On June 25, 1985

Martha Kostuch was elected Chairman.

Associations

Janssen- Municipal Districts Selected to Serve

Taylor - Public I year term

Railton - Member's Committee

Bulton - agricultural organizations | selected to Bayliss - health organizations | serve Kostuch - Environmental groups | 2 year terms

Call Carl Primus:

Suggest he send a letter to Municipal Suggest he send a letter to Municipal Associations telling them that the Heat Associations telling them that the term of their representative is up. The term of their representative is up. To they wish to reappoint Don or appoint someone else. Send at copy to appoint someone else. Send at copy to Don Tannas.

Public representative - advertise for a new representative.

ADRP/PAB Membership List

Chairwoman:

Dr. M. Kostuch,

Box 1288,

Rocky Mountain House, Alberta

TOM 1TO 845-3668

Member's Committee Representative:

Donald Tannas

Box 7

Dr. J.B. Railton,

Manager Environmental Planning, TransAlta Utilities Corporation,

110 - 12th Avenue S.W.,

Calgary, Alberta.

T2P 2Ml 267-3637

Members:

Dr. N.J. Bayliss,

Medical Officer of Health,

Alberta West Central Health Unit,

P.O. Box 1718, Edson, Alberta.

TOE OPO 727-2288

Mrs. Sophie Taylor,

Box 591,

Pincher Creek, Alberta.

TOK 1WO

Mr. William Janssen,

R.R. #1

Woking, Alberta.

TOH 3VO

water Valley
Tom 2EO Mr. Herman Bulten,

Box 321,

Leduc, Alberta

T9E 2Y2

986-3846

Ms. Jean Flatt,

Francis, Williams and Johnson,

#600, 250 - 6th Avenue S.W.,

Calgary, Alberta.

T2P 3H7

Report to Members Committee

from the

Public Advisory Board

November 7, 1986

I provided Caarl Primus with an update on the status of the PAB membership.

Has a letter been sent to the Municipal Associations? Has the request for a representative of the Public at large been publicized?

Since the majority of the Members Committee was at the last meeting (August 220, 1986), I'm not sure how necessary this report is.

Chairman

No one else would agree to accept the chairmanship.

Medical Diagnostic Review

The PAB summarized that two major areas of concern have been identified: the possibility of clusters of problems in the plume area and the lack of monitoring.

The PAB recommends that the ADRP review the recommendations from the Human Health Workshop in light of the MDR. Other recommendations brought foward by groups and individuals were rejected. (The chairman did not vote.)

July 14,1986

Martha Kostuch

Box 1288

Rocky Mountain House

Alberta TOM 1TO

Alberta Society of Professional Biologists Box 566 Edmonton Alberta T5J 2K8

I am the environmental groups representative on the Public Advisory Board of the Acid Deposition Research Program.

Enclosed is a copy of the summary of the Medical Diagnostic Review conducted on residents in the southern part of the Province by the McGill research group headed by Dr. Walter Spitzer.

The Public Advisory Board has been asked to respond to the report and recommendations and to provide to the ADRP members committee feedback on public response. I would be most grateful if you could provide me with a response from your association.

If possible, I would appreciate receiving your response before August 20, the date of the next meeting of the PAB. If it is not possible for you to respond that quickly, please let me Know when I can expect a response.

Thank you so much for taking the time to review the report. Please call me at 845-3668 if you have any questions.

sincerely yours,

The attached list was sent to the following organizations:

Alberta Society of Professional Biologists

Greenpeace

Alberta Wilderness Association

Canadian Society of Environmental Biologists, Alberta Chapter

Claresholm Clean Air Association

Federation of Alberta Naturalists

Pembina Institute for Appropriate Development

Sierra Club of Western Canada (Alberta Group)

Alberta Fish and Game Association

Pollution Study Group, Public Advisory Committee

Pincher Creek Area Environmental Assoc.

Sour Gas Coalition

Sour gas victory cause for glee

I'll just have to control this feeling of glee when the lions fail to eat up the Christians. It's becoming addictive like alcohol.

My latest delight is over the defeat of the environmentalists in Pincher Creek.

They argued for years that the poor residents were dying from sour gas the atmosphere or from hear the etal deposits in the water supply. Every cancer case, every cold, every birth defect and every sick cow was blamed on the gas company.

For more than a decade, the government commissioned study after study. Fred Bradley, the local member, was appointed Minister of Environment. All to no avail. The lobby called each report a whitewash and every politician a lackey of the oil companies. And, with assists from sociologists, residents be-



Martha Kostuch



Roy Farran

came more and more convinced that every sniffle was a symptom of chemical poisoning; that every spot of rust on barbed wire was the fault of the gas plant; that every whiff of rotten eggs was as fatal as nuclear fallout.

Yet it did not seem reasonable that Turner Valley, only a hundred miles to the north, should not have had similar problems. It has been producing smelly oil and gas for more than 40 years with the most primitive of technology compared with Pincher Creek. Though the gas plants at Black Diamond did not exactly smell like roses, the area still produced some of the world's best cattle and healthiest people. Strange indeed.

Then the government ordered a mammoth inquiry at a cost of nearly \$4 million. Are those Pincher Creekers really sick or is it all in their minds? Tell us once and for all and don't spare the expense.

Now they've told us. The people are in fact healthier than average Albertans and there is absolutely no need for further research.

"We were unable to detect any excess of life-threatening or disabling conditions," said Dr. Water Spitzer. "I would be happy to live there myself!"

The hypochondriac suspicions had also spread to Crossfield, site of another modern gas plant. "Don't worry," said Dr. Peter Tousignang, "you also are as healthy as other Canadians."

"We're very disappointed," said environmentalist Martha Kostuch.

You bet.

The meeting was held meeting with ADRP Co-chairmen - July 23,1987 in camera contrideritial contributed used added creditivity to the program The Way I've been treated process commitment to the program process commitment to the program

My commenting publicly on MDR: energy that I participated I don't have June 10,1986 - I called Jean Andrysyn to clarify a I much hope letter which had been sent out to all of the ADRP ghat the ADRP will members explaining who represented the ADRP (the ? co-chairmen) + who could comment publicly. She said I better talk to Fixlay or Primus re: who could make comments,

be successful

- I called Primus. He was gone for the day on personal matters, (I believe there had been a death in the family)
- I called Ron Finlay, He was out to lunch,
- I called Ron Finlay again. He wasn't in so I left a message for him to return my call.
- I called Ed Brushett, He was on his way back from Edmonton so I left a message for him to return my
- Ron Findley called back. He said I just have to clanify that I am not speaking on behalf of the ADRP. The letter is no attempt to muzzle me,

From the PAB Terms of Reference

"All information provided to the PAB will be approved and considered of a public nature by the ADRP's members Committee. This will allow the PAB representatives to communicate Freely with their constituents, the general public and the media!

July 10, 1986

* Millard Wright suggested that since my expenses were paid for by the member's committee (to attend the Pincher Creek release of the MDR) I was representing the ADRP and should not have commented publicly. I agreed to return the expense money which I had received and I subsequently returned it, Ron Wallace accused me of leaking information to Mark

I was told members of the PAB must make it clear who they are speaking on behalf of (which I had done).

Carl Primus proposed a rotating Chairmanship for the PAB Ron Findlay moved that the Terms of Reference for the PAB be ammended so the Chairman must rotate on an annual basis.

I argued strongly against the motion but it was carried. The PAB was to recommend the order of

rotation, I was to review the terms of membership and advise the co-chairmen whose terms are up so they could write a letter to the nominating groups asking them to renominate their representative or nominate someone else,

I subsequently provided this list.

That the same mostings the PAB was told throughout that it could not communicate

Augusto 2n. 1986

The PAB met. No one else was prepared to accept August 20, 1986 the chairmenship

The executive started meeting at 8:30 A.M. The other members November 7, 1986 were allowed to join at 11:30. Ron + Jean attended the executive meeting. At an earlier meeting, we had decided that the Members committee and the exective well would

Ed Brushett indicated poight away that several changes in the PAB Ferms of Reference were being brought foward at the meeting. (It would have been nice if they had consulted with me.) consulted with me.)

The co-chairmen will send letters to all of the groups explaining that the numbership of their representative explaining that the numbership of their representative is up and would they please nominate someone to

represent him. Who ever they nominate must be prepared to accept the chairmanship.

Several new groups were proposed as members on the PAB. It didn't appear as if much thought was put in to selecting the groups.

I argued that the PAB should be able to have one more meeting which had already been scheduled and more meeting which had already been scheduled and to have some input into the selection of the groups to have some input into the selection of the groups to be represented on the PAB. (The majority to be represented on the PAB. (The majority of the PAB imembers indicated there was no sense in holding another meeting since we were lame duck members.)

The PAB members were to be sent letters thanking them for their involvement,

why was I treated this way?
Why was the PAB treated this way?
Why was the PAB treated this way?
What evidence does the ADRP member's committee have
that I leaked information?

Public Advisory Board

Unilaterally Changing Terms of Reference

No consultation with the PAB before approving the

There seeds to Annual rotation of chairmanship

- restricts participation on the PAB because they must be prepared to serve as chairman
- the PAB can no longer decide who they want as
- By the time the PAB representative on the members committee becomes familiar with the way the committee operates, his or her term will be up so the chairmen's effectiveness will be significantly reduced.

(Perhaps the Co-chairman of the members committee should have to rotate annually.)

It was foolish to ask for all new members to be appointed to the ALDRIP. 3 memberships were not due to expire until the summer of 1987. It was intended that their be some old members on the committee at all time (that was the reason for the staggered memberships.) to provide continuity.

The PAB was not provided with anything to review It was promised the Occupational Health Feasibility Study but it never received it.

PAB recommendations were rejected.

In fact, at the July 10, 1986 member's committee meeting, I was informed that the member's Committee does not want the PAB to communicate with the Minister of Agriculture he's the Animal Health Workshop.

The feedback I received from individuals on the PAB was that they telt that they were being used and that the PAB was being manipulated by the member's committee,

There seems to be an expectation on the part of the members

Committee that if they there consult with the public, there will
be no criticism.

Sub stantine

mDR - never reviewed the MDR. Just accepted results.

My concerns:

Area selection - how were the areas selected?

small number of residents living in plume area No monitoring compared with number included in index area Use of 10% of 20% différence required to be

Several heavy thetalsolwere not tested for.

Several heavy thetalsolwere not tested for.

Chronic symptoms ignored - why weren't they included in the report? (the guestionairre included in the report? (the guestionairre included 12 month symptoms.)

The information From the study (the data) was to be included in a central archive in Alberta, Has it been? If so, where? If not,

Dr. Spitzer was too busy writing articles for publication to respond to further questions about the ADRP. Where have this articles been published? Please provide me with copies,

The MDR was never intended to be the only study This The Human Health Workshop recommended several other Studies-

The MOR seemed to get off track when Dr. Bob Roogus was fired,

Lack of integration -

no effects research

A Fancy air monitoring program that has become technilogically driven. Monitoring the become technilogically driven. Monitoring the air in minute detail in 3 locations in the province - two are in the least sensitive the province - two are in the least sensitive area of the province and the 3rd is a background area of the province and the 3rd is a background site, what will this program tell us of

The program has lost sight of the original guestion

The site selection process and the actual site chosen for the study are midiculous (not one of the least sensitive the largest emitters and in one of the least sensitive areas of the province, Not where the most concern has been expressed.)

Ken Smith it all came to a helt when the MDR was released amounted. She was very much involved with the MDR. The crucial point when was the MDR was released. There were some very high expections, Martha's role as a member of the Member's Adusory Committee, Chairman of the PAB that well known environmentalist.

Martha's specking out created some real internal strike in the ADRP.

ADRIP has a long history.

Communications is still an important part of the MDR.

Dr. Spitzer did what he was supposed to do.

Ron Findlow His problem with the public is the way it is to be used in the ADRP process. Vern Millard mitially suggested the public have a voice. Had a workshop + revamped objectives OF ADRP to reflect their input. Delected 5 representatives + From there, Martha was selected as chairman, (He has this stort of mixed up.) Where it came to rest is where some of the PAB members came to Ron personally + said some of their input wasn't being expressed properly at the members Committee Meeting. So Earl & Ron started attending the PAB meetings and taking a more active role in the meeting, John Railton then went to the co-chairmen & told them that the PAB viewed their participation as a threats Other organizations had gone to Ron and and asked to have any input into the PAB.

He retuses to have anyone to have any input into the science.

He had some serious doubt about whether the science was being guestioned scientifically or for political benefit we don't judge the document in any way, we just lay it out to be judged by other scientists.

The SABS approved of the study.

Industry was pressuring Ran about why they involved the public, buly

The Funding we had in place to Fund environmental research was being shaken.

Perception in the use of the Data

Revamp the PAB so they covered all the bases of it became neutral input into the PAB.

If we ever kill the process, it will never be established again.

It's one of the best models that's currently being employed want to end up with good environmental management of strategres

For this province,

Texplained my perceptions of what happened

Ron + Ken have very different perceptions of what happened

Ken

When the "MOR Community Meetings were held. Cancer of

When the MDR Community Meetings were held, Cancerd Seriously disabling conditions took over as the focal point what are the limits of the Scrense? asstachas

Ken has no problems communicating what can be done they can to and what they can't do

July 27, 1787

We're pushing science. Ken Smither Hall and to sithet when it 1973 was Morning The way my man hardend you the proper The country point when we the topic me now and I have were some con buch expecting the days to be a produce of the Mariana planter Committee Charles of the PART to a self the a formartalist Martine grack mount grated some real interest . ADAR has a low hotey. Commenced by the self an important and In the ten to a set to a second to do is an over with the water is the way to be he was to the ROWF process. Very Miland or make accorded to not a very Hall a many a respect STORP to A That the most treated A From them - Mustber was settled as (He has his that it misming) "When it came to go to him son it the PAB member came to Por mersely to took and their input Committee region & Ell & Pan Justed Herein PAG WALLES TO A TUNE A TENE POLICE PERSON meeting 366 Filton A. S. But to the said to Al The test has fall army than participation in three Att in account to hely your to feel you

AND REST WAS TO BUTTON

ADRP-PAB

My Treatment by the Member's Committee

As long as I agreed with them, everything was great. I checked the conditions under which I could publicly Failure to even listen to my concerns

Comment,

Unsubstantiated allegations

Public Advisory Board

Unilaterally ammending terms of reference

Chairman, membership

Not providing the PAB with anything to review

i.e. Occupational Health Feasibility Study

Rejecting the majority of the PAB recommendations

Manipulative, Using them
I suggest a joint PAB-ADRP meeting,
Structure

Public Representaative on ADRP - no vote. Executive making decisions. Executive meeting held; decisions made. Then a members committee meeting is held.

Secretiveness.

All information should be brade public in a timely manner.

Terms of reference

Determined by ADRP + can be changed by them without consultation from

the ADRP

MDR area selection to be the only study publication?

Nover intended to be the only study publication?

ADRP & lack of integration program that has become technologically drilen A funcy air monitoring program that has become technologically drilen both a funcy air monitoring program that has become technologically drilen both a funcy air monitoring program that has become technologically drilen both a funcy has become technologically drilen actual site of the original question.

Occupational Health Study

Arranging for members who don't agree with the chairman to be removed from the committee

I am writing to formedly protest some events that have occurred over the last several months.

I strongly disagree with the After decision of the members Committee to change the Terms of the Reference of the Public Advisory committee so that the chairman of PAB, must vol and thus the public representative on the Members Committee must rotate on an annual basis. This rule restricts who can participate on the PAB because they must be prepared to serve as chairman. The PAB can no longer decide who they want as chairman. And by the time the public mem representative on the member's Committee becomes familiar with the way the committee operates, his orher term will be up, so his of her effectiveness, will on the committee be significantly reduced,

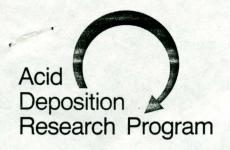
Jecondly, I disagree with asking all of the groups to appoint new members to the part this time, The reason for having some PAB at this time, The reason for having some members some from year terms and some two year terms was so there can be experienced members year terms was so there can be experienced members on the Board all of the time. Three of the

PAB memberships were not due to expire until late spring or summer of 1987.

And Finally I am very disappointed in the members committee Meeting that was held on November 7, 1986. It had been decided at an earlier meeting of the Members Committee that the executive and the members Committee would meet jointly. Yet, apparentlys on Nov. 7, all of the members of the members Committee except me were told to be at a meeting which started at 8:30 A.M. All of the items on the agenda were gone towers and several decisions were made. I was told that the Members Committee meeting started at 11:30 A.M. Obviously it started earlier for the remainder of the committee. Even the program manager and the communications officer attended the earlier meeting.

ADRP Members Committee meeting that directly affect the PAB, those changes should first be discussed with the PAB or at least with the Chairman of the PAB

At Some time I would like to have an opportunity to discuss my concerns about the MDRP in general with the MDRP and wbout the ADRP in general with the members committee for a better environment.



DATE: OCTOBER 31, 1985

TO: PUBLIC ADVISORY BOARD

FROM: MARTHA KOSTUCH, CHAIRMAN PAB

At the last ADRP Members Committee meeting, I presented the PAB's recommendations that the ADRP consider organizing a workshop for the purpose of developing a work plan for animal health research. The members committee indicated that while they were not prepared to organize a workshop, if the PAB identified the concerns related to animal health, and prepared a position paper on what needs to be done, the co-chairman will submit it to the appropriate agencies for action.

Therefore, based on your input at the last PAB meeting and by letter, I have drafted a proposal for your consideration at the November 6 PAB meeting. Please feel free to recommend changes or additions.

In addition, we had three questions that had not yet been responded to. The first question was "How do you apply information gathered at one site to other sites with variable topography, etc.?" Ron Findlay, Co-chairman, ADRP asked me to respond to this question based on what was said at the soil tank workshop.

My understanding is that atmospheric considerations made it necessary to select the flattest possible terrain. The study can not handle complex winds. From an atmospheric standpoint, it is easier to apply data from a simplified system to a complex system. It may be necessary to do further research to find out if what is learned at the Crossfields site can be applied to other sites with a more complex terrain.

We recommended the banking of as many samples and as much information as possible. Ron Wallace, Program Manager, has sent a letter outlining the positive response to this recommendation.

We also asked who is responsible for carrying out decisions made by the ADRP Members Committee. The draft roles and responsibility document will be discussed at the next ADRP Members Committee Meeting. The Members Committee indicated that Ron Wallace, Program Manager, is responsible for carrying out the decisions of the Members Committee.

I look forward to seeing you on November 6.

Effects Of Acid Forming Emissions

And

Associated Compounds

On

Animal Health

presented by the

Public Advisory Board

to the

Acid Deposition Research Program

Animal Health is an area that is not being addressed by the Acid Deposition Research Program. The Alberta Environmental Centre is using animals in research but their research relates more to humans and occupational health than to the questions that are important to farmers. The effects of acid forming emissions and associated compounds on animal health is an important area which needs to be addressed.

Concerns vary from metabolic imbalances to disease syndromes which people believe are at least partially caused by sour gas emissions. White muscle disease, nutrient imbalances, infertility, abortions and early embryonic death, malformations, reduced weight gains, decreased production and increased susceptibility to disease have all at times been blamed on sour gas emissions.

In the case of accidental releases, such as the Lodgepole Sour Gas Blowout, the apparent effects on animal health have been quite dramatic. Other complaints appear to relate more to the long term effects of the emissions.

The workshop approach used by ADRP to plan the biophysical and human health program seemed to work very well.

RECOMMENDATION

A workshop should be held to design an animal health research program.

- Although we believe that it is important to have international specialists involved, we would like to see more Albertans participate in the planning process because (1) they are familiar with the situation in Alberta and thus have valuable contributions to make and (2) they will learn from the information and ideas that are presented by the other experts. We also believe that the PAB has a valuable role to play in the planning process.
- Animal health research should be done for its own sake, that is the health of animals. Animal health research may also help us learn more about the effects of emissions on human health if the research is properly designed. For this reason, consideration should be given to including behavioral aspects in the animal health research program.
- Research should include parameters such as effects of emissions on weight gains and production.
- In addition to cattle, consideration should be given to using swine as research animals. Research on both beef and dairy cattle is important.
- It is important to set up an information gathering system and to collate existing scientific and anecdotal information. This could be done as a separate project or in combination with the animal health research program.

ACID DEPOSITION RESEARCH PROGRAM

Presentation by Martha Kostuch, Public Representative March 19, 1984

Who is the Public?

Eight organizations were asked to select someone to represent the public on the Members Committee of the Acid Deposition Resarch Program. These organizations are: the Alberta Wilderness Association, the Alberta Fish and Game Association, the Canadian Nature Federation, the Entomological Society of Alberta, the Federation of Alberta Naturalists, the Foothills Protective Association, the National and Provincial Parks Association of Canada, and the Sierra Club of Alberta. I don't know why or how these groups were selected.

For the purposes of my presentation, I would say that the public can be put in three groups:

- groups and individuals with local concerns related to industrial emissions;
- 2. environmental groups; and
- the general public.

Overview of Public Concerns

BIOPHSYICAL:

- impacts on the aquatic ecosystem. Includes insects, fish, birds, and mammals which rely on an aquatic food source.
- impacts on high mountain lakes.
- acidification of soils especially in the Peace River area and the Foothills.
- damage to agricultural crops, especially legumes (nitrogen fixing bacteria are sensitive to SO_2 and NO_2).
- damage to plants consumed by wildlife.
- changes in nutrient content of vegetation.
- corrosive effects especially on farm machinery and equipment and barbed wire.

ANIMAL HEALTH:

- metabolic imbalances:
 - increased deficiences of selenium, zinc and copper in spite of supplementation.
- infertility.
- decreased production (weight gains and milk).
- increased incidence of some disease syndromes including white muscle and respiratory diseases.
- decreased resistance to disease in general.

HUMAN HEALTH:

- respiratory problems.
- ear and throat problems.
- stomach aches, nausea, vomitting and diarrhea.
- headaches, leg aches.
- runny eyes and noses.
- nose bleeds.
- skin rashes.
- fatigue, general malaise.
- increased incidence of cancer, muscular dystrophy, and crib deaths.

AREAS WHERE CONCERNS HAVE ORIGINATED:

Pincher Creek/Twin Butte
Mayerthorpe
Joffre
Rocky Mountain House
Carstairs
Rimbey
Okotoks
Millarville
Grand Prairie
Sundre
Millet
High River
St. Albert
Claresholm

General Comments About the Acid Deposition Research Program

INFORMATION

There is a lack of information about the program. This has resulted in poor credibility. People ask what the secret study is all about.

People want information. They want well-informed input into the program including research design. They want to know that their input is not only desired, but utilized as well. They don't want token public representation.

RECOMMENDATIONS

 Develop and implement a communications plan. The public should be kept well informed and up to date about what is happening (press releases, speaking at public functions, and answering requests for information rapidly and fully). Every member of the committee should be allowed to provide information.

The Members Committee can decide what information should be made available to the public (refer to section 10 of the Agreement and Charter (p. 7), and section 10 of Schedule A (p. 11)).

One of the objectives of the program is to "disseminate information among members, to the public and to government bodies".

While I agree that resarch results should receive peer review prior to public release, I think that each project should be required to provide regular updates. The public can then be kept up to date on where the research is at.

2. Actively seek input from the public. This will not only improve the credibility of the program, but it may also improve the quality of the program since the public has valuable ideas and knowledge. Public review of the terms of reference will increase the chances that the right questions are being addressed.

Alternatives for Getting Input from the Public

- (1) Members Committee meetings with the public (the meetings would need to be well advertised).
- (2) Request written briefs (advertise the request for briefs).
- (3) All public input through the public representative. (If this alternative is chosen, expenses of public representative would need to be funded. This method would include use of the network newsletter, news releases, advertisement and meeting with groups and organizations).

A combination of the above alternatives could be utilized. Whatever method is chosen for public input, the public must be kept fully informed if their input is going to be meaningful.

Medical Diagnostic Report (Spitzer Study)

Comments by Martha Kostuch

The first human health study report, the medical diagnostic review, was released in June. The following quote was taken from the June 11, 1986 press release announcing the results of the Southwestern Alberta Medical Diagnostic Review, better Known as the Pincher Creek Health Study.

"The results of our research thankfully allow us to reassure the concerned citizens in this southwestern Alberta area about their community's health. We were unable to detect any excess os life threatening or disabling conditions. Small differences in rates of symptoms such as redness of eyes, itching of skin and throat irritation were documented, but the differences are not large enough to contradict or cast doubt upon the objective evidence depicting a healthy community by any Canadian Standard."

While the study, which was conducted by McGill University, funded by the Government of Alberta and administered by the Acid Deposition Research Program, provides a lot of information about the health of residents in southern Albertta, it provides littlee information about the effects of sour gas emissions on residents living directly downwind of the plants.

The purpose of the MDR was to determine whether residents of the Index Area experience adverse health effects more often than expected. The Index Area included the area in and around the towns of Twin Butte, Glenwood, Hill Springs, Willow Creek and Mountain View.

The overall conclusion of the report was that "the greatest concerns of the population in the Index Area were about excess mortality, high rates of cancer, diminished respiratory function, dangerous levels of trace metals in the body, birth defects, and delayed or abnormal childhood development. For all the foregoing concerns the investigators have not detected objective evidence perpetuate the concerns. The investigators are confident of the scientific basis of that reassurance. With respect to symptoms or how people feel concerning possible contamination of their environment, there is a small difference suggesting greater concern and more awareness of one's health and one's sensations among residents in the Index Area. That is entirely understandable and indeed expected given a quarter century of equivocal information about health in relation to the immediate environment which has been diffused in Southern Alberta."

The report recommended that Alberta standards be relaxed; the province establish a birth defects registry; and no further research be done.

Reactions to the report have varied from acceptance and relief to resignation and even anger. Industry seems to be very pleased with the results and they consider the issue closed. I expect that the government agrees with industry. Some residents, particularly those outside of the Twin Butte area, are relieved by the results. But many of the residents who have been complaining of health problems for over 25 years are disappointed by the findings and they don't expect their problems to just go away.

There are several reasons why the study fails to tell us if residents are being effected by sour gas emissions. To start with, the investigators concluded that the greatest concerns of the population in the study area were about excess mortality, high rates of cancer, diminished respiratory function, dangerous levels of heavy metals in the body, birth defects and delayed or abnormal childhood development. And yet, for over 25 years, people in the Pincher Creek area have been complaining about fainting spells, nausea, vomiting, sweating spells, bleeding noses, difficulty breathing, skin rashes and other health problems which they believe are related to emissions from the gas plants. For some reason, the researchers put the emphasis on the wrong problems.

The small number of residents living directly in the vicinity of the plants makes it difficult to determine differences in the incidence of health problems. Of the 2148 people included in the study area, only about 200 to 250 live immediately downwind of the plant and have complained over the years about health problems related to emissions from the gas plants. Therefore, any effect of the emissions on the people living downwind of the gas plants may have been diluted out by including such a large number of people in the study area.

Establishing a level of 10 per cent and 20 per cent difference in the incidence of signs and symptoms to be considered clinically significant means that even though the levels of symptoms in the study area are systematically higher, they are not considered to be clinically significant. Residents in the Stirling-Raymond Area were 5.1 per cent ostensibly healthier (this includes signs, physical examinations and laboratory tests) than residents in the study area but again this difference isn't considered clinically significant.

ignored

And lastly, but perhaps most importantly, there was no exposure monitoring done. The residents have always indicated that the symptoms are bad when the fumes are bad. This usually occurs in the winter when the wind is from a certain direction and particularly when there are upsets at the plant (flaring). Only symptoms observed during the two-week period prior to examination were included in the report so unless residents were exposed during this two-week period, the incidence of reported symptoms would not be expected to be higher. The observation of the residents was that the air was very clean during both the summer and the winter study periods. Since no ambient monitoring was done in conjunction with the study, it is impossible to Know whether residents in the study area were exposed to higher levels of emissions during the study periods.

Since the report was released, the Scientific Advisory Board (SAB) to the Medical Diagnostic Review has completed their review of the report. Basicly the SAB concurred with the overall conclusion of the report but had some concerns about the prevalence of symptoms. The SAB also recognized that the Medical Diagnostic Review was not designed to detect health problems in relationship to any type of environmental exposure.

Other experts have been more critical of the study. Dr. Philip Landrigan, the Director of the Division of Environmental and Occupational Medicine at the Mount Sinai Medical Center in New York, states, "My major criticism of the study is that it does not pursue suggestive adverse findings as aggressively as it might. For example, within the Index Area, the investigators make no distinction between those persons who lived immediately adjacent to the emission source and those who lived more distantly."

The criticism of Or. Rosalie Bertell from the International Institue of Concern for Public Health is even stronger. Or. Bertell says, "This study, monumental in size and cost, is nevertheless one of the most obscure I have ever read... One major problem not addressed by the research team is that of perspective. A polluting plant is at least a public nuisance...when it causes irritation of eyes and respiratory track. This effect was documented and then dismissed by the team."

Dr. Bertell finishes her criticism by stating, "The final recommendation that further clinical epidemiological or demographic studies involving new data collection in the field not be done appears both unscientific and patronizing. Perhaps the Canadian Charter of Rights will cover personal complaints and government decisions about pollution. What is aceptable to researchers as necessary human suffering to allow industrial operation is a value judgement, not a scientific finding."

Kostuch wrongly dismissed

We object to the removal of Martha Kostuch from the Public Advisory Board to the acid desposition research program (Chairman of study asked to step down, The Journal, Nov. 25), because of her criticism of the Pincher Creek sour gas study conducted by Dr. Walter Spitzer of McGill University.

Kostuch has pointed out that the "epidemiological study" carried out was an unlikely type of investigation to yield significant results. The Alberta government should have known this before it commissioned Dr. Spitzer. There were other methodological problems including poor timing and dilution of the data base.

The government has said Dr. Spitzer's study is now the last word on sour gas safety, but in effect it has deliberately wasted nearly \$4 million. We must return to Earle Snider's previous "sociological study" at Pincher Creek which raises more questions and concerns regarding the health effects of sour gas.

Kostuch is probably the most respected person in the Alberta Environmental Network. Her integrity and objectivity are unimpeachable. We in Hinton are sitting on the very edge of sour gas development. We must know the facts.

The action against Kostuch taken by the government and the sour gas industry is an affront to every environmentalist and citizen in Alberta. We ask for her immediate reinstatement at the chairman of the Public Advisory Board and hereby publicly nominate Kostuch for the first annual Alberta Environment Department award.

Charlotte Hrenchuk T.A. Roycraft Randy Lawrence Hinton

Health problems remain an issue

By Mark Lowey (Herald staff writer)

EDMONTON — The government's \$3.7-million health study of Twin Butte-Pincher Creek leaves many unanswered questions and more research is necessary in the sour gas area, say medical and engineering experts.

Additional health and environmental studies are required to follow up on possible health problems suggested by the government-funded study, according to doctors from Calgary and New York, and a University of Calgary professor.

"Further study is necessary which would include ground and air monitoring and compare these (sour gas) levels to possible medical problems," says Calgary doctor Niels Damgaard.

In a letter to Rocky Mountain House veterinarian Martha Kostuch, Damgaard said the Twin Butte-Pincher Creek study indicated there could be at least four health problems that require further investigation. They are chronic bronchitis, dermatitis (skin problems), neurological problems including deafness and back pain, and hypertension.

Damgaard said the study, by Dr. Walter Spitzer of Montreal's McGill University, "only glanced over these problem areas possibly because they are outside the concerns expressed by the residents..."

Dr. Philip Landrigan of the Mount Sinai Medical Center in New York City agreed that Spitzer's study "does not pursue suggestive adverse findings as aggressively as it might."

Landrigan, director of environmental and occupational medicine, told Kostuch in a letter that researchers should have separated out residents living immediately downwind of the Twin Butte-Pincher Creek sour gas plant from those living farther away. This distinction could have been useful for further analysis of the excess symptoms that Spitzer found in Twin Butte-Pincher Creek, compared with a non-exposed control community, he said.

Landrigan said he was distressed by the prepared statement accompanying Spitzer's final report, which was made public in June. The statement, according to Landrigan, said "in extremely bald terms that no adverse health effects existed in the (Twin Butte-Pincher Creek) population in southern Alberta."

Landrigan said he would have been happier with a more cautious and accurate statement saying that no adverse effects had been found, "but that certain limitations in the study made it impossible to evaluate the occurrence of all possible health effects."

Kostuch, who is participating in a workshop here on acid-forming emissions and animal health, provided reporters with copies of both letters.

Kostuch, several Twin Butte-Pincher Creek residents and other doctors have complained about gaps in Spitzer's study since its release.

Richard Rowe, mechanical engineering professor at the University of Calgary, agrees that Spitzer's study shouldn't be the final word.

Rowe said there are several families immediately downwind of the Twin Butte-Pincher Creek gas plant that are undoubtedly being exposed to emissions, simply because of the area's unique weather and topography.

Rowe provided the Herald with a paper he published in the scientific literature that corroborates his view. Research into this problem, which he stressed isn't found elsewhere in Alberta, was planned before the Spitzer study was done. But the research has been put on hold since Spitzer released his findings.

Dec 17, 1986

Martha Kostuch Box 1288 Rocky Mountain House Alberta TTØM 1TØ

July 8, 1986

Dr. Walter Spitzer
Chairman of Epidemiology and Biostatistics
McGill University
Purvis Hall
1020 Pine Avenue W.
Montreal, Quebec
H3A 1A2

Dear Dr. Spitzer:

I would appreciate your responses to the following questions about the Southwest Alberta Medical Dianostic Review.

How was the size of the Index Area determined? Were all of the individuals studied in the Index Area included in the comparison with the control community or only a randomly selected sample? Only 200-250 residents living immediately downwind of the gas plants have complained about health effects related to the sour gas plants for any length of time. Is it possible that health problems experienced by these people could be diluted out by the inclusion of 2148 people in the Index Area? Can a separate analysis be done on the residents living immediately downwind of the gas plant? How did you determine whether there was geographic clustering of any adverse health phenomenon (objective # 11)?

How was it determined that the Stirling/Raymond area was not exposed to sour gas emissions? A study proposal by the Canadian Public Health Association recommended ambient sampling of airborne contaminants to determine variations in pollution levels and whether peaks of emissions coincide or correlate with increases of reported symptoms or illnesses. Why wasn't this done as part of the MDR? How do you know that the Index Area residents were exposed to sour gas emissions during the study period? Enlight of the residents observation that the air was very clean during both the summer and winter study periods and their past observation that their symptoms occur when the fumes are bad, would you hyave anticipated a higher incidence of symptoms in the Index Area than the control area? If so, why? If the symptoms are caused by sour gas emissions, would you expect the incidence to increase if the exposure increased? Since only symptoms occurring during the two week period prior to examination were recorded, wouldn't exposure have had to occur during that two week period if it were going to effect the incidence of symptoms?

How were the target variables selected?

Was any information about allergies or other symptoms that may be related to sour gas collected from outmigrants?

Did the outmigrants from the Index Area compared with the outmigrants from the SR Area include outmigrants other than close relatives? If not, what percent of the total outmigrant population moved due to health reasons? Did any of the Index Area residents move within the Index Area due to health reasons (to get away from the emissions)?

What is the scientific basis for the prespecified levels of difference required for clinical significance? Can health problems that do not reach the predetermined 10% and 20% difference level be ignored?

Did some residents with cancer chose not to participate in the health survey? If so, how many?

Why weren't the other heavy metals listed in your proposed chromium, copper, cobalt, vanadium and aluminium, included in the study? How were the heavy metals to be sampled for selected? Why weren't the other heavy metals listed in your proposal:

What level of selenium is considered deficient? Why is

You list the oxides of nitrogen, sulfuric acid aerosol sulphur dioxide and hydrogen sulfide as the plausible environmental exposures with potential pulmonary toxicity. What about the other compounds you list in your proposal including CS2, COS, oxone and mercaptin?

There was a higher level other bones or series. You list the oxides of nitrogen, sulfuric acid aerosols,

ailments are not caused by any of the compounds emitted from the gas plants?

How do you explain the higher incidence of ostensibly healthier people in the SR Area as compared to the Index Area and in DCCI as compared to SR-M? Why do you think there is a higher incidence of overall specific conditions (based on data from the questionaire, ritualized physical examination and laboratory) in the Index Area as compared to the Stirling Raymond Area?

You indicate that exposure of DCCI participants is very similar to that in IA? Since you didn't do any exposure monitoring, how did you determine that exposure was similar?

What caused the high incidence of red eyes and red mucosa in the Stirling/Raymond Area? Could the red eyes and red mucosa have been caused by exposure to environmental contaminants (outdoor or indoor)?

You indicate that there are 75 individuals in the outmigrant group with cancer, 64 with 1 incidence cancer and 1 with 4 incidence cancers. (p. 80 of the summary report) What happened to the other 10 individuals?

How do you know that cancers in the Southern Alberta
Divisions # 2 or 6 are not related to sour gas emissions?
What is the expected incidence of cancer in the Index Area
based on cancer rates in other areas of Canada and outside of
Canada? Since the Index Area contains a high proportion of
non-smokers, wouldn't you expect the incidence of cancer to
be lower?

Why could 5 cases of cancer in the resident group not be confirmed?

The May 31, 1982 minutes of the Pollution Study Group of the Public Advisory Committee to the Environment Council of Alberta state: "For over 20 years people in the Pincher Creek area have been complaining about health problems which they believe are related to emissions from the gas plants. Complaints of fainting spells, nausea, vomiting, sweating spells, bleeding noses, breathing difficulty and screaming fits among babies have been voiced by the residents." Dr. McCoy made the following summary of health problems in the Pincher Creek area: "The health problems for the children are recurrent periods of irritability, respiratory problems and cold-like symptoms. For the adults, recurrent periods of fatigue, diarrhea, eye irritation, cracking of the skin and cold-like symptoms occur during the winter and coincide, they feel, with increased emissions from the plant.

You conclude in your overall conclusion that the greatest concerns of the population in the Index Area were about excess mortality, high rates of cancer, diminished respiratory function, dangerous levels of trace metals in the body, higher rates of unfavorable reproductive outcomes and birth defects, and delayed or abnormal childhood development. This certainly doesn't match the history of complaints in the Twin Butte area. How did you determine that these were the greatest concerns of the population in the Index Area?

In response to questions, you have indicated that the higher incidence of symptoms in the Index Area is probably due to selective recall or anxiety. What scientific evidence do you have to support this conclusion?

Based on this study, can you conclude that residents immediately downwind of the plant do not suffer health effects as a result of sour gas emissions?

What recommendations do you have for residents who experience health effects which they believe coincide with increases in exposure to sour gas emissions?

I look foward to receiving your responses to these questions.

very sincerely,

cc: Dr. Ben Burrows, Chairman, Science Advisory Board Co-chairmen, ADRP

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cot Dr. Ben Rurrows. Chairman. Stinne Advisory Board
Co-chairmen, ADRP
(over)

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Vern Millard, you are wrong! if anything, I was too mild in my criticism of the Southern Alberta Diagnostic Review better Known as Spitzer's Report.

The report erred through emphasis on the wrong problems.

I am surprised that Mr. Millard gives so much credibility to an ariticle with the headline CANCER'S GRIPPING US which appeared in the Calgary Sun on June 4, 1982.

It's too bad he doesn't give any credit to Dr. McCoy's report which made the following summary of health problems in the Pincher Creek area: "The health problems for the children are recurrent periods of irritability, respiratory problems and cold-like symptoms. For the adults, recurrent periods of fatigue, diarrhea, eye irritation, cracking of the skin and cold-like symptoms occur during the winter and coincide, they feel, with increased emissions from the plants."

Nor does he consider the Human Health Workshop in which 23 "world-renowned" experts recommended that the health outcomes to be measured in the community epidemiological study (MDR) should include "dermatology, ocular, neurological, psychological, pulmonary and cardiovascular signs and symptoms."

Did Dr. Spitzer consider the recommendations of this workshop? Did he review the history of the long standing problem or did he rely on articles appearing in the Calgary Sun as Mr. Millard did?

The first objective of the study was to "determine the frequency of health problems and diagnoses among residents of the Index Area that are alleged to be associated with the type of industrial pollution found in the vicinity."

Indeed, Dr. Spitzer did include the chronic, recurring problems that people have been complaining about for the last 30 years in his study. He just "forgot" to include the results in his report.

Perhaps I am being a little too harsh. There are people in the Index Area who are and continue to be concerned about the incidence of cancer. Unfortunately, according to Dr. Schrecter, the numbers of people within the Index Area were too small to assess whether there was any statistical difference in the incidence of cancer in people living downwind from the plant. Therefore, this question remains largely unanswered in spite of the emphasis that was put on it in the study.

2. The sample area was too large.

Only about 10% of the people living in the Index Area live downwind from the plant and have complained about health problems related to emissions from the gas plants. In fact, people have moved to other areas included within the Index Area to escape the emissions.

Dr. Spitzer was supposed to have determined whether there was any geographical clustering of any adverse health phenomenon but he explained at the October 28 question and answer session that he didn't consider this objective as important since he hadn't seen an overall excess of symptoms. Certainly the ADRP never consented to him ignoring this objective.

As it turns out, this study should never have been done in the first place because it was doomed to fail. According to Dr. Spitzer, "the most important reason (for not partitioning the Index Area or the control areas) is that your sample sizes within the sector get so small that it's uninterpretable for statistical reasons." Too few people live downwind from the plant for this study to have been successful.

3. Dr. Spitzer was wrong in establishing levels of 10 and 20 per cent difference in the incidence of symptoms to be considered clinically significant.

Although Vern Millard did not rebut this criticism, I again stress that in spite of all of the other problems with the study, Dr. Spitzer still found a significantly higher level of health problems in the Index Area (5.1%). Even though the increase that Dr. Spitzer found was statistically significant, he considers it unimportant.

To give you an example of the absurdity of his predetermined levels for determining clinical significance, if the incidence of a symptom, say rhinitis, was 15% in the Stirling-Raymond Area than the incidence would have had to be at least 35% in the Index Area to have been considered clinically significant by Dr. Spitzer. Approximately 750 people in the Index Area would have had to have had rhinitis for Dr. Spitzer to have considered the symptom clinically significant. That means that more than 400 people in addition to the "normal" rhinitis sufferers expected in the Index Area would have had to have had rhinitis during the two weeks prior to examination.

4. There was no exposure monitoring done.

There was no unexposed control area so the entire study is invalid.

According to Dr. Spitzer, "the burden of evidence for those who would like to suggest it's polluted (the Stirling/Raymond area) is on those who would say that an area that has no wells, no processing, no sour gas plants, nothing of the sort is polluted." He goes on later to ay, "it is unthikable that the control area would be exposed to anything that was airborne of the type that would have been of concern in the Index Area for any period of time, winter or summer." However, he did say that he has no evidence that residents in the Index Area were exposed to any higher level of pollutants than residents in the control area.

Well, we have evidence to show that Lethbridge which is adjacent to Stirling/Raymond, the supposedly unexposed control area, received the highest level of nitrogen oxide deposition measured in the province over a five year period and the second highest level of sulphate deposition.

It's hard for me to understand how this happened when the Human Health Workshop recommended selection of control communities on the basis of emission data, atmospheric models and monitoring data. They also recommended continuous environmental monitoring in the study areas. The monitoring was to be, "sufficiently extensive to allow categorization of the degree of exposure of the residents in the area and to allow identification of sudden increases in exposure throughout the study period."

Mr. Millard implies that since the sour gas plant flared and released 139 tonnes to the atmosphere during a two hour period on June 25 that obviously the residents in the Index Area were exposed. What he fails to tell you is that the monitors surrounding the plant did not pick up any of that flared gas. So where did it go? We have no way of Knowing but it could as easily have ended up in the "unexposed control area" since Stirling/Raymond is downwind from Pincher Creek.

Expert Reviews

A number of experts have reviewed the MDR. Although the Scientific Advisory Board (SAB) did support the general conclusions of the Spitzer Report, they were careful to outline some of the limitations of the MDR. Most importantly, they said, "the MDR was not designed to detect temporal fluctuations in symptoms or other health outcomes in relationship to any type of environmental exposure."

They also expressed concern about the low hair selenium levels measured in the MDR. They commented on the high rate of prostate cancer. They noted apparent clusters of certain conditions such as cancer and birth defects.

The SAB recommends following up on the low selenium levels and states that the reults of the MDR do not exclude the possible need for further studies of health effects of specific industrial pollutants in Alberta.

The Dr. Peter Mahaffy, Chairman of the Science Advisory Committee of the Environment Council of Alberta, writes, "the study was not designed to answer questions about the health effects of sour gas emissions." He wonders how the research group decided what the "unexposed" index area should be. He thinks "the matter of the health of that small portion of the population which may have hypersensitivity to environmental pollutants, including sour gas emissions, also lies outside of the scope of this study. It remains an important question, however."

Philip Landrigan from the Mount Sanai Medical Center is generally satisfied with the report. His major criticism of the study is that "it does not pursue suggestive adverse findings as agressively as it might. For example, within the Index Area, the investigators make no distinction between those persons who lived immediately adjacent to the emission source and those who lived more distantly."

Dr. Niels Damgarrd concentrates on the overall specific conditions with higher prevelances in the Index Area compared to the Stirling/Raymond Area. For example, the incidence of dermatitis was 67% hiher, the incidence of chronic bronchitis was 44% higher and there was a 33% higher incidence of hypertension and 147% more complicated hypertension. "Further study is necessary which would include ground and air monitoring and comparing these levels to possible medical problems."

From McGill, Spitzer's own University, Dr. D.J. Ecobichon writes, "one would not wish to claim that this study was a boondoggle, but it certainly did not address the year-in and year-out health problems of the community. The problem should not be considered closed until the "murky world of toxicology" has been explored, with measurements of air quality being made under the worst possible conditions in the winter when the weather adversely influences fume concentration."

Dr. Rosalie Bertell was scathing in her criticism. She writes, "this study, monumental in size and cost, is nevertheless, one of the most obscure I have ever read." She goes on to say, "one major problem not addressed by the research team is that of perspective. A polluting plant is at least a public nuisance...when it causes irritation of eyes and respiratory tract. This effect was documented and then dismissed by the team."

In Conclusion:

Dr. Spitzer's responses at the October 28 session confirmed most of our criticisms of the study. He also indicated that he was too busy to answer any more questions from the public since he had to concentrate on the publication of the study in the scientific literature. It's been over a year since the report was released. Has anything been published?

The MDR has not been subjected to the rigorous type of cross examination that Vern Millard, when he was Chairman of the ERCB, would have insisted occur before accepting the report as valid evidence of anything.

Furthermore, the study was only one of many that were recommended by the Human Health Workshop. It was never intended to be the only health study.

The Medical Diagnostic Review has some major flaws. It was not, as Dr. Spitzer stated repeatedly on October 28, a study of the effect of sour gas emissions on human health. Dr. Spitzer emphasized mortality and seriously disabling conditions and he failed to even report on the chronic, recurring symptoms that people have been complaining about for years. The population in the plume area was too small to be statistically evaluated. Dr. Spitzer dismissed the higher statistically significant level of health problems in the Index Area as unimportant. There was no exposure monitoring. And the study is completely invalid because there was no unexposed control area.

I am sorry, Mr. Millard, but I have to give Dr. Spiter a failing grade for his report. Unfortunately, it's the residents living downwind of sour gas plant who continue to suffer.

Report on the Medical Diagnostic Review

by Martha Kostuch

"The results of our research thankfully allow us to reassure concerned citizens in this southwestern Alberrta area about their community's health. We were unable to detect any excess of life-threatening or disabling conditions. Small differences in rates of symptoms such as redness of the eyes, itching of skin and throat irritation were documented, but the differences are not large enough to contradict or cast doubt upon the objective evidence depicting a healthy community by any Canadian standard."

The above quote was taken from the June 11, 1986 press release announcing the results of the Southwestern Alberta Medical Diagnostic Review better Known as the Pincher Creek Health Study.

While the study which was conducted by McGill University, funded by the Government of Alberta and administered by the Acid Deposition Research Program (ADRP), provides a lot of information about the health of residents in Southern Alberta, it provides little information about the effects of sour gas emissions on residents living directly downwind of the plants.

The purpose of the MDR was to determine whether residents of the Index Area experience adverse health effects more often than expected. The Index Area included the area in and around the towns of Twin Butte, Glenwood, Hill Springs, Willow Creek and Mountain View.

The following is a very brief summary of the findings:

- 1. Mortality rate in the Index Area is normal.
- 2. There were no significant differences in cancer rates between the index area and the comparison areas.
- 3. A small, not clinically significant, excess of birth defects were found in the Index Area.
- 4. No excess of fertility problems were found in the Index Area.
- 5. The investigators found no excess of delayed or abnormal childhood development.

6. The investigators concluded that Index Area residents do not have an excess of life-threatening disorders of seriously disabling disease.

- 7. A small, systematic but, according to the investigators, not clinically significant excess of symptoms was found. The symptoms include burning and watering of eyes, runny nose, itching of the skin, throat irritation, sputum production, tingling and trembling of hands, fatigue, back pain and leg and hip pain.
 - 8. The incidence of some of the signs were higher in the Index Area and some were lower but there were no significant differences.
 - 9. The respiratory function tests gave similar results between the Index Area and the control communities.
 - 10. The levels of trace metals in the Index Area are within normal limits.
 - 11. The overall conclusion: The greatest concerns of the population in the Index Area were about excess mortality, high rates of cancer, diminished respiratory function, dangerous levels of trace metals in the body, birth defects, and delayed or abnormal childhood development. For all the foregoing concerns the investigators have not detected objective evidence to perpetuate the concerns. The investigators are confident of the scientific basis of that reassurance. With respect to symptoms or how people feel concerning possible contamination of their environment, there is a small difference suggesting greater concern and more awareness of one's health and one's sensations among residents in the Index Area. That is entirely understandable and indeed expected given a quarter century of equivocal information about health in relation to the immediate environment which has been diffused in Southern Alberta.

The report made the following recommendations:

- 1. Alberta standards should not be relaxed.
- 2. The province should establish a birth defects registry.
- 3. No further research is required.

Reactions to the report have varied from acceptance and relief to resignation and even anger. Industry seems to be very pleased with the results and they consider the issue closed. I expect that the government agrees with industry. Some residents, particularly those outside of the Twin Butte area, are relieved by the results. But many of the residents who have been complaining of health problems for over 25 years are disappointed by the findings and they don't expect their problems to just go away.

There are several reasons why the study fails to tell us if residents are being effected by sour gas emissions.

To start with the investigators concluded that the

greatest concerns of the population in the Index Area were about excess mortality, high rates of cancer, diminished respiratory function, dangerous levels of heavy metals in the body, birth defects and delayed or abnormal childhood development. And yet, for over 25 years people in the Pincher Creek area have been complaining about fainting spells, nausea, vomiting, sweating spells, bleeding noses, difficulty breathing, skin rashes and other health problems which they believe are related to emissions from the gas plants. For some reason, the researchers put the emphasis on the wrong problems.

The small number of residents living immediately in the vicinity of the gas plants makes it difficult to determine differences in incidences of health problems. Of the 2148 people included in the Index Area, only about 200 to 250 live immediately down wind of the plant and have complained over the years about health problems related to emissions from the gas plants. Therefore, any effect of the emissions on the people living downwind of the gas plants may have been diluted out by including such a large number of people in the Index Area.

Many of the symptoms are very subjective and can have many causes. This makes objective analysis very difficult.

Establishing a level of 10% and 20% difference in the incidence of signs and symptoms to be considered clinically significant means that even though the levels of symptoms in the Index Area are systematically higher, they are not considered to be clinically significant. Residents in the Stirling Raymond Area were 5.1% ostensible healthier (this includes signs, physical examinations and laboratory tests) than residents in the Index Area but again this difference isn't considered clinically significant.

And lastly, but perhaps most importantly, there was no exposure monitoring done. The residents have always indicated that their symptoms are bad when the fumes are bad. This usually occurs in the winter when the wind is from a certain direction and particularly when there are upsets at the plant (flaring). Only symptoms observed during the two week period prior to examination were included in the study so unless residents were exposed during this two week period, the incidence of symptoms would not be expected to be higher. The observation of the residents was that the air was very clean during both the summer and the winter study periods. Since little or no ambient monitoring was done in conjunction with the study, it is impossible to Know whether residents in the Index Area were exposed to higher levels of emissions during the study periods.

Copies of the report are supposed to be available in most libraries in the province. If you would like a copy of the report, you might be able to obtain one by writing to the Acid Deposition Research Program, 1500, 633 Sixth Avenue S.W., Calgary, Alberta T2P 2Y5. I would very much appreciate your comments about the study. Please send them to me at Box 1288, Rocky Mountain House, Alberta T0M 1T0.