SPECIAL MEETING OF THE

OREGON AIR POLLUTION AUTHORITY

September 28, 1954

The special meeting of the Oregon State Air Pollution Authority was called to order by the Chairman at 10:00 A. M. Tuesday, September 27, 1954, in Room 36, State Office Building, 1400 S. W. 5th Avenue, Portland, Oregon. Those present were Carl E. Green, Chairman, Mr. R. P. Dixon, Vice Chairman, Dr. Harold M. Erickson, Merle S. West, Harold F. Wendel, Members and Curtiss M. Everts, Jr., Secretary, Charles D. Burt, Special Assistant Attorney General, R. E. Hatchard, Chief of the Air Pollution Control Section, State Board of Health, W. J. Whitsell, Associate Sanitary Engineer, State Board of Health and Frank P. Terraglio, Chemist, State Board of Health.

Chairman: This is a special meeting scheduled for the purpose of hearing testimonies regarding Fluorine at Sauvie Island. The plan of procedure which we will follow, Mr. Fraser and others from Sauvie Island, is for you to present such material as you wish and then following the representatives from Oregon State College and Washington State College will be heard and others who might wish to present material and data may likewise do so. I don't know your plan. Will you have counsel present this or what is your pleasure. Someone should assume the charge of your presentation.

Mr. Fraser: I brought all this, here are copies of reports.

Chairman: Mr. Fraser, we will leave it to you and your group the manner in which you wish to present your material but I think someone should assume the charge of it and I believe it is the plan to take it down on tape recorder so if you would come forward and give your name and address and come by the mike so we can take it down, please.

Mr. Fraser: My name is Robert Fraser and here are copies of reports. I will read you the findings of fact in this case. So far this is a supplemental complaint that we have filed in the District Court of the United States for The Western District of Washington,

Southern Division. William F. Fraser, Marie Fraser, plaintiffs against The Aluminum Company of America, defendants. On December 11, 1950, this Court entered Findings of Fact in this case including the following:

A. That between September 1940, and December, 1949, between 1412 and 7075 pounds of fluorine as fluorides were discharged each day from defendant's plant.

B. Prior to December 1, 1949, fluorides released from the reduction of alumina to aluminum in the defendant's plant were deposited upon the forage growing upon the plaintiffs' property in amounts sufficient to injure the plaintiffs' cattle grazing thereon and plaintiffs' cattle were injured as a result of the consumption of such forage.

C. Prior to December 1, 1949, fluorides so deposited upon plaintiffs' property rendered the crops and natural vegetation thereof unfit for consumption by animals and injured and killed animals grazing and feeding thereon, lowering their productivity and diminishing the quality of said animals and their products.

D. The symptoms of fluorine poisoning include not only tooth and bone lesions, but also diarrhea, emaciation, loss of spirit, loss in milk production, an impairment of reproductive capacity, and, in extreme cases, the death of the animal. All of the foregoing symptoms, in a greater or lesser degree, have been present in plaintiffs' herd since March, 1947.

E. That as a result of the foregoing, plaintiffs suffered loss and injury for the period between March 31, 1947 and July 1, 1950 in the sum of $60,000.00.

Mr. Fraser: This is the supplemental complaint. "On December 11, 1950, this court also entered an order in this case to the effect that plaintiffs might, within two years thereafter, offer further evidence and make an additional showing upon the question whether, since December 1, 1949, fluorides have continued to be discharged from defendant's plant and be deposited upon plaintiffs' farm in amounts sufficient to cause any further continuing or permanent damage to plaintiffs and to the market value of plaintiffs' farm.

Since December 1949, fluorides have continued to be discharged from defendant's plant and such fluorides have continued to be deposited upon the forage growing upon plaintiffs' farm in amounts sufficient to injure the plaintiffs' cattle grazing thereon, and since December 1949, the fluorides so deposited have continued to render the crops and natural vegetation growing thereon unfit for consumption by animals and have injured and killed animals feeding thereon, lowering their productivity and diminishing the quality of said animals and their products and resulting in the same symptoms as stated above and found to have been present, in a greater or lesser degree, for the period prior to December 1949. In addition it has since been discovered by plaintiffs that as a result of the discharge by defendant of fluorides upon plaintiffs' farm the consumption by animals on plaintiffs' farm of forage contaminated as a result thereof, excessive amounts of fluorine and fluorides have been deposited in the internal organs of said animals and that as a result of said fluorine poisoning said internal organs have been caused to degenerate and have been seriously and permanently damaged."

/S/ Hicks, Davis and Tongue
Collier, Bernard, Bernard and Edwards
L. B. Sulgrove
Attorneys for Plaintiffs.

Mr. Fraser: The death and loss in our cattle has been so great that we moved our breeding stock off the ranch a year ago away from the fluorine area. Here is an answer to an Air Pollution letter, September 23, 1954.

Mr. Green: I would like to ask our Attorney and members of the Board if we have a clear understanding of this procedure. As I understood it we were to have received evidence and data regarding this condition about which the complaint is registered and so far - - -

Mr. Fraser: It is all on your desk right there.

Chairman: Is this procedure we are following proper, Mr. Burt? This is a reading of a complainant or basis of action in court rather than presentation of evidence as I see it so far.

Mr. Fraser: It is purely evidence.

Mr. Burt: Mr. Fraser: What date is this Finding of Fact?

Mr. Fraser: December 11, 1950.

Mr. Burt: Since that time was there any change in the Finding of Fact.

Mr. Fraser: No.

Mr. Burt: Is this matter still under litigation?

Mr. Fraser: Yes.

Mr. Burt: Do you intend to follow this report of detailed information?

Mr. Fraser: Yes, I have it all right here ready to go.

Mr. Burt: What is the latest report you have here?

Mr. Fraser: September 25, 1954.

Mr. Burt: That is your latest report? Are you introducing the other material as a means of explaining the more recent data that you are going to introduce?

Mr. Fraser: Yes.

Mr. Burt: I see no reason to deny him from introducing background information.

Mr. Fraser: This is a letter dated August 6, 1954. "Mr. William M. Fraser, Rt. 1, Box 118, Portland, Oregon. Dear Sir: In reply to your letter of August 3, I have examined my report that I made of your cattle on September 30, 1952, and find that sufficient clinical evidence of fluorine ingestion was present at that time to certainly make a diagnosis of both acute and chronic fluorosis being present in your herd. As you well know I have examined your herd numerous times over the last six or seven years and each and every time this same condition has been found. I have examined this herd with

such men as Drs. Udall, Menaul, Holden and Gaurd and each of these men agreed with me on this diagnosis.

You and the Air Pollution Authority might be interested in the fact that I examined Mr. Carl Baker's herd, who lives only a short distance from you, and found evidence in the teeth to indicate fluorine intake in sufficient amounts to cause staining in the teeth that erupted this year."

/S/ Keith P. Keller
Capt. V.C.
U. S. Army

Mr. Fraser: September 30, 1952

"This is a summary of my findings on the examination of cattle owned by Mr. Fraser on Sauvie Island." * * * * * * * * * * *

Mr. Fraser: That report gives the condition of each of the 23 animals examined in the chute. "In addition there were 17 young calves in this group that were very rough and in poor condition, several had diarrhea. Fecal examinations were taken from several calves which were negative for parasites. Seven bulls were seen and all were stunted and rough appearing. The pasture was excellent and consisted of clover and rye grass. It is my opinion that several of the animals examined showed syndromes of fluorosis. This group did not appear in as good condition as they should have considering the luxuriant pasture that they were on and which Mr. Fraser said had been good all summer".

Respectfully yours,

/S/ William Menaul

Mr. Fraser: Here is a letter from Dr. Udall dated November 8, 1950. "Mr. Wm. Fraser Rt. 4, Box 118, Portland, Oregon. Dear Mr. Fraser: In compliance with instructions from Mr. Hicks I am enclosing a statement for the examination of your herd, and am writing him that I am unable to recognize any significant change in the cattle since my examination made last May and June. Apparently the amount of diarrhea, and unthriftiness of the young, are about the same.

I shall be interested in the decision of the Judge on the amount of your indemnity. With best regards to the Frasers, from"

/S/ D. H. Udall

Mr. Fraser: That is the veterinarian from Cornell University.

Mr. Fraser: Here is an answer to request No. 2. (in the Authority's letter of September 23, 1954)

"Evergreen Animal Clinic
6816 Highway 99
Vancouver, Washington

September 25, 1954

Dear Mr. Fraser:

After examining the reports submitted by the pathologist and the chemical analyses of the several samples taken by me and submitted for examination, it is my opinion that the specimens show an excessive amount of fluorine, much higher than that considered normal."

/S/ William Menaul, D.V.M.

Mr. Dixon: What is the date of that last letter?

Mr. Fraser: The date is September 25, 1954.

Mr. Fraser: Here are copies of the pathological report (dated May 1, 1952). I can't pronounce the words in it but I can read the summary. "Examination of specimens of tissue delivered to me by Dr. Menaul and labeled specimens from horse of Mr. William Fraser" * * * * * * * Summary: Examination of liver and kidney tissue reveals parenchymatous degenerative changes and cell necrosis of toxic origin, the nature of which is not apparent by histological examination."

/S/ H. H. Foskett, M. D.
Pathologist

Mr. Fraser: Here is the chemical analyses of the same samples.

University of Nevada
Reno, Nevada

Consulting Chemist:
R. J. Morris, Ph.D.
The Ohio State University

Fluorine determination - No. 1.

Subject: Horse

Sample Received: April 23, 1952

Analysis completed: May 2, 1952

Result: All values tabulated below are reported in parts per million (P.P.M.) on a fat free, dry weight basis.

Sample:

Outside bone	1305
Inside bone	1255
Kidney	44
Liver	16

Submitted May 2, 1952

/S/ R. J. Morris

Mr. Fraser: Here is a report also from the University of Nevada.

Fluorine Determination: No. 2.

Subject: Two year old heifer
Tatoo #102 Ear tag #K 490649 Chain tag #4

Sample received: May 13, 1952

Analysis completed: May 29, 1952

Sample	
Tooth	908
Jaw	1130
Kidney	74
Liver	40

Submitted May 29, 1952

/S/ R. J. Morris, Ph. D.

Mr. Fraser: Here is Northwest Laboratories dated December 3, 1952.

Sample	Parts per million fluoride basis dry, fat free sample
Mandible (including teeth)	515
Metacarpal	369
Liver	107
Kidney	123

Northwest Laboratories

/S/ Thomas H. Williams

Mr. Fraser: I believe I have turned in other copies before. Some of these reports were taken to your office. Now that answers your 1, 2 and 3 questions. (Authority's letter of September 23, 1954.)

Mr. Fraser: That is all I have.

Chairman: Mr. Fraser, is there anyone else from Sauvie Island who would like to be heard?

Mr. Fraser: Who will be first?

Chairman: Would you give us your name?

Mr. Carl A. Baker, Rt. 1, Box 117, Portland, Oregon. I have the one letter that I would like to read to the Board and the people present. "This letter is for the purpose of giving a short report of fluorine poison in your herds so that you can convey it to the Air Pollution Authority. I have examined your herd at least yearly over the last six or seven years. Each time I have found conclusive evidence in the cattle so as to give a diagnosis of both acute and chronic fluorosis. Many other veterinarians have accompanied me on these examinations. The most notable of these being Dr. D. H. Udall. You might be interested to know that your herd was herd No. 2 in the article written by Dr. Udall and myself. The most recent examination of your herd was made in 1953 at which time the same diagnosis of both acute and chronic fluorosis was made as in previous examinations. It is my sincere hope that the Air Pollution Authority can be some help in this problem that has been such a financial handicap to you for so long."

Sincerely,

/S/ Keith P. Keller
Capt. V.C.
U. S. Army

Mr. Baker: I also would like to tell the Board that I am now out of the dairy business; that after raising all the replacements that could be raised from the stock that I had on the ranch and plus buying additional cattle each year and I continued to decline in cattle numbers and milk production to the point where it was not feasible to operate further so I sold my herd and my ranch is idle.

Mr. Fraser: The next person is Mr. Cashdollar.

Mr. George Cashdollar, Rt. 1, Box 151, Portland, Oregon. We had some trouble with our cattle and we didn't know what it was so we called in some veterinarians. We got one report from a gentleman who claims we have twelve teeth of five cattle in the herd grade No. 2 which mean slight changes probably due to fluorine and they haven't found no bone change, but there is teeth change. They also say in this letter it is probably due to fertilizer that we are using. We have a lot of cracks on the hoofs.

Chairman: Mr. Cashdollar, wouldn't it be best if you would read the letter so we have it for evidence, please?

Mr. Cashdollar: I don't know if I want all this read.

Mr. Green: What is our position in this matter?

Mr. Burt: If he doesn't want the entire letter, I don't see how you can simply quote from it.

Mr. Cashdollar: All right that is fine and dandy.

Mr. Cashdollar: "Full examination of your herd is enclosed as requested. The results of the analysis of the urine has not been received from the clinical laboratory. The cracking of hoofs in your herd is unusual and abnormal that I have not incurred previously. I have not found any other herds being affected with this high hoof crack. The cause is probably some external factor because the thinning of the hoof which appears to be beside the cracks mainly in the front portion where the hoof is rubbed over the grass when the cattle walks. We have considered the possibility that fertilizers you are using might have a direct corrosive action in the hoofs. If you wish to send me several pounds of fertilizer, I will try to determine if it has a corrosion action by rubbing it on to some of the hoofs of the cattle. Twelve teeth of five cattle in your herd were graded No. 2 which means slight changes probably due to fluorine. The low and slight degree of dental changes and absence of special bones indicate normal fluoride intake for most of the animals only slightly above normal during the rest of the several years." This is

signed by G. R. Spencer, Professor and Chairman of the Department of Veterinary Medicine, Washington State College.

Mr. Cashdollar: We also have a fertilizer man here who we would like to have come up here and have something to say that there wasn't fertilizer causing this damage.

Mr. W. R. Charleton, Oregon Washington Fertilizer Company. Frankly, this is a new side of the thing, fertilizer damage inasmuch as talking with George Cashdollar, he didn't use any fertilizer on the pasture in which his cows grazed. Another thing involved, in most of the areas of the United States they recommend the dairy farmers, different colleges in the country recommend this, to place the fertilizer directly into the gutters in the barn to catch the ammonia fumes and as a result when they put the barnyard manure on the ground they come out with a complete or semi-complete fertilizer. It is a recommended practice. Another factor, in the U. S. the state of South Carolina where they use in the neighborhood of millions of tons of fertilizer a year as compared to 130,000 tons of all types in the State of Oregon, no one has ever made a complaint against the fertilizer industry or any damage to any cattle or any livestock of any kind. I can't help but believe this man was dreaming or grasping in the dark. I don't claim to be an expert, I'm just basing my thoughthere on observations I have made. I see no reason why he could possibly claim fertilizer damage. We've never heard of such a thing anywhere in the United States at this time. Take in England where they have been using commercial fertilizer for 100 years, no one has ever made such a statement. The whole thing is preposterous to my way of thinking. Are there any questions anyone would like to ask me.

Chairman: Does anyone on the Board want to ask any questions?

Mr. Burt: Did you say Mr. Cashdollar did not use any fertilizer on your land?

Mr. Charleton: He didn't use any commercial fertilizer on his pastures. I sold him commercial fertilizer for use on his cabbage he is raising for a sauerkraut concern here and I sold him some fertilizer for his barley and wheat. No fertilizer used this year on that pasture ground. He had plenty of pasture without using fertilizer. We had a good wet year and he had all the pasture he needed. Now what he had done previously I can't

say. But this year I know he didn't use any.

Mr. Charleton: Another thing I would like to bring up. The common practice in the state of Oregon is to use 200 to 300 pounds of fertilizer on pastures here and in such states as the north east states and the south states they use as high as 1,000 pounds to 1,500 pounds a year without any adverse effects. In other words out here we are just scratching the surface.

Dr. Erickson: Has anybody examined the hoofs in the other states? Has the question ever come up?

Mr. Charleton: You take here in these states where they are using it in the gutters the cows are standing it.

Dr. Erickson: But you couldn't say whether the hoofs had been examined to determine-----

Mr. Charleton: I could say this, if there had been cracking someone would be checking it by now. It is like a man when his feet start cracking. He would do something about it.

Chairman: Is there anyone else now who would like to present any other material?

Mr. Cashdollar: Just one thing I would like to make clear. Where these cattle have been pastured there hasn't been no added fertilizer put on that ground, not where these cattle have been pastured this year. There never has been no fertilizer put on that ground at all.

Mr. Fraser: Mr. Earl Reeder would like to be heard.

Mr. Earl Reeder, Rt. 1, Box 124, Portland, Oregon. Well, I have no written reports, only what you fellows have got from the two colleges, Oregon State and Washington State College. I got, I think I have this urine sample, stool samples and bone and I never got no report from either college. What I did get I had to call up to get them. They were awful slow about sending the reports out. Dr. Garlick he went through and tested twenty-two head and found several of them with fluorine on their teeth - positive fluorine but he won't give me a report. I says I want to know why he won't give me a report. He said

well, you wouldn't let us examine your complete herd. I said "that don't make sense. What makes the difference - you examine 20 some head or go through 50 or 80 head. You saw what was there, why can't you give me a report". He said, "I won't do it because you won't let us examine the complete herd." He admitted fluorine on three of the teeth but he won't give me a report. What reports I have got you gentlemen got.

Mr. Reeder: In talking about this hoof cracking. I never use commercial fertilizer. I have cows do the same thing. Here during this last south wind and rain we had last week I had four hobbling who could hardly walk. One now that hasn't cured up but the rest got over it when the good weather came on. When Oregon State College and Washington State College came down to investigate we threw the gates wide open-they were going to find out why the cattle go this way-why don't they find the cause? I still haven't heard the cause - what we can do to remedy these cows. They was going to tell us just what was wrong and fix the cows up in good shape. I haven't heard but the cows are still going to hell. This is still going on. Cows are dropping production. There for awhile about 3 fresh cows a month, went a whole month. Now we have had some fresh ones lately, still got them so I wish they would tell me what is wrong with them if it isn't fluorine.

Mr. Archie Hall, Rt. 1, Box 148, Portland, Oregon. This is a problem that we have lived with for many years on the Island. I am here today to speak as one of the committee of three. The other two gentlemen are not present. This committee was selected by the people on the Island for the purpose of collaborating with the two colleges in carrying on the experimental work and the research that was done. In connection with this fluoride problem, we start with certain admitted facts here. I am going to try to tell you the way that I interpret the feeling of many of the Island people who fought this situation. One of the basic facts that we start with is that it was judicially determined in the trial of the Fraser law suit to which Mr. Fraser has referred here, that there was an escapement of fluoride being permitted from the Alcoa Aluminum Plant in Vancouver in an amount of approximately 1100 pounds a day of the element fluorine and it was also shown at that time that the various arresting methods and control devices had been installed and that was the

maximum or optimum condition that the aluminum company felt could be created. In other words they felt they could go no further to reduce that escapement. I participated with the various gentlemen, Dr. Spencer, etc., and participated in their sessions which took place about every 3 months over a period of several years here, and shaped the investigation along the line which I felt the people would like to have it directed. We feel, that the investigation has not gone far enough in the matter of degree nor the matter of time. We feel that this is a long range proposition, that the amounts of fluorine that are being deposited now are such that it may take a period of several years for the ingestion of these fluorides to show up to observable levels. The experiment was carried on for a matter of something like a year and a half or two years, I have forgotten the exact time and in view of the lessened contamination by virtue of the various control measures we feel that it may take a much longer period of time for these things to reach an observable damage at an economic level. However, there is great dissatisfaction among the people there as you see some of them are here today. I don't think it was fully understood that this was to be in the nature of a legal proceeding or a matter where evidence was to be presented but that if necessary can be done and these various doctors and veterinarians and so on can be called before you people if that is the contention of the thing. These Island people, I think, are here to state the position that they have observed and have seen in their own herds of cattle and from reports they have had from various veterinarians that have been presented to you. The damage is still being done to those cattle, and this damage is based by the fluorine contamination. Now we feel that something further should be done, we feel that we haven't yet gotten to the crux of this matter and these people have come here to tell you that they think that the damage is still taking place. This committee, of which I am a member, suggested that the investigative proceedings be carried on over a longer period of time and the committee also suggested that perhaps the toxic element with which we are dealing is some form different in kind from that with which we have been running tests. There may be something that we aren't reaching yet. But the position of the Island people, I think the majority of them is

that the problem is not solved yet, that we are still being damaged from this contamination. That is all. Thank you.

Chairman: Mr. Hall, you stated that you didn't understand that evidence was to be presented here today. I think our Secretary should read a letter from the Authority addressed to Mr. R.W. Fraser, dated August 12, 1954, which I think covers that point.

Mr. Hall: I received a copy of that letter. I am familiar with that. What I meant was whether you wanted a showing of the evidence as has been given you here or whether it was necessary to bring in evidence.

Chairman: Might as well read the letter so it will be clarified.

Secretary: On August 12, 1954, the Authority sent the following letter to Mr. Robert W. Fraser, Rt. 1, Box 118, Portland, Oregon. "Dear Mr. Fraser: Reference is made to your appearance at the July 14, 1954 meeting of the Air Pollution Authority and your statement that dairy and livestock owners on Sauvie Island are being damaged by fluorine which is allegedly discharged from the aluminum reduction plant operated by the Aluminum Company of America near Vancouver, Washington, as well as your statements that you disagreed with the conclusions contained in the "Summary Report of Fluorosis Investigations in the Sauvie Island Area in Oregon from December 1, 1951 to June 30, 1953", by the State College of Washington and Oregon State College.

The members of the Authority discussed the matter at the meeting and it was decided that a special meeting would be scheduled at which time the residents of Sauvie Island would have the opportunity of presenting any factual information to substantiate the statements which you have made with regard to the report. Chairman C. E. Green pointed out that in order to obtain factual information it would be necessary for each Sauvie Island representative to present his statements in accordance with the following procedure:

1. Allegations regarding damage to livestock or plants caused by air contaminants must be substantiated by authoritative opinion such as a veterinarian or a plant horticulturist.

2. Laboratory analyses of animal or plant specimens showing concentrations of a contaminant present must also include an interpretation by a person who is technically qualified to render an authoritative opinion.

3. A copy of all laboratory reports of contaminants found in specimens together with the interpretation of the data must be filed with the Secretary at the meeting.

4. Representatives of Washington State College and Oregon State College fluorine research projects have been requested to attend the meeting as well as representatives of the Aluminum Company of America plant at Vancouver, Washington. The meeting will be open to any other group that is interested in the matter.

5. Questions or comments by the representatives present pertaining to the fluorine study on Sauvie Island will be directed to the Chairman of the Authority who will then forward the question or comment to the appropriate Washington State College or Oregon State College representative.

The special meeting will begin at 10:00 A. M. September 8, 1954, in Room 36, State Office Building, 1400 S. W. 5th Ave., Portland, Oregon.

The Authority members have suggested that you have the statements presented by counsel. Please advise this office if the date for the meeting is convenient and whether or not there will be residents of Sauvie Island present to present factual information to the Authority. "

Very truly yours,

/S/ Curtiss M. Everts, Jr., Secretary
Oregon State Air Pollution Authority

A copy of this letter was sent to Messrs. Earl Reeder, R. M. Johnson, Wm. M. Fraser, County Agent Wm. S. Averill, A. Hall, B.D. Molinary and F.E. Peterson

Secretary: The date for the special meeting was subsequently changed to September 28, 1954.

Chairman: I thought that the Secretary of the Authority had tried to indicate that we wanted factual data presented.

Mr. Hall: The evidence you have, I am sure is factual. I assume that these gentlemen have presented whatever they care to in that line.

Chairman: I said this because of the statement you made, Mr. Hall, that you didn't understand that that was the case.

Mr. Hall: Well, I was referring more to the nature of the method of presenting the evidence, whether you needed the veterinarians and those gentlemen here or not. That's all I have.

Chairman: Thank you.

Mr. Fraser: Mr. Cashdollar would like to make a statement.

Mr. Cashdollar: On that hoof cracking how that happened to come about they called in the college to try to find out what was causing these cracked hoofs. So, they haven't given me no answer to this date. I think there was 21 head out of 36 head of milk cows. So the cows went down and the veterinarians done what they thought was right - they couldn't do no good for them, the cows are still in a bad condition. We went out and bought $8,000 worth of cows and brought them in there; now I don't know how they're going or what they are going to do but these other cows are not getting any better. The college told me that they'd give me some stuff to give these cows to see if that would straighten them out but they've never been back with no minerals or nothing to give them so I don't know. I've done what they - I agreed to do anything that they wanted to do and they haven't come forth and told me what to do yet, and so I should kind of like to know to let you know that it cost me $8,000 to go out and buy cows and production is off about 60% on some of them cows. Some of them went dry, hoofs cracked and naturally they got sore footed and they couldn't walk around.

Chairman: Is there anyone else in the audience who would like to be heard on this matter as far as Sauvie Island is concerned, that is who lives there or who has any material to present for the people who live there? If not I think we will next call on the repre-

sentatives of the Oregon State College and the Washington State College to, if they wish, answer any statements that might have been made or amplify their report or data or to take it as they see fit. We have present F. E. Price, Dean of the School of Agriculture, Oregon State College, Dr. Compton of Oregon State College, Dr. Spencer of Washington State College.

Chairman: Gentlemen, what's your pleasure?

Mr. Wendel: Mr. Chairman, would it be proper to ask the Aluminum Company if they cared to say anything first?

Chairman: Well, I had in mind that we might ask them later but if you want them second or third it will be perfectly all right with me. The charge was being brought against the aluminum company. I see Mr. Thayer and some others here representing the Alcoa people, if you like you have an opportunity to be heard.

Mr. Biggs: Just one minute, Mr. Green.

Chairman: Yes.

Mr. Wendel: I would like to ask the representative from the Attorney General's office -----

Mr. Burt: Sir, I don't feel that there is any advantage changing the procedure as long as both have an opportunity to speak. Personally I think that if the questions regarding the report from the state colleges should be clarified, the questions that have been raised -----

Chairman: I think primarily the allegations were made because of their disbelief of the findings in the report, that's why I thought the college representative should be called next.

Mr. Biggs: Is it still your desire that we have anything to say, Mr. Chairman, we say it now?

Chairman: Well, I would just as soon have the college people speak. Is that agreeable to you?

Mr. Biggs: Oh perfectly, yes each of them.

Chairman: Dean Price, Dr. Compton, Dr. Spencer, would any of you like to make a statement?

Dean Price: Since this meeting is called for the purpose of supplying additional information I think I shall keep it within that area, to report on the Summary Report of the fluorosis investigation on Sauvie Island here in Oregon for December 1, 1951 to June 30, 1953, which has been filed with your Secretary and you have copies of that. The investigating staff working on this, I think, are particularly well qualified to do a very excellent technical job, and they have worked conscientiously to arrive at what they think is a fair answer. So far as examination of every herd on the Island, that did not occur. We made a *few* spot checks on the island and that is summarized very well in the report. So, I think that unless there are specific questions it would not be particularly appropriate for us to go into a long discussion of this report. Conclusions are summarized and the purpose of the undertaking is clearly stated.

Dean Price: I might clear one point that Archie Hall referred to, the investigation was to determine whether or not fluorine emissions from this factory were currently impairing the functioning or health of livestock in the area with particular reference to Sauvie Island. The investigation was to cover the period after December 1, 1949 which does not refer to matters of economics as indicated.

Dean Price: In regard to a statement made by Earl Reeder, regarding the special study they agreed to make of his herd, in view of the fact it was quite well established he was having difficulty with the herd, we made this examination. Among the first findings were that this herd had rather severe case of hoof rot. We recommended that that be cleared up as the first step in the program of treating the health of his animals. We further agreed after consulting with others concerned that, while this would not establish a precedent for dealing with others, because it was agreed that he seemed to have a rather special problem with his herd - that in view of the fact that there was no question, I believe in his mind at least so I understand, whether that condition could be cleared up, that he secure a veterinarian of his choice to treat this herd and it would be charged and paid for by the over-all study on Sauvie Island. That offer was made before the first of July, and we sincerely think that was a sound recommendation and that procedure

should be followed and as yet we have not had a proposal from Mr. Earl Reeder selecting a veterinarian to do this job, and we still think that is the number one step in the program of treating his herd and getting it into condition and so that any other program of treatment will be a matter of following active progress of correction of this problem, hoof rot.

Dean Price: Insofar as the reference to the Cashdollar herd is concerned, visiting with those who had inspected the herd from our staff it is a condition that I think we can summarize quite briefly - has not been observed in other herds and I don't think there is any person that knows the cause of that condition, if it is common on the Island it hasn't been seen on the herds where the regular examination has been going on. I think that is a statement of fact, and as far as fluorine situation is concerned, while no one knows the cause of it, it is not typical of the herds of the Island and we have to stop at that point without an answer. I think there is nothing else that we would have to say for the State College unless there are some questions. Dr. Spencer, I believe, would like toclear up one point. Dr. Spencer of Washington State College.

Dr. Spencer: I think that I'll agree with Dean Price that our main conclusions and our data are presented in the report which you have. There are several special points that might be brought out; the project continued after this report was made and continued until June 30 of this year making a total of about 31 months of examination on the Island. Now during all that time and for two or three months before the investigation began we had a veterinarian on the island regularly and he was either living in Portland or living on the island and then at periodic intervals some of the veterinarians from the Veterinary School of Washington State College, including myself, went down and made special investigations. The decision as to whether fluorosis was a problem in the area, in my opinion, should be based on an over-all investigation such as we made - not just a few analyses here and there. One or two mean very little; you have to have the over-all picture including both the changes in the teeth and the bones and the chemical analysis to make

an accurate and reliable decision and in my opinion that is what we did in the report. And now in regard to some of our special problems, we examined Mr. Cashdollar's herd the latter part of June of this year. This examination was made in an effort to help him specifically in regard to this problem of cracking of hoofs of the cattle. The hoofs apparently became thin - that is the wall of the hoof, the horny part became very thin on the front part of the hoof and in a few instances cracked and I think at the time we examined them two cows were slightly lame in that herd. The rest of the animals - I don't recall exact figures at the present time - but there were a number of animals that had small cracks but only two were lame at the time we examined them and we felt that probably that the lameness in those two was not of sufficient significance to lower their productivity or reduce their ability to get out and get some feed. Now we don't have the answers as Dean Price indicated for that foot condition. It wasn't seen on any of the other herds on the island including herds immediately around and close to this herd of Mr. Cashdollar's. The letter that he refers to was the letter reporting, according to his request, our investigation and we were attempting to search at that time for the cause for this hoof cracking which is apparently a new condition that we have never seen before under dairy cattle conditions or in any animal husbandry that I have had any experience with. Now this suggestion about the fertilizer was made because the only common chemical I can think of that will cause a solution of the horny part of hair or hoofs is a sulphide. Most sulphides, soluble sulphides, will produce a solution of the horny part of the horn or the hoof or the hair and dissolve that material that forms that horny part. Now sulphides are rather unusual around a farm and we couldn't think of any source and in talking with Mr. Cashdollar about his operations and his feeding we couldn't think of any source of sulphides that would explain this particular condition. After I went back to Pullman, it occurred to me that we should have taken samples of his fertilizer that perhaps he was adding fertilizer to the pasture and the suggestion I made in the letter - I did not say the fertilizer caused the solution of the hoofs, I just said we were considering the possibility and I did that so Mr. Cashdollar would send me some fertilizer so that we could test it on a number of hoofs

and see if his particular fertilizer had any dissolving effect. He did not answer my letter or send us any fertilizer so we couldn't make any more investigation along that line.

Dr. Spencer: Now I'll be glad, as Dean Price indicated, to answer any specific questions particularly the analyses that you've been presented with here by the people from Sauvie Island have been principally soft tissues and in my opinion the analysis of soft tissues is of little value in establishing whether or not you have fluorosis. Soft tissues are extremely erratic in their content of fluorine; the analytical procedure for soft tissues is difficult because of many other constituents found in soft tissues and high chloride content and so on. I think it is well recognized that analyses of teeth and bones and urine provides the best and most reliable evidence whether fluorosis is occurring. We have many analyses of all the tissues that we could collect of that type from the Island including many analyses of bone and many of teeth in herds scattered over the Island and also we have many thousand analyses of urine from the Island and they all point in one direction; mainly, that the levels of fluorine in the animals or in the tissues, or in the urine of the animals on the island is only very slightly above that of the surrounding areas that we examined as control areas and the levels are certainly not anywhere near those levels that have been reported as being associated with fluorosis in animals now, so the conclusions that we have from that is one given in the report that there is no damage from fluorosis in the area.

Dr. Spencer: Now regarding the teeth, I might clear up another point. We have a grading or classification of the teeth. The teeth are very sensitive indicators of fluorosis and any intake of fluorine above that found in ordinary cattle rations will produce a mild mottling or observable change on the teeth. Long before anything else in the animal will be damaged those changes will occur in the teeth providing the fluorine is taken in at the time the teeth are being formed, that is in the young cattle. Now, a grading of "1" on our classification means that there are some slight abnormalities there that do not resemble the fluorine particularly but are abnormalities in the teeth. A grading of "0" is perfectly normal, a grading of "2" were changes that we suspected were probably due

to an intake of fluorine above the usual amount; a grade of "3", we call moderate fluorosis; grade of "4", severe fluorosis. Practically all of the teeth that were examined that had been formed after December 1, 1949 were grading of "0", in other words perfectly normal and a few were grading "1", a very few a grading of "2" and "3". The teeth alone on Sauvie Island are a good indication that by and large the intake of fluorine is at a relatively normal level and the grading of teeth on the Island cattle is very similar to the grading of teeth that we found in the areas in other parts of Washington and Oregon distant from any industrial contamination. Thank you.

Chairman: Any members of the Board like to ask any questions of the Washington or Oregon State college people or any of those that have--------

Mr. West: I would like to ask Dr. Spencer if it has ever been determined here or elsewhere if fluorine caused any hoof cracking.

Dr. Spencer: To my knowledge no. It has never been described as a symptom of fluorosis or either in the animals naturally poisoned from industrial sources or in the animals fed fluorine in experimental procedures. I have never seen it in any of the reports in the literature nor have I seen it in any of the animals we have seen with fluorosis in other areas.

Chairman: I'd like to ask a question. Have you conducted investigations of this kind elsewhere wherein fluorosis has been found?

Dr. Spencer: We have conducted a small investigation in one area which we did find fluorosis. As part of the report, as mentioned in the report, a group including both the Oregon State College and Washington State College people have traveled to different sites around the country where they are doing experimentation in fluorosis or where they have the problem in fluorosis from natural sources. The group had the opportunity to see animals fed a known amount of fluorides and also animals which were exposed to fluorides from water and some from industrial sources. So we have seen fluorosis in a number of areas. We have made a small investigation of fluorosis in one area.

Chairman: In the State of Washington?

Dr. Spencer: Yes

Dean Price: Would you name the general scope of that tour, Dr. Spencer, to give the folks a general idea? I don't know if you remember off hand all of them but perhaps you do - the general areas that you visited checking on other experimental work dealing with this problem.

Dr. Spencer: The first trip was made in 1951, as I recall in March, and it included Modesto, California, where an experimental feeding was going on with sodium fluoride in dairy cattle; then the group went on to Phoenix, Arizona where we examined some herds exposed to the high water fluorides and from the natural under ground water wells. Then the group went on to Tennessee where they examined animals that had been exposed to sodium fluoride feeding and also to natural industrial contamination from an aluminum plant. Then the group went on to Cincinnati and Washington, D. C. and to Michigan to talk with people who had worked with fluorosis and also see some laboratory experimental work in Cincinnati. Then they came back through Madison, Wisconsin and talked with Dr. Hall Phillips who had conducted an experiment, several years previously, feeding rock phosphate containing high fluorides to cattle. That was the first trip.

Dr. Spencer: The second trip was one to Lubbock, Texas, to examine the cattle that were effected with fluorosis as a result of drinking water high in fluorides. Then the group went on the next trip, the third trip, last March and the group went to Modesto, California, and then to Utah. I should have mentioned at the second trip that they also went to Utah, where we observed the animals exposed to fluorides from an industrial concern in central Utah. The third trip we went to Modesto, California, and Utah. Then the fourth trip we went to Tennessee where we again saw the experimental feedings at that time - that was a year ago last March, we saw animals that had been on 100 ppm and less of sodium fluoride for a period of five years without detectable economic damage or detectable reduction in production. Then we went to see experiment herds at Madison, Wisconsin, where Dr. Phillips is now conducting another experiment of feeding dairy cattle sodium fluoride.

Chairman: I would like to ask one more question. You mention seeing fluorosis in cattle

at several points. At those locations was there or is there data regarding teeth, bones and urine which might serve as a means of comparison for the findings at Sauvie Island

Dr. Spencer: Yes, there are numerous data concerning the fluorine levels.

Chairman: Would you care to comment regarding the relative differences between the two situations.

Dr. Spencer: Summarizing briefly where there is a definite fluorosis and animals will be injured one usually finds the urine values from 15 to 40 or 50 ppm. The urine levels vary from time to time but most fall between 15 and 50 ppm. The bone levels in relation to that are usually from 3,000 to 10,000 ppm and sometimes as high as 18,000. Urine on Sauvie Island averaged between four to five ppm and bone averaged 475 or less than 500 ppm. The teeth are slightly lower than the bones. In general teeth and bones run from 10 to 20 times higher in animals with fluorosis regarding fluoride than they are in normal animals. In other words the fluoride in teeth and bones in animals with fluorosis is 10 to 20 times higher. That is why the teeth and bones are such a good indication of past intake over a period of months.

Chairman: Would the Board like to ask any questions regarding the reports?

Mr. West: I would like to ask Dean Price if fluorine builds up in the soil from year to year or is it dissipated?

Chairman: Let Dr. Compton take that, he is our specialist for that area of the study.

Dr. Compton: The fluorides would be deposited in the soil, yes. But in normal soil, fluorides would be precipitated out as calcium fluoride. Plants do not take up very much fluorine from calcium fluoride even though that calcium fluoride may be very high. Otherwise it would take a very large amount of fluorine deposited on normal soil such as that on Sauvie Island for any appreciable amount to be taken up by the plants from the soil. That can be disregarded in this case or in practically all cases.

Chairman: All right that will be all.

Mr. Wendel: Mr. Chairman, I am perplexed - those who have looked at the cattle over there have evidence before their eyes and it seems that the preponderance of the evidence

presented by the veterinarians, acquainted with the situation, indicated a contamination by fluorine. At the same time we have the higher authorities representing the state colleges who feel that it does not indicate contamination by fluorides. Now how can we reconcile this? What is the reconciliation?

Dean Price: May I make a statement?

Chairman: Yes

Dean Price: The only thing I can say is that this is subject, of course, to the acceptance by the people with their own viewpoints and opinions. But I feel that the large number of samples that were taken and the varied skill and the procedures that were used in the fluorine determination during our studies and - as a matter of fact we held up our staff for several months spending a considerable amount of money until we could even get our chemist to check on chemical analyses procedures to the point that when they would take a sample they could check it in three different laboratories and they would come out practically the same. The large numbers of samples taken, the large numbers of examinations that have been made on and off Sauvie Island is the basis for the conclusions taken by the colleges' staff. We have no desire to challenge others who have come to the Island and have made examinations who have made analyses of individual samples but we have made hundreds and hundreds of analyses and that is the basis for the conclusion so I only submit that in general to the point that you have presented. That will not entirely solve your problem of some confusion, I am sure.

Mr. Wendel: I take it that, Dean Price, you have inspected the cattle themselves for example on Mr. Fraser's ranch. Have you seen them yourself?

Dean Price: No, I have not. Not to our knowledge. None of our staff have worked with that herd.

Dr. Spencer: May I say a word in that connection - in regard to teeth examinations our plan was set up to examine all teeth of all cattle on Sauvie Island. We also made examinations of bones and other characteristic on it. In two different instances I instructed Dr. Garlick, our veterinarian, on the Island, to visit Mr. Fraser and request that he be

allowed to examine Mr. Fraser's animals and in both instances the request was denied so we made the attempt to examine his herd and were denied a visit.

Mr. Fraser: May I make a statement in that regard? It seems that Oregon State has never been refused to come on our ranch. Washington State, a man named Dr. Garlick who at the time he came there hadn't any experience at all with fluorine. Was coming there to learn about it - I believe it was 1951. He came out to the corrals where we were and we showed him a whole group of dead trees, they were all dead on the side of the aluminum plant and on the other side they weren't. He said he was supposed to take notes of anything unusual and report it. Well, he said he would write us a letter to the effect that he saw these trees dead on one side and not dead on the other. We have yet to receive that letter. He didn't come that time for any cattle examination. He came back another time when the aluminum company had been conducting cattle examinations periodically on our ranch and he came back another time previous and said that his boss, Mr. Spencer, had told him the aluminum company is going to conduct an examination and he would like to be present. He came in to our place where we asked him to have something to eat. He told us who he was, we didn't remember. He said that he was Dr. Garlick and said that - - oh, we asked him about this letter he was going to write. He said he never said he was going to write a letter to us and, of course, that made my dad pretty mad, he doesn't like to have people lie to him .So, he told him to get off. He already told a neighbor he couldn't write such a letter as that, that he would lose a $600.00 a month job.

Mr. Fraser: Would it be all right if I asked Dr. Spencer some more questions?

Chairman: I think questions pertaining to the material presented here today or ------

Mr. Fraser: It is pertaining to some statements he just made.

Chairman: You direct the questions to the chair and we will refer it to the proper person.

Mr. Fraser: Mr. Green, Dr. Spencer made innumerable statements here about calcium fluoride being different from sodium fluoride but what I am most interested in right now is the statement he made about going down to Tennessee near another aluminum plant finding fluorine in the cattle there, as to his comparison - wel hat is something I would like

to know about because they have the same controls on that plant as they have on this plant over here although I understand now they are tearing those controls out because they recently paid a Mrs. Lucy Austin who lives six miles from that plant damages and she has to move her whole herd out of that place to North Carolina.

Chairman: Mr. Fraser, I think that the questions before us today should pertain to our local situation and that particular instance of Tennessee doesn't concern us other than it might be illustrative of fluorosis or something of that sort. Am I right, Mr. Attorney? Please guide us in this matter.

Mr. Burt: I believe the question should relate to the situation at hand - Sauvie Island particularly.

Mr. Fraser: The only reason I asked you was just to have this statement that he had seen fluorine in that area with the same controls on that plant as they have on this one.

Chairman: Mr. Burt, will you please advise us how to proceed with this question?

Mr. Burt: I don't believe that question is pertinent to our examination of the matter - as variances between two plants would be too great as far as I am concerned. If it is a matter entirely of curiosity with you ----------. Mr. Fraser, I am sure the gentleman would be glad to answer your question but the fluorosis problem we are facing ---------- I don't think it has any bearing on the local problem.

Mr. Fraser: I would like to ask Dr. Spencer, through Mr. Green, why when Dr. Spencer went out to hire men to investigate the fluorine problem on Sauvie Island, why he didn't pick some experienced men who had training along that line who also had graduated from Washington State in previous years and had had lots of experience instead of getting some man who knew nothing about it down there and then using their report that was printed in 1934 on rock phosphate fluorine as the basis of their conclusion in their report and not using sodium fluoride. I want to ask one other question too about pathology.

Chairman: Let's limit our questions one at a time, Mr. Fraser, so we aren't too confused.

Chairman: Dr. Spencer, do you care to answer the last?

Dr. Spencer: I will answer the first question regarding why we hired the individuals we

did. At the time we took hold of this job we were rather short of help and took it on with the understanding from our superiors that we would have to get additional help for urine collection and routine examination on the Island. It was manifestly impossible for us to teach school up at Pullman, 400 miles from Sauvie Island and still be on the Island all the time so we attempted to hire the best man we could get and we canvassed the field to find what was available for what we could afford to pay at state college rates and think we got the best man we could at the time. I didn't really hire the man myself, that was done by the acting Dean of the Department of Veterinarian Medicine at that particular time and by the director of the experiment station at Washington State College - I did help to locate or attempted to locate a man. We got the best man we could for the job, it's true that Dr. Garlick, until that time, had not had any experience with fluorosis. Before Dr. Garlick took the job - we did take him on this trip around the country, and we also had him at Washington State College and had him review the literature on fluorosis. He saw a great deal of fluorosis before he went on Sauvie Island. I am sure everyone will have to agree that it is better to get a man that is open minded who will start with the facts at hand than to start with a man that has already fixed opinions. We certainly had no one available at the time we hired Dr. Garlick that was an experienced man in fluorosis that we could have hired that we knew of. That is my impression in the matter.

Dean Price: What was the relationship between the other staff members and Dr. Garlick as far as handling the project?

Dr. Spencer: I was made Director of the project. The committee including present Dean Stone, and Dr. Gordon Quenn, Head Surgeon, Washington State College, we were administering the project. We established the policies and Dr. Garlick merely carried them out. He was our field man. He went out and collected urines from the cows and he made most of the examinations. We set up the conditions under which he made the examinations and we developed forms for the examinations so he was essentially our field worker in the area. We were in charge of it, in other words.

Mr. West: The chemical analyses were made where?

Dr. Spencer: Chemical analyses were made at Division of Industrial Research, Washington State College. D. F. Adams was the Chief Analyst.

Mr. West: Then Dr. Garlick didn't have anything to do with this, the analyses were made elsewhere?

Dr. Spencer: This is correct, he shipped the analyses to the Division of Industrial Research or to me and I in turn sent them to Division of Industrial Research.

Chairman: Is it not true that representatives of Oregon State College did participate directly in the field work on the Island also - Dr. Compton and others?

Dean Price: We had two phases of the work, the plant sampling program and the field program and they were coordinated operating under separate groups.

Chairman: There was another question raised by Mr. Fraser which I think should be answered if possible, and that is the analogy between calcium fluoride and sodium fluoride and what is referred to as rock fluoride using one yardstick for comparison against another. Did you get that question clear, Dr. Spencer.

Dr. Spencer: Not absolutely clear but I presume Mr. Fraser refers to the experiments reported on feeding animals fluoride of various kind, for instance rock phosphate. Now in the 1920's and 30's rock phosphate was used as a source of calcium phosphate for animal feeding and they ran into trouble with fluorosis and many of the early experiments were performed with rock phosphate, studying the fluorosis. However, our report was not based simply on those reports, our report was based on all the evidence we obtained at that period including the evidence from sodium fluoride and from rock phosphate. We also had the advantage of observing animals that were affected with fluorosis from sodium chloride from the effluent from industrial plants as well as the animals' poisoning from rock phosphate. Now regarding calcium fluoride, that is a relatively insoluble form of fluoride. I mean the general opinion would be that it would be less toxic than other forms of fluoride because it would not be readily available to the animals. As you go down in dose of fluoride these different kinds of fluorides begin to resemble each other in toxicity, in other words a very high dose of sodium fluoride would be much more toxic than rock phosphate,

or calcium fluoride. As it goes down to a minimum level then the toxicities approach each other and they are quite similar. Calcium ~~chloride~~ fluoride isn't a problem here and I can't see its pertinence in the discussion.

Mr. Wendel: I think it is very unusal that Mr. Fraser never requested Oregon State College to come down and help him out.

Mr. Fraser: They started on our place and quit for some reason, we don't know why.

Mr. Wendel: Oh, I thought Dean Price stated that they had never been invited to come to your place.

Mr. Fraser: They worked one year on our place after the controls were on but we haven't seen those reports.

Chairman: Just a moment please. In answer to those last statements is there any question you gentlemen would like to ask?

Dean Price: I am not sure I heard him exactly.

Chairman: It had to do with Mr. Wendel's question of whether Oregon State College had ever been invited to conduct an investigation on the Fraser place. Perhaps Mr. Fraser should restate his question regarding the matter of work or lack of work on your place by the Oregon State College people.

Mr. Fraser: They worked a year at our place after the controls were on. We have not received those reports.

Dr. Compton: We did start work on the Fraser farm sampling both pasture and some indicator plants, the information of which was put in one of these reports that we had sent out to the farmers on Sauvie Island.

Chairman: Was it identifiable as to source of samples?

Dr. Compton: I think we indicated on the report each farm by number and a map.

Chairman: Wasn't Mr. Fraser given a copy?

Dr. Compton: No, I don't have anything to do with that but I know he got a copy.

Mr. Wendel: What was the date of that project?

Dr. Compton: The first summary report, January 9, 1952.

Mr. Wendel: Is it possible to make a generalization from that report as to either fluorosis or lack of fluorosis on the Fraser place ------

Dr. Compton: No, these samples are all plant samples. I wasn't studying fluorosis in animals.

Dean Price: May I make a general statement.

Chairman: Yes

Dean Price: The particular reasons that we have not worked on the Fraser place are two: One is the Frasers have bitterly attacked the whole proposition of the colleges - the Washington State College and Oregon State College - well, principally Oregon State because the project planning hadn't been worked out for conducting any part of this research reported in this document. In a public meeting held on Sauvie Island, I asked them if they were interested in such a survey - such a research investigation - because we could not carry it on without cooperation of the people on the Island and it was only facts as applied to their Island and no place else and as a result of the leadership of that opposition at the public meeting on Sauvie Island, the plan was abandoned. I advised them that we would not plan to continue the research because it would not be advisable without cooperation of the people on the Island. Subsequently, others on the Island in the majority petitioned Oregon State College to go on with the investigation as outlined that evening and after several months delay we were able to build up a staff and get under way because this was a rather large undertaking. That's the background of the situation and we have never been asked to carry on work on the Fraser herd following the re-activation of that research project. It was a bitter opposition and we respect his wishes and we would not be on his farm because we have no desire to be on his farm if he does not desire us to be there. So that's the general summary of the situation just as true as can be.

Chairman: The dates involved are what, Dean Price, when did this occur?

Dean Price: The activation of this project was in 1951. We got the program going in 1950. The decision of whether or not the college should participate in the investigation to secure additional information to settle this issue in which there was a difference of opinion. And it was following - We'll take the period beginning December 1949, it was the time the

improved scrubbers were installed; we were to test the period after the new scrubbers were put in and not involve the period previously which was involved in litigation and covered a period in which the emissions from the plant were admittedly larger than the later period that we were working on the scrubbers were installed; and it was also admitted that the scrubbers did not remove 100% of the fluorine from the stacks.

Mr. Hugh Biggs: May I ask Dean Price a question, Mr. Chairman, or have you ask him a question?

Chairman: You may do so, your name is?

Hugh Biggs, representing Alcoa.

Mr. Biggs: I would like to ask him if this is the proper procedure, Mr. Chairman, whether or not at the inception of this work a letter was sent to all the farmers on Sauvie Island, including Mr. Fraser asking whether they would be willing to cooperate in this program by permitting the colleges to make such examinations on their particular places as the colleges might be advised to make, and if such a letter was sent to Mr. Fraser.

Dean Price: I don't believe so. It had been made very clear at the meeting previous to that that Mr. Fraser was not interested and desired that they not participate in the program. I don't believe that I sent such a letter to Mr. Fraser.

Chairman: Would you give me your name and address, please.

Mrs. Fraser: My name is Mrs. Fraser.

Mrs. Fraser: Dean Price said it was December 1950, but he is wrong, it wasn't until 1951, because our trial began in June and ended in August 1950, the 10th day of August and our decision didn't come until December 11, 1950.

Dean Price: Well, I've given this from memory. I'd be glad to send you the documents of the meeting and the petition of the folks that were sent because it was taken before the project was started and the project was started before November of 1951. My contention, of course, is it was held in advance of the beginning of this study.

Chairman: I think that is important.

Dean Price: That is the point I am making. December 1951, it could have been of that year. I will check my records. It was not so much the date as the fact it was preceding in the

investigations on our part as reported in this summary report.

Mrs. Fraser: Mr. Chairman, Oregon State did have test plots on our place during 1951.

Mr. Fraser: I think I had better correct Dean Price's words. I should give you the background of that meeting which was held at Sauvie Island where the people were invited. There had been some money appropriated by the state to continue investigation. We were perfectly willing for the state to go along as they had done before and continue on their program. This special meeting was held to decide whether they should accept money from Alcoa, to conduct this investigation. After going through a trial with Alcoa and knowing their underhanded methods we just knew what would happen. So, we were much opposed to them accepting the money from Alcoa mainly because for one example Dean Price was assistant Dean down at Oregon State. During the trial we had a Dean Schoenfeld. Alcoa sent Mr. Spencer (not this Mr. Spencer) one of their attorneys who also has a farm on Sauvie Island down to Oregon State College to get Dean Schoenfeld to come to the trial. Well, Dean Schoenfeld came to the trial but when he saw what he had to testify to he backed out and went back. They went down to ----------

Chairman: Just a moment, Mr. Fraser. I wonder if these matters are pertinent to the case before us.

Mr. Burt: I don't feel that they are inasmuch as they explain your personal feelings.

Mr. Fraser: Well, I was just trying to point out they tried to bribe ----------

Chairman: Just a moment, Sir.

Mr. Fraser: We have evidence in court record which is open to everybody.

Chairman: It isn't the position of this Air Pollution Authority, as I see it, and the attorney will give us advice, to hear allegations of collusion, bribes or anything else. Our problem is to listen to and obtain facts pertaining to air pollution. That is the only thing we are concerned with. If you have allegations about former Dean Schoenfeld or anyone else this is not the place for you to be making those statements and I for one am not going to listen to it.

Mr. Fraser: Then I would like to ask Dr. Spencer here a question about pathology.

Chairman: Go ahead.

Mr. Fraser: I understand that Dr. Spencer has taken pathology. Is that correct? I want to know if that is correct before I ask him the question because if not it wouldn't do any good to ask him the question.

Chairman: I personally am not familiar with the background of training of these gentlemen. I assume they are qualified ---------

Dr. Spencer: I'll be glad to give my qualifications.

Mr. Fraser: If he has studied pathology I would like to know. I heard him say there that it shows up in the teeth before it shows up in the internal organs. Well, I should think that the report we have from Dr. Foskett who is an M.D., who is a pathologist, shows that the current contamination is in the internal organs. I think that anybody who has studied pathology should know that it would effect the insides and could kill an animal before it would ever show up in the teeth.

Chairman: Mr. Fraser, I would like to make this observation. We originally requested you and your people to present facts and opinions by people qualified to give them and express them. None of us here are pathologists or veterinarians or anything of the sort. We also believe that you are not. Now if you have statements of that sort to be made it seems to me that they should come from people competent to make such statements. Am I not right, Mr. Attorney?

Mr. Burt: I believe we should have opinions other than written reports, opinions from veterinarians and pathologists.

Mr. Fraser: The opinion is from Dr. Foskett --------

Chairman: Now is it his opinion a matter which you are stating? It seems to me if that is the case he should be here testifying.

Mr. Fraser: That is current contamination.

Chairman: I think those people who have such statements to make should come here and present them and not someone else indirectly for them. Am I not right?

Mr. Fraser: Well, sure but----------

Chairman: This is hearsay, we should have specific statements from those who are qualified.

Chairman: Am I wrong? I wish the Board would correct me if ------

Mr. Wendel: I don't see the relevancy of it anyway.

Chairman: I don't either.

Mr. Fraser: I think that I complied with all of your questions that you sent to me. They all have the proper answers. There are a lot of questions I would like to ask you people but if it isn't going to make any difference in that regard we'll just let it go and take it to the courts.

Chairman: Dr. Erickson, do you want to -----

Dr. Erickson: I was just going to support your statement. I have a little knowledge of pathology, and certainly these are technical matters - conditions vary so much - I think only having the authorities here to clarify his position would give us some data to make decisions on. Talking as we have - does not get at the facts.

Chairman: I would like to refer to a document which you presented earlier today. It has to do with a report on the horse of Mr. Wm. Fraser. The date is 5-1-52, copy signed by Dr. Foskett, Pathologist. I think it is obvious that it is rather difficult for we who are not expert on this matter to properly remember and absorb all the material that is thrown before us over a period of an hour or two and become experts ourselves. We have to look to those who are, of course, for interpretation.

Dr. Erickson: Just from a hurried glance at this I wouldn't be able to draw any conclusions related to fluorosis at all from Dr. Foskett's statement. If he was here he might explain further------

Mr. Fraser: Possibly I should read this again, that part that shows the trained man that he is to put those chemical analyses and pathology report together.

Dr. Erickson: From Dr. Foskett?

Mr. Fraser: Yes

Chairman: By whom is this statement?

Dr. Fraser: This is by a doctor of veterinarian medicine, Dr. Wm. Menaul.

Chairman: I have no objection to his reading it again. Do you, members of the board?

Mr. Fraser: After examining reports submitted by the pathologist and the chemical analyses of the several samples taken by me and submitted for examination, it is my opinion that the specimens show an excessive amount of fluorine much higher than that considered normal. There is also the tooth ------ I didn't read that because I didn't want to take the time.

Chairman: That was the end of that statement?

Mr. Fraser: Yes.

Chairman: Just a moment. Is that evidence sufficient to reach a conclusion, Dean Price?

Dean Price: The question is, isn't there data available to support that. You may have a very strong statement there. But the date that the chemical determinations were made are lacking. That ought to be very valuable data for whatever followed there. That is the only point I would suggest - that is to help you folks.

Mr. Fraser: That one was on the horse, that particular pathology report.

Chairman: The statement you are going to read is by whom?

Mr. Fraser: Yes, by Dr. R. J. Morris, Chemist, Ohio State University, University of Nevada, Reno, Nevada.

Chairman: Is he a veterinarian?

Mr. Fraser: No, he is a chemist.

Dr. Erickson: Do you have a copy of that?

Mr. Fraser: Yes, a copy is right here (dated 5-2-52.) All values tabulated reported in ppm are on a fat free, dry weight basis. "The outside bone, 1305, inside bone, 1255, kidney 44, liver 16".

Chairman: Dr. Spencer, would you care to comment regarding these results reported in that determination?

Dr. Spencer: In regard to the bone, 1305, would be approximately twice that that we found on the other animals on Sauvie Island, or from animals in the outside area. We did find, I think, two particular bone samples over 1,000 on Sauvie Island. However, it is more than normal but I still think that it is not nearly enough to indicate that the animal had fluorosis, in my opinion. If those samples are reliable now, I don't know anything about the Chemist who did them, I don't know anything about his controls, I don't know how many

fluorine samples he has run, but if those reports are reliable I would say that the report on the bones indicate the animal does not have fluorosis.

Mr. Fraser: This question was not concerning bones, it was concerning the pathology report. I read the pathology findings of the kidney and liver.

Dr. Spencer: Regarding the kidney and liver, as I mentioned before, the results we have gotten from Sauvie Island and other areas too have been extremely erratic as have the results in the literature reported. In my opinion the values reported for soft tissue such as kidney and liver are unreliable, they are not to be depended upon as values.

Chairman: Mr. Cashdollar.

Mr. Cashdollar: Well, I would like to ask Mr. Spencer one question. Did you find any fluorine in our cattle?

Chairman: Any fluorine - you don't mean any -----.

Mr. Cashdollar: That is just the question I asked.

Dr. Spencer: I'll take the first answer in a slightly facetious manner. We can't see fluorine. We can only see the effects of it when we examine the cattle and in his herd, I would say, the results of the over-all examination indicated that this herd was not affected with fluorosis. He did have a few animals, as he mentioned and I reported to him in the letter, a few animals that were graded #2 in the teeth in relation to lesions of fluorosis. That means a slight effect from fluorosis. Now we have seen the same thing in animals in other herds - the Oregon State College herd. The Oregon State College dairy herd has much worse signs in the teeth than those of Mr. Cashdollar's and the probable source, as far as we can tell, and we know that this is the rock phosphate in the concentrate grain ration. The evidence we have in the report, that is that the principal source of fluorine for those herds on Sauvie Island where the level was above average, the principal source was rock phosphate and my interpretation would be in regards to Mr. Cashdollar's herd would be that the animals were receiving more than the usual amount of fluorines during a period when their teeth were formed and in some instances that grade was after December 1, 1949. However, that amount was not sufficient to produce other signs and symptoms of

fluorosis. In my opinion it could be disregarded as a factor in health in the animal.

Mr. Cashdollar: Gentlemen: I had talked to a man who is head of White Star Feed Concentrate and he said that in the mineral we were using there was absolutely no fluorine in it. That is what he told me this morning on the phone.

Mr. Cashdollar: It is a bone-making mineral, is what it is. The White Star people handle it right here in Portland.

Dr. Spencer: I would like to remind you again the effect on teeth is at the time they are formed and when we see it too -- it is marked by evidence of past intake of fluorosis and that marking had occurred previously, a number of months or years previously when that tooth inside the gum is being formed. That is the time the tooth is marked, so the teeth changes do not indicate how much the animal is getting at the time that you examine the tooth. It indicates how much the animal was getting at the time the teeth were being formed. In that regard further I would like to say that normal bone meal has 500 or 600 ppm fluorine, normal bone meal that is used routinely for feed. The Washington State College, Department of Dairy Science, has investigated - not in connection with fluorosis alone - has investigated animal feeds and they have found evidence that rock phosphate of very high fluorine content was being sold as bone meal. The probable source of fluorides in many of the herds we examined in outside areas, as near as we could tell on examination of their feed was this rock phosphate but in some instances it is passing as bone meal and in some instances is actually sold. The man who says he has no fluorine in his feed is making a foolish statement, in my opinion, because fluorine, a small amount of it is everywhere and I think in every feed and I think Dr. Compton will probably bear me out, there is a little fluorine, there is a little fluorine in every breath of air that we and cows draw and there is a little more fluorine in all coal smoke and so on. So, to say that there is no fluorine is a foolish statement, as there always is some. It is the relative amount that is important and that is what we are attempting to establish in this investigation.

Mr. Cashdollar: Mr. Chairman, I want to ask one more question. Do you admit there is a slight amount of fluorine in cows? I want you to answer yes or no - not beat around ----

Chairman: Well, now just a moment. The people who present the material before this Authority have a right to qualify and explain the statements that they make and you nor I nor anyone else has a right to say they shall say this or they shall say that. We shall depend upon their best judgment and their training to say what they feel they can say.

Mr. Cashdollar: Well, Mr. Green, we asked them to find out the condition, what was causing our cattle, what was wrong with them. Mr. Fraser, and I have done everything and corresponded with the aluminum company, with the colleges, both Oregon State and Washington State College, then he writes us a letter, admits they have got fluorine on their teeth. Now he says he don't know. What kind of a guy is he? Does he know or don't he know, that is the question I ask you.

Chairman: Just a minute now. We are not going to let this hearing degenerate into matters of personality or accusation or anything of the sort. This board is interested in only one thing, ascertaining the facts that pertain to the matter before us which is fluorosis or fluorine poisoning on Sauvie Island. We are not going to get into any personal animosities or anything of the sort. All we want is factual data and we are not going to get off on a tangent of that sort.

Mr. Cashdollar: That is just what I asked you. That is just the word I asked him, isn't it? Whether there was any fluorine in my herd or not, and how did it get there.

Chairman: Just a moment, please. If you people wish to come forth with anyone who is technically qualified to interpret these findings and to disagree with Dr. Spencer, Dr. Compton, Dean Price, or anyone else, we have no quarrel at all. You can present any evidence you want but keep this on a technical, proper plane and let's not degenerate into personalities and accusations or positions. We are not here for that. We are here to determine the facts and that is all we want. You or anyone else direct your questions accordingly in line with that type of approach. We will be glad to hear from anyone in this audience.

Mr. Cashdollar: Well, I want to ask this question. Did he find anything of fluorosis or any ----------

Chairman: I think he answered your question. He answered the question very completely, in my opinion.

Mr. Cashdollar: He answered it? What did he say? Yes or no.

Chairman: What about the board?

Mr. Dixon: It isn't the question of whether it is fluorine or not it is the matter of the degree of fluorine. I think he made that very clear. He indicated the degree was below the level found or detected in herds tested for fluorine poisoning.

Dr. Erickson: I believe he made it very clear.

Chairman: Anyone else on the board feel that he did not make it clear?

Mr. West: He made it clear.

Chairman: Mr. Wendel?

Mr. Wendel: He made it clear.

Chairman: It seems to be unanamous so far as the board is concerned. We feel that he made it very clear. I personally do, Mr. West does, Dr. Erickson, Mr. Wendel, Mr. Dixon. I don't think we need to pursue that matter any further.

Mr. Fraser: Mr. Green, I would like to ask one more question.

Mr. Chairman: Yes, Mr. Fraser.

Mr. Fraser: I submitted an analyses of a tooth. I didn't read it because I didn't want to take up your time. I submitted a tooth examination of our cattle too showing it in the teeth. I would like to make this statement. On our ranch there has never been any, he says it is foolish to say that you don't have fluorine in your feed. The only feed that has been fed on our ranch has been raised on our ranch. The only thing we have bought is pure salt, and the only fluorine that our cattle got has come through the air to the ranch.

Chairman: Does that require a statement?

Dean Price: Fluorine is in all feeds whether it is on his ranch or anywhere else, that's a technical point which has no bearing on the facts.

Dr. Spencer: I might say that most soil would run 100 to 300 parts. I am no soil expert and I don't pretend to be but------

Chairman: Dr. Compton probably knows about that.

Dr. Compton: Fluorine content is in most soil. It will run from very low figures of 50 ppm to over 1000 ppm but no information that I know of where the soils in this area it will be in the neighborhood of 200 to 400 ppm.

Mr. Fraser: Mr. Chairman, I would like to ask Dr. Compton a little bit about it in normal areas, or even though the soil is testing 200 to 400 ppm it still doesn't go up into the grass.

Chairman: We will direct that question to Dr. Compton.

Dr. Compton: We have run control pastures so-called in the Willamette valley at several times, we have sampled the pastures in those areas and analyzed samples for fluorine. They will normally run less than 10 ppm. They vary during the season from very low amount sometimes to a little over 10 ppm but they normally will be less than 10 ppm. We do have a large number of samples like that, so we know that in areas where there is no major industrial operation that pasture grasses and such do contain a small amount of fluorine.

Chairman: The time is getting along. I wonder if this part of the meeting has been explored completely - perhaps we should hear from Alcoa representatives.

Mr. Biggs, Attorney for Alcoa. I thought, Mr. Chairman, that it might be helpful to the Commission and all of us here if some of these things were put in a chronological prospective at least. I would like to say first that the Fraser case was tried in 1950. It was the Findings of Fact which Mr. Fraser adverted were made at that time. Now the history of that briefly is this. Prior to 1949 the aluminum company did not have its corrective devices installed. The installation was completed December 1, 1949. The trial of the Fraser case started in June 1950. The Findings of Fact were entered December 1950. The judge who tried that case made his findings of fact as to some fluorosis in the Fraser herd for the period prior to December 1, 1949 and expressly found that the evidence which had been taken before him was not sufficient to justify a finding that there had been any contamination or injury from the aluminum plant after December 1, 1949. He recognized that the time between December 1, 1949 and a year later when he made his findings was perhaps too short a time for him to make a determination of whether, after the corrective

devices had been installed, there was continuing damage. For that reason he permitted the case to remain on file with permission to the Frasers at the end of two years or within two years to file a supplemental complaint if they felt there was continuing damage. Now let me say with respect to that case that fluorosis in animals was, particularly from aluminum plants, was a fairly new subject. The court before whom it was tried was an ordinary layman. The testimony taken before him was highly technical just as the statements here made this morning would indicate. Judge Levy was compelled to choose between the conflicting opinions of experts who were appearing as experts of a party and was much troubled by the fact that both sets of experts were, in fact, identified, with one party or the other and had been so identified with them, in investigating the case and preparing the testimony they were to give in the trial. Finally he did find in favor of the plaintiff for that period up to 1949, still somewhat disturbed about the technical nature of the testimony. After he had granted a two year breathing spell the aluminum company then recognizing his situation and that he did not have before him in the file of that case a body of completely independent expert testimony - felt that the real solution of the problem - not just the technical problems in litigation, but the real solution to the problem so far as the public in general was concerned - would be to have an authoritative determination made by people in whom the public would repose confidence, who would have no objective but to find and declare the truth whatever it might be so that there would be a body of expert opinions uninfluenced by association with any of the parties, competent to decide these technical questions and which could be accepted as an authoritative determination. Alcoa's efforts, therefore, following the trial in 1950, during the period of two years allowed by Judge Levy within which a determination could be made upon accumulated evidence in the meantime set about attempting to conceive and formulate that kind of a program. It was with the thought that the two state colleges, Oregon State College from Oregon and Washington State College from Washington, Washington being the place where the Alcoa plant is operated, would certainly be representative of every conceivable interest in the determination of that kind. They were scientifically trained, they had the farmers' interest at heart, they were

interested also in seeing that industry was not unfairly treated and for that reason it was suggested to the colleges through Dean Price, and I think perhaps Washington State College jointly that if they cared to take up such a study on their own terms and under whatever controls to guarantee their impartiality and objectivity that they cared to lay down, Alcoa would consider financing such a project. Dean Price to whom that proposition was submitted agreed to investigate. It was in the investigation of the feasibility of doing that that he held the meeting on Sauvie Island to which all farmers were invited and before whom he outlined the proposal that was made by Alcoa and asked their reaction. The reaction at first, as Dean Price has reported, because of the opposition of two or three of the farmers, was bad. Subsequently, when Dean Price announced the abandonment of the project, a petition of the farmers themselves on Sauvie Island reactivated and they requested that the colleges do undertake such a program at Alcoa's expense. Dean Price insisted for the colleges to do so it would be on the basis of collaboration with all the farmers and with Alcoa, and that their work would be subject to the supervision from day to day and time to time of a committee of the farmers themselves and representatives from Alcoa. Periodically, the college representatives would meet with those committees to outline the nature of the work, the scope, they were undertaking, the techniques that were to be used and so on. That was actually done and the report at the end of their study was made and finally put before the body. Now I want to say this, Mr. Chairman. So far as I know the two people who have spoken, or three people, Mr. Reeder, Mr. Fraser and Mr. Baker, did not permit or invite the colleges to come on their place. Alcoa, of course, had nothing to do with what farms the colleges would undertake to study but we were informed that it was not acceptable by those farmers for the colleges to undertake to investigate their place. The colleges then, as we understand it, set up an investigation of the whole problem by selecting representative farms in various areas throughout the Island which would be not only representative but statistically important in ascertaining whether there was contamination throughout the Island. Now that work was carried on in that manner, was done by the colleges in that way and we have relied completely upon their objectivity and impartiality and scientific know-

how in making the determination. We have, of course, been faced during this interim period with the possibility that Mr. Fraser would file a supplemental complaint; that was filed yesterday, just has been put in court in which he now contends that the bad damage has been continued and necessarily issues that have been raised by his complaint will have to be tried out before Judge Levy in Tacoma. We have, during the interim period caused or been permitted to make two or three herd examinations; we have not had any analytical work done upon the pastures of the Fraser place. The reports of the veterinarians who examined his herd - that is the veterinarians that Alcoa retained to make examinations can be made available to the Commission if the Commission so desires. They show no lesions of teeth, urinalyses, that have been made are within normal limits. If the Commission cares for that information we will be glad to submit it. We have had no work done upon the Baker place at all so we would have no information to offer on that but we would have been very happy if Mr. Baker had permitted the colleges to make investigations on his place. I want to - an issue has been made as to what was done with respect to the examinations of the Fraser place. Dr. Compton and Dean Price have spoken about that; Mr. Thayer, the works manager of Alcoa at Vancouver, did write a letter to Mr. Fraser after the college program was under way requesting or inviting him to submit his place to the examination of the colleges so that it would be made a part of the program. That was a specific request and invitation and no response was ever made to that letter; so that the only thing that we have, as of this time on the Fraser place, are the reports of the veterinarians who made the clinical examinations of the herd and some urinanalysis; as I say, I make that statement just to put these various events in perspective. I was very interested in Mr. Wendel's question because it certainly is obvious whenever a subject like this is discussed - how can we laymen where we're met with conflicting opinions of experts on technical subjects, make a determination. Of course a court has to do that, a body of public servants as you people are here are called upon to do that, we suggest to you what we think the solution of the problem is if it comes to a question of who can you believe, we at Alcoa sensed after the trial in the Fraser case, that the beliefs and the creditability of the experts who had nothing but strictly scientific objectives in view is more reliable than the

creditability of experts who had been retained by one party or another and who may therefore to that extent be presumed to be partisan. It was in recognition of that problem that we asked the colleges as representative of the public and the parties and as friends of the court to make the kind of determination that could not be impeached by charges of bad faith, corruption and dishonesty and bribery and all the other charges that have at times been hurled at Alcoa in the Fraser litigation. I don't think that I have anything more to offer, Mr. Chairman, I realize that this evidence is simply an explanation of Alcoa's position. We have been advised, of course, by our own experts that there is no fluorosis out there but we are not satisfied that would even be persuasive to the parties opposing us or to the public if it rested simply on our own experts' testimony. For that reason we submit our case on the basis of the colleges reports.

Mr. Chairman: Mr. Thayer, do you care to say something?

Dean Price: One part of your remark, Mr. Biggs, I ask your consideration and acceptance with what you intended to say. I gathered your exact words were that the farmer advisory committee and the committee from Alcoa sitting with the college as we did periodically supervised the research work. I think you said that but I don't think you meant that. I would object. They did not supervise the work. I would say that the farmer advisory committee and the Alcoa committee sat with the college technical staff and we mutually agreed on the scope and project, and the colleges were willing anytime for anybody to challenge any procedure we were following and we would justify our procedure or we would reorient ourselves. But the colleges directed the research first last and all the time, and it is their report and no one else is responsible for it. We considered the farmer advisory committee very helpful in its over-all work, approach or anything else. I thought I would make that clear because I think when you read the transcript you will see-------

Mr. Biggs: I certainly will accept Dean Price's correction. And, as Dean Price said, if that is not the appropriate word and I used it, I would like to withdraw it.

Chairman: Anyone else from Alcoa or the industry who would like to be heard?

Mr. Biggs: I think not.

Chairman: Mr. Fraser, would you like to say anything?

Mr. Fraser: I would like to have Mr. Biggs withdraw a few more statements. One of them was that Judge Levy will hear our case again.

Mr. Biggs: Well, if I said that, I don't know why I said it. I didn't mean to say that as Judge Levy is now dead. He died within a year or two after the trial. We don't know what judge will hear it.

Mr. Fraser: The other one is that this case lasted ten weeks - before the man - he was not just a layman after ten weeks. But the other statement; he made out like we didn't have any unbiased people there. Well, Oregon State College was there at that trial too.

Chairman: What is the pleasure of the Board? Shall we have a motion?

MOTION RE: SAUVIE ISLAND COMPLAINT

It was MOVED by Mr. Wendel and seconded by Dr. Erickson and carried that the Board take the matter under advisement and announce its decision later.

Respectfully submitted,

CURTISS M. EVERTS, Jr., Secretary
Oregon State Air Pollution Authority