. I guess my standard is pretty high. If go a little bit, you know, over the background, I wouldn't call it a spill. And if it's a huge area, then definitely. And fortunately I never had a problem like that.

MS. ULLRICH: That's good. That is good. Okay, do you have any questions or comments that you can think of that are related to the incident or what we've been talking about?

MS. SHEN: Not really. I'm just glad finally, you know, this investigation is under way. Because it's kind of -- I feel like -- I mean, I don't feel safe in the lab any more.

MS. ULLRICH: Okay.

MS. SHEN: And you know, so I'm -- although this probably will give us some inconvenience, but I'm glad it's happening because I want the lab to be a safe place to work. So --

MS. ULLRICH: Were you aware of the similar

incident that happened at NIH prior to this incident with Eugene?

MS. SHEN: I think somebody in the lab talking about that, and probably just like -- I don't remember exactly. It just right before this happened. But it was not something, you know, like very strong. And I just -- it's not something, I guess, as shocking as happening right next to you.

MS. ULLRICH: Okay, sure. All right, I think that we can finish here then, unless you have an additional --

MR. MADISON: We've got to -- is there anybody else that we should talk to or that wants to talk to us that we haven't met yet?

MS. SHEN: See again, I think -- well, I know you have to ask me this question, but if you have to ask me to point a finger towards somebody, I don't have any reason -- any experience myself. I mean, I overheard all kinds of things which I -- you know, I should not say because not in my experience.

And I can't think of anybody.

MR. MADISON: If you do, we're going to give you a number that you can contact us if you have additional information, or you can pass on to anyone.

MS. ULLRICH: Yeah, sometimes we don't know who

wants to talk to us, and that may not be a person that's obvious to us that we need to talk to. And if there's anybody that's like that, they're welcome to contact us or to have somebody else let us know they're out there. It's not a problem.

I think we can go off the record then.

MR. MADISON: Do you have any questions of us?

MS. SHEN: No.

MS. ULLRICH: Okay, it's 12:05.

(Whereupon, the proceedings were adjourned at 12:06 p.m.)

C E R T I F I C A T E

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: INTERVIEW WITH JIE SHEN

Docket Number: --

Place of Proceeding: Cambridge, Massachusetts

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

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95-001
(March 8 to 10, 1995)

Contrary to condition of L/N 20-01537-12, an irradiator was located in an unauthorized location. (level IV)

Contrary to condition of L/N 20-01537-02:

the Radiation Protection Committee (RPC) failed to meet at the required interval. (Level IV)

the RPC failed to review the Radiation Protection program each year. (Level IV)

thyroid measurements were made 7 to 14 days post procedure rather than within 3 days, as required. (Level IV)

the RPC failed to make a quarterly review of occupational radiation exposures. (Level IV)

retraining of laboratory workers was not performed on a two year basis and authorizations were not renewed, as required. (Level IV)

training was not provided for housekeeping personnel each year. (Level IV)

Contrary to 49 CFR 172.604(a), an emergency response telephone number was not placed in the proper location on a shipping paper. (Level V)

Contrary to 49 CFR 172.203(d), incorrect isotope was listed on a shipping paper. (Level V)

93-001
(January 12 to 14, 1993)

Clear (Transportation violation cited and withdrawn)

91-001
(February 11 to 12, 1991)

Clear

88-001
(April 20 to 22, 1988)
(Enforce Conf June 22, 1988)

Extremity exposure of 22.91 rem (18.75 limit) (Level IV)
Failure to survey contrary to 10 CFR 20.201(b) (Level IV)

10-95-55

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
ENFORCEMENT HISTORY
LICENSE NUMBER 20-01537-02

95-001 (March 8 to 10, 1995)	Contrary to condition of L/N 20-01537-12, an irradiator was located in an unauthorized location. (level IV) Contrary to condition of L/N 20-01537-02: the Radiation Protection Committee (RPC) failed to meet at the required interval. (Level IV) the RPC failed to review the Radiation Protection program each year. (Level IV) thyroid measurements were made 7 to 14 days post procedure rather than within 3 days, as required. (Level IV) the RPC failed to make a quarterly review of occupational radiation exposures. (Level IV) retraining of laboratory workers was not performed on a two year basis and authorizations were not renewed, as required. (Level IV) training was not provided for housekeeping personnel each year. (Level IV) Contrary to 49 CFR 172.604(a), an emergency response telephone number was not placed in the proper location on a shipping paper. (Level V) Contrary to 49 CFR 172.203(d), incorrect isotope was listed on a shipping paper. (Level V)
93-001 (January 12 to 14, 1993)	Clear (Transportation violation cited and withdrawn)
91-001 (February 11 to 12, 1991)	Clear
88-001 (April 20 to 22, 1988) (Enforce Conf June 22, 1988)	Extremity exposure of 22.91 rem (18.75 limit) (Level IV) Failure to survey contrary to 10 CFR 20.201(b) (Level IV)

10-95-56

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 20, 1995

MEMORANDUM TO: Chairman Jackson
Commissioner Rogers

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: MODIFICATIONS TO THE ONGOING INVESTIGATION AT MIT CANCER RESEARCH CENTER

Reference: Memorandum of October 17, 1995, Subject: Investigation of A Phosphorous-32 Internal Contamination at the Cancer Research Center, Massachusetts Institute of Technology, Boston, Massachusetts

In the reference memorandum I provided you a brief description of an event at the MIT Cancer Research Center and notified you of my decision to form an IIT pursuant to Agency procedures. The team members included, among others, a representative of the Office of Investigations. The IIT Charter was attached to the October 17 memorandum. One element of the Charter included the following:

> "With respect to potential wrongdoing at the center: evaluate whether and the nature of any intentional actions by one or more individuals to cause the contamination."

I and senior staff members of HQ and Region I had an extended conference call with the IIT on Friday, October 20, 1995. On the basis of the information exchanged in this call, I now believe that a separate OI investigation should pursue the matter of potential wrongdoing. Accordingly, this memorandum directs OI to start their separate investigation, and modifies the IIT Charter to remove the task related to wrongdoing. The OI member of the IIT is removed from the IIT, and will begin the OI investigation phase in accordance with OI procedures. The principal contacts at MIT will be informed of this change.

This action is effective at noon (EDT) Friday, October 20.

Attachment: Revision 1 to IIT Charter

cc: SECY
OGC
ACRS
OPA
OSP
Regional Administrators

9510210073

Incident Investigation Team Charter
Revision One
PHOSPHOROUS-32 INTERNAL CONTAMINATION
AT THE CANCER RESEARCH CENTER,
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, BOSTON, MASSACHUSETTS

The scope of the investigation should include: incident chronology; source of the P-32 and contamination characterization; analysis of actual and potential dose consequences; radiation safety program; event reporting and licensee response; and whether the NRC's regulatory process and activities preceding the event contributed to it. Within the framework of this overall scope the IIT should specifically:

With respect to the incident chronology; develop a probable sequence of events associated with the P-32 internal contamination including its probable source; handling and movement within the center; and ingestion circumstances. A separate OI investigation will followup any potential wrongdoing at the centers.

With respect to the P-32 source and contamination characterization: determine the quantity and chemical form of the radioactive material ingested, whether any other individuals were contaminated, and any external contamination associated with the event.

With respect to analysis of the actual and potential dose consequences: evaluate the intake and the resulting internal dose received by the researcher (and any others who may have been contaminated) as a result of the ingestion or external contamination, and the potential health consequences, (if any); and assess exposures (if any) to any other individuals who were associated with the center from the time of discovery of the cancer researcher's internal contamination.

With respect to the radiation safety program: evaluate the licensee's program at the center for P-32 including material accounting; controlling access and use; evaluate the use of surveys for detecting contaminations and procedures for responding to P-32 contaminations.

With respect to event reporting and licensee response evaluate the actions taken by the licensee to: report the contamination to the NRC; assess contamination of individual(s) including medical followup and mitigation treatments; assess the extent of any other associated contaminations at the center and offsite; and prevent additional similar events. Provide input to Region I to evaluate continued operations of the center.

With respect to the NRC's regulatory process and activities: evaluate the regulatory controls concerning this type of event.

Attachment