Transcript of proceedings of:

WORKSHOP ON ENVIRONMENTAL HEALTH

Sponsored by the Iowa Office of
Comprehensive Health Planning
and its Standing Committee on
Environmental Health
September 3, 1969

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Chairman - Dr. Hohn B. Herrick, Extension Veterinarian, Iowa State University
Co-Chairman - Dr. William J. Hausler, Director, State Hygienic Laboratory

SPEAKERS:

Bill McLaughlin, Director, Planning Division, Iowa Development Commission
C. L. Campbell, Ph.D., Technical Secretary, Air Pollution Control Commission
Everett Hart, Chief, Consumer Protection Division, Iowa State Department of Agriculture
Dr. Vaughn Seaton, Professor and Head, Veterinary Diagnostic Laboratory, Iowa State University
Dr. J. L. Walker, Maytag Corporation, Newton
Thomas Corothers, Director, Sioux City Health Department
Dr. Ted Willrich, Professor, Agricultural Engineering, Iowa State University
Dr. Robert Morris, Associate Director, State Hygienic Laboratory, Iowa City
Dr. Robert Bauman, Professor, Civil Engineering, Iowa State University

INVITED GUESTS:

Kenneth Barrows, Chairman, Comprehensive Health Planning Advisory Council
Cornelius Bodine, Member Environmental Health Standing Committee, CHP Advisory Council
Peter Brown, Director, Siouxland Health Planning Council
Robert Garrison, Chairman, Health Facilities Standing Committee, CHP Advisory Council
Dr. John MacQueen, Chairman, Health Manpower Standing Committee, CHP Advisory Council
Donald McGill, Member Executive Committee, CHP Advisory Council
Steve Franklin, Assistant Director, Health Planning Council of Central Iowa
Jim Stewart, Administrative Assistant, Health Planning Council of Iowa
A. J. Shakeshaft, Chairman, Projects Review Standing Committee, CHP Advisory Council
Reverend M. O. Smith, Member Executive Committee, CHP Advisory Council
Dr. James F. Speers, Commissioner, Iowa State Department of Health

The Environmental Health Standing Committee of the Iowa Comprehensive Health Planning Advisory Council has accepted the objective: "to promote environmental conditions throughout the state that contribute to healthful living".

In our efforts to evaluate the present situation in Iowa and thereby establish priorities for action, we must involve persons who are knowledgeable in the various areas of consideration.

Consequently, an environmental health workshop was sponsored by the Office of Comprehensive Health Planning on September third.

Perhaps the purpose of this meeting can best be summarized in the Welcome given that day by the standing committee chairman Dr. John Herrick of Iowa State University.

"It is hoped that by listening to people that are involved in activities pertaining to environmental health, that we can be given some food for thought and some direction for the committee's effort. We hope that you charge and challenge us to do the job right, to coordinate right, and to see where there are voids.

ZONING AND ENVIRONMENTAL HEALTH

Bill McLaughlin, Director

Planning Division
Iowa Development Commission

First, we're going to ask Bill McLaughlin, Director of Planning Division, Iowa Development Commission to discuss Zoning and Environmental Health.

BILL MCLAUGHLIN:

I'm going to address myself primarily to the topic of Zoning as a tool which can be utilized in Environmental Health. Initially, I would like to give you a little bit of background on zoning of which you are possibly not aware. Actually, in 1692 when Massachusetts was granted larger territory, the authority was excercised to assign areas within the communities for certain uses. This was primarily aimed at gunpowder. They were having a great deal of difficulty with the black powder exploding and causing fires. They realized that something was necessary to keep defensive and dangerous products or facilities and to locate them in a special area. Since that time, zoning has evolved around strictly public health and safety. Laws are much broader in promoting the health, safety, moral and general welfare in the community.

In Iowa, the cities derive their power to zone from the State Code of Iowa, Chapter 414 and the counties in their control from Chapter 358a. I might just quote Chapter 414, the legislative power that is available to the communities. The legislation states that for the purpose of promoting the health, safety, moral and general welfare of the community, a city or town is empowered to regulate the height, number of stories and size of buildings and other structures, the percentage of lot that they may occupy, the size of yards the court and open spaces, the density of population, and the location and use of buildings, structures and land for trade, industry, or residence. Later, I am going to try to relate this to how it affects various areas in our environment. The problem that we face primarily in the State of Iowa is getting communities and counties to utilize these facilities. Chapter 414 which is Community Zoning has been on the books since I believe 1927, but today approximagely 50% of our communities have taken advantage of it. The County Zoning enabling Act has been on the books since approximately 1958. Only 32 counties have actually enacted zoning, however, 26 counties

are in some stage of progress at the present time. They are either talking about forming a county zoning commission or getting these controls under way. Seven counties in the state have planned a zoning program, but their Boards of Supervisors have failed to adopt these ordinances.

I would like now to go into some of the problems which I think development controls with zoning could eliminate. One county in Iowa does not have any zoning control or land reach development controls. A sizeable recreational area is being developed. A lake is being cratered to cover approximately twelve hundred acres. The corporation that is developing this area is developing about 4,000 lots. If we assume a density of two people per lot, we are talking about approximately 8,000 people. This community of 8,000 people will not be served by a sanitary sewer system, treatment facility, but will be served on the basis of septic tanks and this type of thing. I don't believe that we would permit a community of 8,000 as incorporated in the State of Iowa to be developed with such facilities. I believe the State Health Department has presently notified quite a few committees that they have the alternative to put in a treatment facility or face legal actions. Yet, we have one action taking place which is forcing incorporated communities to put in a treatment facility and the other side of the spectrum action permitting another one to be developed without similar restriction. I believe that if the county had passed an ordinance with strict development controls, it could increase the size of the lots and also put in requirements so that this development would be a much better facility as far as health standards go. I would also like to point out that in the State of Iowa, we have three major lakes being developed from the reservoirs. It has been found that zoning by itself is inadequate to put all the restrictions into the required improvements in order to have the facilities, water, sewers, good roads, and other facilities that people need. The Health Department in one county wrote the requirement that if a parcel of land is going to be developed it has to be of a size that is large enough that treatment facilities can be utilized on the ground and therefore it will encourage in the long run that treatment facilities be made available, a central treatment facility. Unfor-

tunately this is not the usual case. I believe we have a Senator here today from four counties whose boards of supervisors have not taken action to develop any type of controls around an area. Major problems will be developing, not only in treatment facilities, but sewage, water and also in police and fire protection, adequate schools and this type of thing. All are by-products of this kind of development facility.

We have, of course, in the formation of these new communities, the financial ability to create the community, residential and commercial. For some reason, however, we do not have the financial capabilities for creating the services needed to service these areas. It is this problem that is going to face the local governing bodies in the future. For example, the Board of Supervisors in the State of Iowa will be faced in the future with problems that they have assumed in the past always to be something related to the incorporated areas. They would include transportation and so forth. We no longer have to live in an incorporated type of area. We find many more subdivisions being developed outside.

I would just like to bring out some of the things that we have been doing in the past few years trying to overcome this problem. Three years ago, the Development Commission invited the Highway Commission, the Health Department, National Resources Council and a few of the other state agencies, (Conservation Commission, etc. - All of the agencies that have a vested interest in these areas) to sit down and discuss this problem of lack of development controls. At that time it was brought out that in the area of sanitary facilities, we do have on the books adequate laws to enforce this type of development. Unfortunately, the law requires that it go back to the County Health Boards and in discussing this problem, it turns out that either the County Health Board is non-existent or they have the same problem as the Board of Supervisors have - the lack of enforcement locally accepting their responsibility. This committee was an ad-hoc committee and really has no legal basis other than a state agency looking at these problems statewide. We proceeded to look into what other states are doing, and we found that Kansas, Wisconsin, and a few of our other states have a mandatory requirement

that around a large recreational facility (such as Red Rock, Rathbun) that before development goes in, within the one mile area from the shore line, and in one case three miles from another, that sewer and water facilities have to be available. Following this up a little bit we felt that maybe Iowa should have some method of actually enforcing this and not have to rely on the local governments. A bill was introduced in February of 1969 - House File 358. The bill states that the Iowa Development Commission may review the zoning regulations adopted by the County Board of Supervisors or the need for such a regulation concerning certain lands within a county. This is to develop controls for them. I might add that this included land within 1,000 feet of center lot of any interstate or primary highway. This was aimed at area problems around interchanges where motels, filling stations, camping facilities and so forth are being built in the rural areas without any type of treatment facility other than septic tanks or something like this that at a later date might create health problems. Also included were lands within one area of any public owned park or recreation area. This would permit the state's small artificial lakes to have some kind of controls developed so that health, welfare, etc. in the area can be preserved. In addition, lands within one mile of the center line of any natural river were covered. This would also take into account areas along for example, the Mississippi, where large industrial plants are being constructed (in some cases other facilities) that do not have proper treatment facilities which land use controls could be properly instigated. I might add that this bill still is pending. This is not a dead issue. We feel that this type of support is correct and it might be the correct approach in this area to delineate the Iowa Development Commission as the responsible agency. This type of development control can be implemented.

If we rely upon zoning, some of the areas which we get into in larger communities would rat controls and this type of thing. I think we are doing a good job in our communities. They are improving this aspect and the services that go along with it.

As a closing statement, I would just caution you that zoning is only one of the tools. We still need our building codes. We still need strong health codes.

Zoning is not a substitute, but it is a mechanism that when utilized correctly, enforced, and well-prepared can be a big help. We anticipate, for example when we get a home rule implemented we can strengthen our zoning so that more of our actual development controls can be put in.

Dr. Herrick - Thank you Bill. Now we have a few minutes for questions for Mr. McLaughlin. Would you like to fire away?

Q - Do present Iowa laws authorize the zoning of partial counties?

Bill McLaughlin - Yes, the interpretation is that, a part of a county can be zoned.

Q - Who initiates the action?

Bill McLaughlin - The Board of Supervisor's still initiate the action. They do have the control of the county development. They work for the county zoning commission. In Appanoose county for example, one had been created and it had been limited. Now there is a four county planning commission but they are not related into areas like zoning. This is a very controversial area especially in rural areas.

Dr. Herrick - Other questions?

Q - Concerning the first example that you gave, the commercial development in Guthrie County, is there some difficulty here also in having a water source created as this lake?

Bill McLaughlin - This has been brought up at the National Resources Council, and the Conservation Commission is looking into this. I believe the question revolves around the fact that this water is still for public use and in my interpretation it is a public body. The water is public, but it is something that the Natural Resources Council and the Conservation Commission will have to decide upon.

Q - The dam is being built now. When will the decision be made?

Dr. Herrick - Does the County Board of Health have any jurisdiction over a camp ground?

Dr. Speers - This would come under its jurisdiction.

Comment - The distinction in sewage disposal is definitely the Iowa Water Pollution Control law which states that a permit must be obtained for disposal of sewage which is proposed to discharge in any stream or water course. In other-words, a dry run so to speak. But the law specified that no permit will be required from the State Water Pollution Control Commission for disposal of sewage from a building occupied or to be occupied by fifty persons or less. There is a distinction definitely in the law. For any building disposal of sewage occupied by less than fifty persons excluding industries, this is a problem for the local Board of Health and they are authorized by Chapter 163 Local Board of Health law to adopt a system requiring permits for that installation as well as the State Department of Health has done for the larger ones. The problem of course is the lack of competent personnel on the local level to do the job necessary in inspection to determine whether the use of waste is proper at the local level. Machinery is there but there is no implementation.

Bill McLaughlin - I'd like to make one other comment. I've referred to zoning primarily as being restricted and non-oriented. It is restrictive, but it is also protective. For example, in the area of feed lots, this has been creating quite of bit of news in the papers and so forth. We realize that there should be some development standards for feed lots. If they drain into streams, then the Pollution Control Commission becomes involved. For those that do not, however, we still feel that there should be development standards which people in those facilities can maintain. We do have problems. Under the Nuisance Law, the feed lot operator may find himself in court because of the smell and odor. We do try to work with counties to develop areas. Enabling legislation, of course, is developed by rural legislators who are super protective of farmers to the point that they have got zoning laws for the counties which actually work against what the counties really need. Hopefully through legislation, this will be overcome and adequate planning and zoning laws will be available for the counties.

Q - What would you propose then as an amendment?

Bill McLaughlin - Farm lands actually come under something of the local governing body. It involves zoning districts, and the use of land. Land that should

be devoted to, for example, forestry, or pastures might be set aside by the local governing bodies in order to cut down erosion. Many states have this now. Another type would be to permit the counties to actually have planning on an on-going basis. There is no provision for a county zoning commission, which will continue after one has been appointed. We don't know if they ever hope to have one or if they will change every time the Board of Supervisors change.

Robert Bauman - I would like to make on comment on zoning as far as feed lots are concerned because it is a very ticklish and dangerous area in which we have some public selling to do. Dr. Willrich and I have been on opposite sides of law-suits. We have something like 50,000 feed lots in the State, 46,000 feed lots in about 60,000 square miles of territory. So we have approximately not quite one per square mile. Yet, we have experts that indicate that the zoning should be such that there should be no feed lot within one to five miles of an inhabited area. Now this pretty well exludes any feed lots in Iowa if you apply it literally and in feed lot operations you're bound to have odors and you're bound to create nuisances. You have to make some decisions as to whether you're to zone to protect an individual who also is in the farming operation or whether you are going to zone to protect a conglomerate of buildings such as a village. Zoning has to be worked out if it is going to have the support of the voting people.

Dr. Herrick - Any other questions? Thank You, Bill. We appreciate your contribution very much. We'll move on now to Dr. C. L. Campbell, Technical Secretary of the Air Pollution Control Commission. Dr. Campbell is with the State Health Department in the Environmental Division, and he will discuss Air Pollution.

AIR POLLUTION

C. L. Campbell, Ph.D., Technical Secretary

Iowa Air Pollution Control Commission

DR. CAMPBELL:

The Iowa Air Pollution Control Program is relatively new since, up to 1967, no state agency was authorized to conduct air pollution control activities. Air pollution was included in the definition of nuisances, and jurisdiction over nuisances was allocated to local officials. The State Department of Health provided technical advice and assistance to local officials on specific incidents at their request, but the corrective action was always taken by the local officials. On this basis, the accumulation of background data in regard to the contents of our air resources was nowhere near in the range that it was for water pollution, that had the benefit of many years of strong action in this field.

Iowa Statute

In 1967 when the Iowa Act was passed, jurisdiction was transferred into this State directed program. The Act set up an air pollution control program in the State Department of Health. It also created an Air Pollution Control Commission with eight members with some competency in the air pollution control field, and representative of various disciplines and areas, appointed by the Governor; plus the Commissioner of Public Health as an ex-officio member.

The Commission is delegated the policy-making, the rule setting, and the enforcement activities; and the Department is allocated the technical, the administrative, and the investigative functions. In addition, the law also specifies that the State Hygienic Laboratory, which is the Public Health Laboratory agency for the State, is allocated the laboratory support for the program.

Special Provisions

One section of the law authorizes the Commission and the Department to obtain cooperative assistance from other agencies and educational institutions of the state. This provision provides a means for securing supplementary expertise when special problems warrant.

The law provides for the issuance of permits for new equipment that may cause or control air pollution in accordance with pertinent rules and regulations. When such rules become effective, a cut-off date will be established, after which all new equipment installed in the state will be provided control.

The law also provides for the issuing of variances for existing equipment that may serve as a source of air pollution, and for extensions of individual variances contingent upon evidence of acceptable progress in reaching a state of compliance with applicable standards. The variance procedure provides a means for ~~correcting~~ existing operations that are sources of pollution to develop an orderly, logical approach to compliance. The maximum period for a variance is one year.

The law also provides for cities, towns, or counties to develop and to conduct local air pollution control programs within their jurisdictions, or jointly with other political subdivisions in this and other states; and for the state agency to stimulate such programs. Under one section, the Commission may issue a certificate of acceptance of a local program and transfer jurisdiction of air pollution control for the area involved, if the local program is judged adequate.

The Iowa statute differs from those of several other states, in that it includes no provision relating to emissions contained in motor vehicle exhaust.

Program Activities

When the Iowa law became effective, it was apparent that there was a need to conduct several activities. Those that were assigned high priority, and that have received attention, are summarized below.

A program plan, with both short range and long range aspects, was developed. This activity is recurrent in nature, so that appropriate revisions are made when warranted.

The development of a technical staff has the highest priority. Efforts in this aspect are continuing, and must of necessity be continued.

One of the first activities of the Air Pollution Control Commission consisted of the development of rules and regulations for the control of open burning. Attention was given to these rules on the basis that open burning at public refuse dumps, motor vehicle salvage operations, and industrial waste disposal caused the greatest number of complaints throughout the state. In developing these rules, a discussion draft was prepared, a series of public hearings was held, a final draft was prepared, and they became effective during April, 1969.

The compilation of an emissions inventory is under way to gather information on the general condition of the air resources of the state. The first approach consisted of conducting a literature survey to obtain information on the overall emissions of particulate matter, sulfur oxides, carbon monoxide, nitrogen oxides, and hydrocarbons; on population density; and on industrial activity. This information shows that Iowa is in the mid-range of the states, being 25th in rank for area and for population. The current approach consists of circulating questionnaires relating to fuel and chemical usage to industries and power generation plants; followed by calculation of the basic indices of pollution through use of accepted emission factors. The return of questionnaires has been high through cooperation of industry officials, and their evaluation constitutes a major task.

One activity receiving considerable attention is the development of an air monitoring network through the efforts of the laboratory personnel. A network covering the entire state is being established, to obtain information on the current concentrations of the various pollutants in the various parts of the state. This network is scheduled for operation in the very near future.

Cooperation with federal agencies has been practiced for several years. One phase of this aspect has consisted of the operation of sampling stations in Iowa for federal networks, some of which were established in 1956. The data from these stations constitute the only data of any extent in regard to the actual concentrations of the basic pollutants in this state. These data are somewhat misleading, since only one station is operated in each sampling area, and the applicable criteria for the stations are such that the results represent the maximum, rather than the general, levels for the communities. In one eastern city, the federal network station is so located with respect to heavy sources of pollution that the data collected is consistently higher than the average for the remainder of the city.

Considerable attention is being given to the development of general rules and regulations relating to air pollution control that will pertain to materials discharged through a chimney or stack. This activity requires the review and study of much technical data, and is a time-consuming task. It is anticipated that public hearings on these proposed rules can be scheduled within the next few months.

Efforts are being directed to the administration of the open burning regulations. Applications for variances are being submitted by industries and vehicle salvage operators. Each application is investigated by the Department staff; a summary of the findings and recommendations is provided to the Commission; and official action is taken by the Commission in regard to issuance or denial of the variance.

Attention also is being given to the stimulation of local control programs. It is generally conceded that air pollution control is most effectively conducted at the local level. At present, the only local program conducted under a modern ordinance is in Cedar Rapids and Linn County. These programs are being considered for certificates of acceptance. Efforts are being made in two other metropolitan areas of the state to develop such local programs.

The federal act calls for the designation by the Secretary of Health, Education and Welfare of Interstate Air Quality Control Regions. When these are designated, it puts quite a burden on the state agencies involved, because the federal act specifies that certain procedures and activities must be conducted, or the federal agency will perform these functions. These involve the adoption of air quality standards and certain enforcement procedures. The current listing of prospective areas is designed to include at least one in each state and territory. The Iowa program is just getting involved in this activity, since the Omaha - Council Bluffs Metropolitan Area is being considered for an Air Quality Control Region. A preliminary meeting relating to collection of pertinent data was held recently. This project will require special activities.

Problems and Needs

The first consideration is the need for time in which to implement the state program, which was initiated in 1967. The activities to be conducted are such that adequate background information must be collected to provide a basis for a logical program.

There is a definite need for additional technical staff members; and there are definite problems involved in acquiring this staff. One prime difficulty lies in the existence of a shortage of personnel experienced in

the field, and the need to compete in a national market for such personnel. Another prime difficulty lies in the non-competitive salary schedule that we have. As indicated, there is considerable competition for personnel, and the salary scale existing under the Merit Employment Department is just not adequate to attract, nor to retain, engineers and other qualified personnel. Expansion of the job specifications to include scientific personnel, who are not engineers, that can contribute to a successful program also is needed.

A need for additional quarters for the program is developing rapidly. This need will become acute upon the adoption of rules and regulations requiring the submission of plans for review, with an accompanying requirement for office space and plan storage facilities.

Additional appropriations will be required for the conduct of a program that fully implements the statute. These funds will be necessary to provide for the increased staff and related expenditures involved in the program activities.

It would be of considerable value if the state universities would conduct courses in air pollution control. It now is necessary to secure specialized training in this field at agencies and institutions located outside of Iowa.

It was a pleasure to have the opportunity to discuss this program at this meeting. If anyone has any questions, I will be glad to entertain them.

DR. HERRICK

Does anybody have any questions for Dr. Campbell?

Q - I'm from a local planning council and we've been working with Environmental Health and we've used the goals enacted by the Environmental Action Task Force of HEW to get us going. One of the problems in regard to air quality was to reduce the plant stack emissions by 90%. Now, are you getting information on the plant stacks?

A - Our emissions inventory is based on 1968 data, and these are what we are asking for. We ask them not only what they use, but what kind of furnace or equipment they have, and what kind of control equipment they have. We will be able to estimate the emissions. The way to determine emissions from single sources is to get stack samples.

Q - In regard to automobile exhaust, are you establishing any priorities as to where our major source of pollution is coming from? Are you helping to establish possibly regulations against the automobile?

A - Yes, that's one of the purposes of our emissions inventory, and the monitoring network is to find out actually what is in the air and where it is coming from. The federal act has preempted to the federal agency jurisdiction in regard to motor vehicle exhaust. This is probably as it should be, due to the interstate nature of motor vehicle travel. All new cars have exhaust control equipment, provided by virtue of the federal act. This might not apply in California, since their requirements are a little more strict. There will be a problem in regard to used cars. This is where the states will probably become involved.

Q - Is there any research being done, or any information available, in regard to the capture of some of the pollutants and their reuse?

A - This information is a little hard to come by, since it is available only from the manufacturer or the owners of the installations. Quite often this occurs, and it is a very nice result if it does. However, most people assume that operation of the control equipment is going to be a cost of doing business. If you can collect something and reuse it, then you are just frosting the cake.

Q - Is there any consideration being given to pending legislation that might make it profitable for an industry to implement control equipment?

A - There have been attempts at both the federal and the state levels for a tax credit for equipment to control both air and water pollution. The theory is that we all have to pay for the improvement of our environment. Whether we want to do it by increased cost in product, one way or another, we're going to pay it. However, at one time, there were over thirty bills of this kind in Congress, which indicates that there is none yet that satisfies the overall needs.

DR. MORRIS

There is one comment that I would like to make on that. This was discussed in considerable detail in respect to the legislation in 1965 in Water Pollution Control. The big hook-up is: where do you start giving people credit for the money they have spent for control equipment? Do you start it now, or do you go back five years, or do you go back ten years. Maytag, for instance, in Newton spent over a million dollars on a heavy metal control procedure to keep metals from going into the streams. This has been many years ago. If a new industry comes along, and you give him credits for his water pollution control, how is it fair to a company on their own that did it at the expenditure of a great deal of their own money. I think maybe the assessment of cost of air or water pollution control better does belong on the product, and that gives the company that did it before a

break on the cost of his product, so it does spread it out over many years. Where this tax credit is directly by legislative act, I think is an unfair way to control it.

DR. HAUSLER

I'd like to comment for a couple of minutes if I may, Mr. Chairman. Dr. Campbell, if you will excuse me for interrupting here. For the benefit of any of you here, I'm sure Dr. Speers feels the same way, both he and I are members of the Commission, as Director of the State Hygienic Laboratory, I have activity, technical activity, that has to do with control, but for environmental health this morning, I would like to bring up a couple of other items for your own consideration. First of all, I have to back up what Dr. Campbell said about the lack of funds, the lack of personnel, and the lack of staff. I can't do anything other than to bolster his remarks each time. I'm only sorry that Senator McGill is the only legislator that I know is here in the meeting. I feel that the legislature has given lip service to environmental health, air pollution, water pollution, to the point that there is a real grappling to the water pollution problem. One of them is founded and raised on water pollution and sort of infrequently do we hear of air pollution from the automobile. The automobile is the polluter, and it isn't entirely the exhaust. The United States population is a user, he likes to use things and throw them away. He doesn't like to wash dishes, he wants a dishwasher. Ladies would much rather use disposable plates, cups, and things. This is good, but it is the solid waste that is causing the problem. We use our automobiles until the 36th payment is made, then we turn it in to someone else and buy a new one and he has a couple of years. I think five years is the average life of the automobile and it goes to the junkyard. Our refrigerators, our washing machines, our dishwashers, and all of this are actually expendible materials. We use them for a period of time and get rid

of them. If we are really going to be concerned about environmental health, we are going to have to be concerned with what we do with our waste products, and the automobile is the problem, but it is not the exhaust of the auto that is going to cause us any problems, it is the hulk and how to get rid of it. Right now the salvage yards are applying for variances from open burning, there are what, Dr. Campbell, 250 known salvage yards in Iowa?

DR. CAMPBELL

There are 290 on record, and we don't think that is the whole list.

DR. HERRICK

All of these have burning fires, and any of you have ever looked inside of any of the equipment that you have around your home, or the automobile, you know if you set fire, there is oil, grease, phosphates, and everything else that are going to create a terrible nuisance, and if you put several of these together, it's going to be a community nuisance, not an individual nuisance. So, if we're planning for environmental health, if we're planning for a better healthful environment of Iowa, we are going to have to be looking at what we are going to be doing with the waste products that we have, such as the automobile. We put up speed controls going down the highway and this just means that we don't get there as fast as we normally would, in traveling 80, we now have to travel 70 or 75. Where a stop sign stops the flow of traffic, that's controlling the automobile, the emission control is something similar to this, but the real problem is what are we going to do with all of these community wastes that we are accumulating. The incorporated communities under the open burning regulations all dumps, must be replaced with sanitary landfills if you have open burning. The communities are going to have to do something about those as of April, 1970, when it goes into effect. So this is going to put a tax bite on you as a resident of incorporated communities.

The same thing is going to happen with the other problems. I think that we've got to be thinking in this phase, in environmental health planning, rather than the emissions from the factory that control that make sure this is fine. I think that they should be doing it collectively and to create a better air they should be controlling it. I think we should look at the major sources which is the land site.

Q - What about beer cans in the bottom of the lake?

A - I understand that Reynolds aluminum is paying $200 a ton for all used beer cans.

Q - Is there any evidence that the particles produced by contact of tires with the highway are sources of pollution?

A - About the best that is really definitive that can be shown is that rubber particles are ground off by the abrasive action. These are found by the sampling of particles of the air along the highways or at congested intersections.

Q - May I ask a question? If I understood this, and I may not of because you are fairly technical, the activities of the Air Pollution Control Commission so far have been addressed to data collection. Is that right?

A - Not necessarily. The Commission deserves all kinds of praise and commendation for the efforts that they have put into the development of rules and regulations. They have spent a tremendous amount of time on these. They've been very fair and impartial. After the open burning regulations became effective, the applications for a variance call for an investigation by the staff and a report to the Commission, and they review these. The last file number for variances was 103, so there are investigative, and judgment, actions being taken. At the same time, we are still carrying on the development of the general rules and regulations which contain emission standards and were very technical. But my point was that, when the act became

effective, then we had a whole lot of things that we had to do at once.

Q - You have established some standards and you are now enforcing them.

A - Some of our other people are working with the communities on the refuse disposal which is also covered in the open burning regulations.

Q - Well, let me ask one other question. I know that most of us are aware of the asthetic objections to air pollution, but are you getting in the position to document the health disadvantages of this function, what it does to people?

DR. CAMPBELL

Well, I think every bit of data that is put into the bank of information is going to help us eventually come to this conclusion. Now, the federal network that I mentioned a while ago covers the country and the territories. They started this with the idea that they would collect data on the air contaminants in these specific places for 10, 15 or 20 years. It is the intent to go back to the physicians after this period of time and see if they can get some data from them, feed it into a computer, and see if they can get some correlation. The direct linkage of definite health deterioration from air pollution factors is very difficult to establish up to now, in most cases.

PRESENT AND FUTURE OF IOWA'S FOOD INSPECTION

Everett Hart, Chief

Consumer Protection Division
Iowa State Department of Agriculture

MR. HART:

Thank you, Dr. Herrick. Ladies and Gentlemen, I appreciate this opportunity to meet with you this morning and discuss briefly the subject of the Present and Future of Iowa's Food Inspection. Mr. L.B. Liddy, our Secretary of Agriculture, asked me to extend to you his personal greetings this morning. The inspection of food is a very important part of this program of healthful living in Iowa. The right of consumers to safe, pure, wholesome food has been recognized for centuries and to insure this right, it has been necessary for law to be passed and enforced by government agencies. A short time after the Federal Food and Drugs Act (known as the pure food law was passed in 1906) the Iowa Legislature adopted many of these same laws relating to the adulteration of foods and the regulations for the labeling of food products. In 1923 a law was passed creating the Iowa Department of Agriculture and giving to it the enforcement of several laws including these pure food laws, berry laws, the egg laws, animal industry laws, weights, measures and labeling laws and the hotel law. Then a few years later, the restaurant law was passed and this was assigned to the Department of Agriculture for enforcement. All foods moving interstate at the present time are inspected by a federal agency, either the U.S. Department of Agriculture and/or the U.S. Food and Drug Administration. Many large fruit manufacturing plants in Iowa that are shipping their products interstate retain their own full-time USDA inspectors.

The inspection of foods manufactured and served within Iowa is the responsibility of the Iowa Department of Agriculture. The food inspectors in the Consumer Protection Division inspect grocery stores, meat markets, supermarkets, bakeries, pop factories, canning factories, warehouses and all places where food is kept, produced, prepared or distributed for commercial purposes for off the premise consumption. These inspectors carry official test weights and test all the sacles as part of their inspections. They routinely check packages of fruit, meat, vegetables to see that they contain the amount stated on the label. There

is no tolerance for shrinkage in our Iowa law. When the inspector checks the package of meat for instance, it must weigh exactly what is stated on the label. These inspectors check the sanitation and the food handling by the employees; also the equipment, refrigeration, the garbage disposal as well as handling the eggs and checking the labels on the eggs. Last year over four hundred dozen eggs were taken off sale because they were found to be below the quality stated on the label. Also last year, 3,000 pounds of butter were taken off sale for short weight. The food inspectors take samples of all kinds of food as part of their routine work. This includes meat, fish, chickens, bakery products and beverages and these are sent to our laboratories for analysis. The hotel and restaurant inspectors check all hotels, motels, restaurants, drive-in's, cafeteria's, taverns and cocktail lounges, and fairs and carnivals and all other places where food is prepared or served for pay or profit for on the premise consumption. The way the law reads, "for pay or profit" means that the non-profit organizations are required to be licensed and inspected by the Department of Agriculture inspectors. This includes country clubs, lodges, and even a few churches, where they are serving regularly which is interpreted as once a week. They must have a license and be inspected. This is a complete inspection of the building, premises, equipment, tableware, and dishwashing, sterile grill, refrigeration, demolation, and also the employees. Inspectors spend considerable time in the food handling and the dishwashing as these are the areas where pathogenic bacteria can be spread. At regular times they take swab tests of dishes and silverware to see how clean they are. We find this is very effective in demonstrating to the employees in a restaurant how important not only dishwashing is, but the handling is afterwards. When a swab test comes up high in the thousands or millions, we go back and try to work with these people to see if this condition is corrected.

The restaurant inspectors check all food stands at carnivals and fairs. For the past several years, we have had ten inspectors out at the Iowa State Fair. These men check every food stand twice a day, more often if needed, and they also two of them bring in samples of food in every day for our laboratory which is

checked. As a result, of this work, there has been no serious food poisoning at the fair for the last ten years and we're quite proud of this. There, of course, is the usual number of stomach upsets and stomach aches but nothing in the way of salmonella or the like.

In addition to the work of the Iowa Department of Agriculture restaurant inspectors, many cities and counties have adopted a restaurant ordinance and code. They have their own licenses and inspectors. This is work in addition to the work of our state restaurant inspectors. This total of state and city inspectors checking restaurants in Iowa now amounts to over 40 men full-time. This is a little different than some of the figures that have been quoted recently.

Pure safe milk and dairy products are taken for granted these days. Few people realize the great amount of work that is being done by the inspectors and the milk processing plants to maintain this high standard. The Dairy Division of the Department of Agriculture inspects farms and dairies producing grade A milk that are not under city jurisdiction. The Iowa Dairy Laws like the restaurant laws provide for the cities to adopt their own milk ordinance, hire inspectors, and operate their own laboratory. The laboratories are surveyed annually by the Department of Agriculture survey officer. The cities and state use the same U.S. Public Health Ordinance and code regarding Grade A milk production and handling. All Grade A dairies must be surveyed by a State Health Department survey officer. The Secretary of Agriculture issues and has the power to withdraw Grade A permits from milk processing plants on cause. This is an overlapping area which was purposely set up by the legislature and it has worked out very well by where one agency works with another agency in maintaining our standard of Grade A milk. In addition to the Grade A milk inspection, the Department of Agriculture milk sanitarians are checking all milk manufacturing plants, such as creameries, ice cream plants, chesse factories, and dry milk plants. This involves farm inspection where the bulk tanks are used. There is a continuous sampling of both the raw milk and the finished products being carried on by these inspectors.

All of the food, restaurant, and dairy inspectors are on the call 24 hours a day for emergencies such as fires, floods, tornadoes, train wrecks, or truck wrecks. These inspectors must handle the supervision of salvaged food and see that food unfit for human use is destroyed or diverted for animal feed. Last year following the terrible tornadoes at Oelwein and Charles City there were seven inspectors at Oelwein and eight at Charles City for a full week supervising this salvage work.

The Iowa Pesticide Law has been amended in recent years to keep up with the rapid changes in this area. All commercial applicators are now required to pass an examination and are licensed by the Department. The Department of Agriculture has very modern equipment in the laboratory and is carrying on a very extensive program of sampling all kinds of food and testing for pesticide residues. Milk and eggs have a zero tolerance and each year there have been a few farms that have been quarantined where we have found contamination. At the time the eggs and milk are free from pesticide residues. There has been much publicity recently about the future hazards of the use of pesticide and herbicide chemicals in farming and it is possible that we will have to have more strict controls for the use of these products in the future. However, at the present time because of the work being done by U.S. Food and Drug Administration and the many state laboratories, you can be assured that the food you are buying at the grocery stores is well below the tolerance that is allowed.

I'd like to call your attention to just one of the ever important responsibilities of consumers. All insecticides and weed killers are poison. Read the label carefully and follow the insutrctions and handle them carefully and keep them away from children. There is one product in the process right now of being taken off the market by the U.S. Food Drug Administration. This is aerovat, indane vaporizer. This is a product advertised in your papers, you've probably seen it. It kills all bugs, everything flying. They guarantee most everything, but when you buy one and get it home you find the warning on a little package of chemical indane that is included with this air vat. On that you will find the skull and crossbones in red and the warning - do not use where

there are children or pets or people sleeping. It's very plain, the warning is there, yet this is one thing that has been misleading. We've tried to take these out of restaurants and grocery stores. In a few cases we have found contamination of food where is happened to be right under these. This particular product will be taken off the market very shortly where food in concerned.

The legislature in 1965 passed a Meat and Poultry Inspection Law which improved the conditions of packing plants and locker plants. However, it exempted the small plants handling less than 200 thousand pounds a year live weight of animals from anti-mortum and post-mortum inspection. The Federal Meat and Poultry Law of 1967 requires that all states meet the federal standards by December 15, 1969, and an amendment was passed last session of our Iowa Legislature which will accomplish this and they also appropriated 400 thousand dollars to carry out the enforcement of this law which will bring in matching federal funds. The new law will require veterinary inspection before and after slaughter of all animals for commercial use regardless of the body. The enforcement of this law will be handled by the Iowa Department of Agriculture under the direction of Dr. H.E. Knosby. This is a good law that will assure the consumer of clean, wholesome meat and poultry products.

To carry out the enforcement of these food laws, it is necessary to have complete and modern laboratories. The State Department of Agriculture food and chemical laboratory is one of the finest in the mid-west. There are over 44 chemists, bacteriologists, technicians, and office workers employed there. All the food, restaurant, dairy and feed, seed and fertilizer inspectors send in samples regularly. Last year over 30 thousand samples were tested with over 100 thousand analysis made. These samples require 3 to 5 separate analysis each. When violations are found, inspectors follow up and see that corrections are made. A large number of food samples, including meat, were tested for salmonella, staff and prostretum for fringes, and other types of pathogenic bacteria. This month we are running a series of tests on fish from the Mississippi River for pesticide residues. We don't have the report yet. We are also sampling

all of the Iowa grown fruits and vegetables that are on the market this month. It will be interesting to see if there are any pesticide traces show up on those tests.

Another division that indirectly has a very important part on consumer protection is the animal industry division under the State Veterinarian, Dr. Butler. The veterinarians and field men in this division check livestock in sale barns to see if it is free from disease and enforce the rendering plant, garbage cooking law and so forth, and put up quarantines where needed. The Iowa Department of Agriculture has been cooperating with the Food and Drug Administration in carrying out inspections and exchanging laboratory reports and other information. It is now the policy of the Food and Drug Administration to turn back to the states much of this inspection in food manufacturing plants, warehouses, bakeries and beverage manufacturing plants. Many of our inspectors have attended the federal schools and are qualified to pick up samples for the Food and Drug Administration and make investigations when requested. The USDA has followed this trend as demonstrated by this recent wholesome Meat and Poultry Act. Looking ahead, it is quite clear that there is going to be a need for more inspectors and more and new improved sophisticated laboratory equipment to keep up with these rapid changes that are taking place in processing and packaging of food. We already have our plans approved for a new agriculture building which will combine our scattered offices, our laboratory, weights and measures, and bring them all under one roof. We hope the legislature will see this need and respond with larger appropriations so Iowa may keep up in this field of food inspection. I'd like to try to answer any questions now if you have some.

Dr. Herrick: Thank you Mr. Hart.

Q. Presently, sir, how many eating and drinking establishments do we have in the State of Iowa?

Mr. Hart: About 8,700 a couple of months ago. That's restaurant licenses, cafeterias, taverns and cocktail lounges and all places where they have a coffee service or food is served for consumption on the premise, that's classified a restaurant.

Q. Approximately how many inspectors do you have on the staff, not counting city inspectors.

Mr. Hart: We have 13 of our own. These are hotel and restaurant inspectors and we have 13 food inspectors to carry our grocery store inspection.

Q. Mr. Hart, of these 26 inspectors, what are the qualifications of the inspectors?

Mr. Hart: They have background experience in the food business, that's one of the first requirements.

Q. Do you mean like a grocery store clerk?

Mr. Hart: Yes, meat market operator, possibly a meat processing plant worker, someone that worked with food, handled food, in the case of restaurant inspectors someone that has operated a restaurant, worked for a large hotel, some college is desirable, then we carry on in-service training programs with three or four one or two day sessions a year in our laboratory and keep up-to-date with these changes in times.

Q. Are you able to inspect each food service place at least once a year?

Mr. Hart: Yes, the law requires once a year and we are able to. We try for twice a year. Of course, with city inspections this adds up to about 40 inspectors in restaurants, and all operating on very much the same code. Again, we have adopted part of the U.S. Public Health Code for Food service that is adaptable in Iowa Code, and the cities, have adopted almost the whole thing.

Q. Does your department accept the reports of these cities food inspectors?

Mr. Hart: Yes.

Q. Do you conduct your own inspection then?

Mr. Hart: No, the way the law reads, when a new application comes in for a license, our man does inspect it before the license is sent out. We work together with the city in exchanging in information, particularly if we have a trouble spot.

Q. Have you ever closed a restaurant?

Mr. Hart: Yes, but this is not as easy as some people think. We have our

law, but we don't have police authority in our pocket. We have to go through the channels. What happens is that a place starts slipping. These are usually the smaller places, sometimes the larger ones. They go along for a year or two pretty well, then they start to slip, and they just seem to get tired or they have help problems or the equipment is wearing out. When they reach a certain point, our man sets down and says this is what you've got to do. Quite often it's equipment. You are going to have to have a whole new counter top or a new dishwashing sink, if you keep going, that is the fellow is losing money, this is all he needs. He is either sold out or closed voluntarily. This takes care of quite a few of them.

Q. Mr. Hart, what about the custom slaughtering places that you see around the countryside. What protection does the consumer have?

Mr. Hart: This is under the new Meat and Poultry Law. I can't give you the exact answer except that even under the Federal law there is still a certain exemption if a person slaughters for his own use, for his immediate family, or his employees. I just don't know how far that can be carried.

Q. Let me ask you this phrase a little differently. Someone has an animal slaughtered in one of these custom slaughter places, and this individual, the consumer feels that the product is contaminated. May he bring that into your laboratory into the Department of Agriculture for examination and for an opinion from you?

Mr. Hart: The usual procedure would be for our inspector to go out and the inspector must take the sample in order for it to be an official sample. If it was really in our jurisdiction, that would be the procedure. We would send the man out and he would sample it and then get all the information needed and bring it in. In other words, we cannot run samples for the public or commercially, only for regulatory purposes.

Q. Do you feel that in cooperation with the local community, you are adequately staffed for the responsibilities that you have?

Mr. Hart: No, we need many more. This has come out in newspaper criticism in the past six months. This is true in so many departments. There is a shortage of manpower. I would say that restaurant inspection should be doubled, even brought out on a quarterly basis and it could be kept pretty well under control.

Q. Is it in the budget that you are handicapped, or is the lack of qualified manpower?

Mr. Hart: It's the budget entirely.

Q. I was going to ask in this fish work that you are doing, are you testing the pesticide level of the whole organism or just in fractional tissue so that you're really dealing with the part that the people are going to consume. The statement that has been made so often by the great state of Wisconsin, for example, is that they have published data on the aggregate of pesticides in fish and it's the whole doggone fish. You don't eat the entire fish. Neither does the concentration of pesticides in the whole fish have a genetic effect on proporagation and growth rate. So laboratories have to be very careful about doing pesticide work and not just publish high numerical values that scare people up in the newspapers.

Q. In regard to the vaporizer that you mentioned, do I understand correctly that Iowa Pesticide Law does not prohibit the sale, but you do have control over the use of certain pesticides by your licensed operator? You can't prohibit the sale of an indane vaporizer, for example.

Mr. Hart: That's right, it may be used in homes, but all we can prohibit is the use in restaurants.

Comment: It isn't really what we are talking about as pesticides and all of those other exotic chemicals which have long lives. Their sale to the general public has to be prohibited and their sale should be used only by people who are trained and experienced in the use of the chemicals who pass certain tests. I mean the indiscriminate use of DDT is a step backward in history because DDT has saved thousands and thousands of lives in this country and abroad, and what we have to do is make sure that the use is not indiscriminate as it has been in the past 15 years.

Herrick: I am more concerned about these restaurants that I frequent in Iowa. I know that they are inspected once a year, but it doesn't mean a damn thing. I think it is atrocous that we have some of the restaurants that we have. I'm speaking of the towns and hamlets that I frequent and I don't know how you could ever adequately set up frequent enough inspections.

Mr. Hart: This is our goal.

Herrick: It is a token at the present time and I don't mean to belittle what you have, but it is a token on a once a year basis.

Mr. Hart: The U.S. Public Health Code that the cities have adopted requires four times a year and it is usually stated that way. In the case of problem restaurants, our men go back often every two or three weeks, maybe three of four trips until they get them cleaned up or they are closed.

Herrick: Mr. Hart, you are presenting the typical problem that has been presented here today, and the typical problem that has been presented here today is money, manpower, and expertise.

Q. Isn't the answer the allocation of this to local inspection so you can get higher qualified people out to the cities. I know some city milk and general sanitarians who have qualifications far beyond people who walk into restaurants and work in meat markets. They are technically trained people. I think there should be more of this in restaurant inspection than simply more numbers of people.

Mr. Hart: This gets back to our money system again, under our Iowa Merit System, we haven't even been able to compete with the Health Department when it comes to our Sanitarians. We're hoping to upgrade this whole area whereby our inspectors will be college graduates, that will be a minimum requirement, but we will have to get that pay scale up to where we can attract these young men.

Q. Mr. Hart, there is another problem on the restaurant inspection that I detected in a most recent comment in that one you made. You as the Department of Agriculture will not accept an inspection by a local inspector. One of your people must be witnesses for the licensing aspect. Wouldn't it help your department and restaurant inspection a great deal if the State of Iowa and your depart-

ment could establish a mechanism where you accept the reports of local, state and county boards of health or something like that?

Mr. Hart: Yes, that can be worked out.

Q. You still have to have your inspector there once a year.

Mr. Hart: Only for the new license application on a new restaurant chains hand. But on routine information, we exchange information regularly in the different cities

Q. Do you accept their reports?

Mr. Hart: Not literally to getting into the files. Down in Burlington, for example, they are doing a good job, so our man is working out in the country more. This is the way it's working out. We put our men where they are needed.

SALMONELLOSIS

Vaughn Seaton, Professor and Head

Veterinary Diagnostic Laboratory
Iowa State University

Dr. Seaton: I originally gave thought to the question that was presented to me - is Salmonellosis a problem in Iowa. I suspect that you might get a different answer from different people depending on what they do, and what their function is. I suspect that if you were to ask the average practicing physician, he would say, well it can be a problem and in his experience, it's not a very big problem. He doesn't have very many cases of it; he has not lost very many patients and the mortality rate is not very high, when it does occur. There is a severe problem momentarily and only for a matter of days. This would be his view of it I think. If you'd ask a practicing ~~vetinarian~~ veterinarian the same question, he would say, it's a problem that occurs. He sees it in varied species of animals. It usually responds to treatment; occasionally the death ratio is high, but ordinarily not. You might say then, it's really not too much of a problem. Ask people who are interested in food technology, however. I suspect that they might give you a bit more of an alarming point of view. How you reconcile these two things? I think the difference is that the physician and the ~~vetinarian~~ veterinarian are talking about the occurence of actual cases, and they may not see great numbers, or a death loss. The food technologists and dietitians and people of this type are concerned with it as a potential, as a public health hazard. They view any salmonella as being significant and potentially serious. I think this is a good attitude to have, but I suppose the answer to the problem is a rather qualified yes, depending on your point of view and your perspective.

This disease, and incidentally, I noticed on your program that this is the only topic concerning a particular disease, is an old one. It was first recognized back in the 1880's when it was isolated from swine. Since that time it's been found with regularity in both man and animals, as recently as 10 or 15 years ago. The ~~vetinary~~ veterinary professor thought it primarily a problem of poultry and swine. Now we realize that it is a problem of most all domestic animals and wildlife as well as man. We're talking about a bacteria that is an organism present in the intestinal tract. When we mention Salmonella synonomously and by definition, we are talking about contamination.

This organism is a contaminant in the sense that it is pathogenic. This is the way that it gets where it goes. The entry in man and animals is usually by ingestion and it's ingested as a result of contaminated feed of animals, drinking water of animals, or food in humans. The contaminated food may be originating from diseased animals. Poultry for instance has often been incriminated. They pass this organizm through the egg and infection of the ovaduct. So the human eating eggs improperly cooked often times becomes infected. Another thing that happens, is that in the processing of poultry and animal products for human consumption it is easy to have the meat and poultry become contaminated in the plant. If the Salmonella organism is present at tables and processing sinks, knives and all kinds of instruments may be the vehicle by which contamination occurs. There are many Salmonella species, I hesitate to say how many because every time I do, I find out that there have been another 50 or 60 identified. Well over a thousand species do exist, however. There are many of them. All of them are not really prime pathogenes. Rather, some of them are host species. If we think of them as an indication of contamination, however, then I think we must look at any Salmonella isolate as being a potential problem of the environmental conditions to which a person or animal may be exposed. So we do have here an organism which the environmental health committee, ought to look at it, not as Salmonellosis as a disease itself, but as an index organism concerning contamination in our environment. It is often said, and I suspect that it is true that the cases of clinical Salmonellosis in humans represent about 1 in a hundred that occur. Consequently when you cite statistics on incidents and they are only indications, they really don't tell you much for sure. In the first place, not every case is diagnosed and not every case that is diagnosed is confirmed by actual isolation and identification. In Iowa, according to the Health Department's figures in 1965, there were about 106 reported cases of people in the State. In 1966 there were 89, 1967 - 115, 1968 - 107 and so far through July 30 of this year about 78. It looks rather consistent for at least the last four or five years. These cases

come from all over the state, and are not confined to any one area. I might mention that we have done a survey on wildlife trapped for pelts. We've received the intestinal tracts from some of them for information, to see how much Salmonella we might have in that kind of animal population. We had 324 different intestinal tracts and isolated Salmonella in about 4% of them. So there we have another possible source of contamination. We have the problem of feed lots which are possible sources of contamination. Here again Salmonella is an index kind of organism. In many instances, Salmonella isn't the only thing you might be concerned with in feed lots, but certainly it is there. I suspect that what we're saying is look at it as a contaminant, as something you should be aware of and concerned about but not necessarily alarmed about. In your committee deliberation as to where you go from here, it strikes me that there are ways existing to handle this thing. If our food inspection law's enforcement for example is as adequate as it should be, that it would be one tremendous step. If it is not, the mechanism of enforcement should be put into motion. The question of sterilizing animal feeds is a big question. I don't know how practical it is, but it is a point that this committee might discuss or view. The feed lot zoning situation is another area. I'm not familiar with what the regulations are, what they are supposed to be, or the fact that they have finally been formulated. Here's an area however that I think this committee would like to look at with Salmonella in mind. Mr. Chairman, I think that will be about the extent of my remarks, if someone has some questions we might enlarge on them.

Question: I wonder if the Dr. might comment briefly on the life expectancy of the organism outside of its natural environment. For example, in a feed lot or in a stream.

Answer: The organism is extremely resistant to environmental changes. It's one of the tougher bugs. There have been some longevity studies done in Waterloo.

Herrick: For the benefit of many of you people in this room, there has been a

great deal of literature on Salmonella. This has been set up as a scare in my opinion -- We've had a lot of surveys. Dr. Seaton, wasn't there a survey conducted in Iowa in our rendering plants, etc., as an instance. Would you care to remark on that.

Dr. Seaton: We participated in that survey, in fact, a couple of them. One of them pertained to animal feeds--different kinds of animal feeds--and of course, the figures came out a little differently. None of them were higher than a 1% from the samples, and that most of them were less than that. On the other hand, we surveyed meat scraps and animal by-products that are used in feed, that came from rendering plants, the instance there was as high as 30%.

Hausler:(comment) Dr. Seaton, I think one thing that is misleading is the reporting of cases of Salmonella through the State Department of Health. We received items from hospital laboratories throughout the state, and we report these monthly. I know that our average is about 10 a month, and we are confirming the identification of Salmonella. These probably never get back through the case reporting to the State Health Department and logged as an individual case, but at least the organism is isolated.

Herrick: As head of the State Hygienic Laboratory and head of the Diagnostic Laboratory you gentlemen are saying that it is something of which we should be aware. Do you have any specific recommendations as far as this committee is concerned, as far as environment of the human beings in Iowa are concerned.

Dr. Seaton: My view in a nutshell is that Salmonella can be a serious problem in a given instance, place and time. It is not a thing in my opinion to be greatly alarmed about. Simply, if I had it today, I would be alarmed, but I doubt that you ought to be alarmed. As far as specific recommendations for it, I don't have any because I think the knowledge of our sanitation and ways of combating contamination are adequate if we really enforce them. I don't know that we really need to do a whole lot more than utilize the knowledge that we now have.

Question: Do I get the idea that this particular category of bacteria is quite

common and widespread and becomes dangerous only when the numbers build up.

Dr. Seaton: They're very widespread. I'm thinking here of the animal population and this becomes a source of infection for people. There are certain ones of the Salmonella genus which are more pathogenic and more capable of causing problems. I think most any of them are potentially dangerous. I don't know that I am answering your question, but what I am trying to say that they are a potential problem and in a given instance they can be severe. I don't remember the hundreds of cases that we have received in a ten year period in our laboratory, but I can remember one because it is unusual and dramatic and it could be used as a very alarming situation. There was a group of 83 one month old dairy cattle brought together from different sources. Within 36 hours after the first one showed signs and symptoms, 79 of those 83 were dead. So this can be a very dramatic thing. This is not the usual species of the thing.

Question: You mentioned Salmonella in feed-lot run off and I think this is an area where we need more investigation. First of all, the question is, is the Salmonella an organism that causes disease in humans?

Dr. Seaton: I think the answer to that is that when we have 1200 different series, I would view any of them as being dangerous. If it is in feed-lot run off, it hadn't ought to be there.

Question: What you are really saying is that we use the Coliform test as an indicator of contamination from animals?

Dr. Seaton: Yes

Question: Dr. Seaton, with your permission, I would like to address a question to Mr. Hart. You spoke in your presentation about the Department of Agrilulture laboratory being involved with Salmonella. Have you found any Salmonella in the food that you have examined? If you found it, what incidence is it, and to whom do you send your reports? What is your public information source?

Mr. Hart: Our sampling procedure is mainly at the resale level--Meat markets, and supermarkets. We have found some chicken products, livers and other products with Salmonella. We go right back and our man checks everything with the butcher and especially the sanitation, the cleaning of the block, the cutting of meat, the cutting up of chickens and then we re-check. Usually it's just once and it's a matter of sanitation that controls it. Our reporting is for regulatory purposes, and is available at the lab.

Question: You make no public report to Dr. Seaton or his laboratory, or to the Health Department on your findings?

Mr. Hart: No, not at the present time. There may be an exchange of information at other levels.

Dr. Herrick: Any other questions for Dr. Seaton? Thank you for coming down, we appreciate your contribution.

INDUSTRIAL WORKERS AND HEALTH MEASURES

J. L. Walker, M.D.

Maytag Corporation
Newton

J. L. WALKER, M.D.:

What he does, a lot of people have the idea that all he does is treat injuries that occur in the plant, and in trying to list all the things I do, I usually put that down at the bottom of the list. A lot of the time, I don't have time for injuries because I am so busy with other things. One of the prime things that an industrial physician does is physical examinations. Most companies now have some type of pre-employment examination. Of course, some of the smaller companies do not. This is very important. I find that many times this is an opportunity to counsel with the person about some defect that he has which is treatable and which he ought to get corrected. With a fellow that is 22 years old and 75 pounds overweight, I often say that well, you are overweight and I won't accept you now, but if you come back in two or four weeks and show me that you are on a diet and have lost some weight, then I'll employ you. This is a very good tool to use. The same thing occurs for periodic follow-up examinations.

A large thing that we do is counseling in health education. I have six nurses, for example, on my staff, just before I left this morning, two foremen brought in a fellow that was staggering around who had an alcoholic problem. He had been off for a week because he had fallen into a hole. He came back to work this morning and couldn't make it. He got there at 7:00 and made it to about 8:00. Among the things I wanted to do was see what his blood alcohol content was. I got the balloon out for this fellow to blow up, and he couldn't even blow the balloon up. I had to leave in a hurry so there were two things I instructed my nurse to do: (1) talk to his doctor, and (2) tell his wife that he's not going to lose his job. Obviously in smaller plants, we do not have a doctor or nurse and the workers do not have this opportunity for counseling.

Another thing which takes quite a bit of my time, is controlling absences. In other words, when a worker requests a leave of absence for fishing, I am the one who decides whether he needs it or not. If one comes for a month's leave, and the man says it is to help his sprained back, I look into the matter. Now this is rather long for an ordinarily sprained back. Especially, when he says it

occured at the plant and we can find no evidence. The next day somebody brings the newspaper where this man lives in a small town. He's also a city council-man there. On the front page is a great big picture of this man showing what bad shape the railroad tracks were in this town as he was in the process of lifting up some of the rotten railroad ties while he was supposedly off on a leave of absence. This takes a lot of our time.

We are concerned with air contamination and water contamination, cutting oils and various glues and adhesives. These have many things in them that will cause skin trouble and one thing and another like this. This takes a good bit of time. We also are concerned with physical factors that affect persons. One of the most prominent ones at this time is noise. We are quite concerned with the effect of noise on hearing. We are also concerned right now with heat. We had quite a problem with hot air and heat in our plants. We have had a number of people who have gotten sick from heat and others that have taken advantage of it when they are really not sick. We also have a problem with colds. We have people that have to go outside and back in, and these can be a problem too.

Finally, is the treatment of injuries. This is a minor part. I only take car of the minor injuries. For a more major injury, I usually refer them to the specialists or their own physician. So many times we have to act in an advisory capacity of course. I don't understand how a large company can operate without services of physicians, but so many of them do just this.

Another thing in the services that we can and do provide at times are screening type programs. I think as time goes on, this is going to be more important. We have x-ray and laboratory facilities within the plant and we carry out an extensive program of x-rays for people who work in dusty areas just as a follow-up. We do a very large area of tests for diabetes. We are in the process of setting up a study on tuberculosis. These are voluntary programs,but a fellow is a lot more likely to come in for a chest x-ray, a TB test, if he can do it while he is at work at the plant because he is paid for this time. If he has to go and sit in the clinic for an hour or two missing time from work he is less likely to do it.

There's a great future in this type of thing. We do many visual and hearing tests on people here. Again, all of these are screening type programs. Some of the larger industries throughout the country now have what you call an automated type program. For instance, you sit down in a chair that reminds you of an electric chair. You just sit down and it automatically runs an electric cardiogram without the bother of hooking up to you. Then you go down to the next one. You walk in and stand before the screen and you are x-rayed. We haven't found an automated way to draw blood out of a person's arm yet, but we have nurses to do this, blood pressure readings, physical measures like your weight and height and so forth, all go into a computer. It comes out with an answer, that the doctors have to review, of course. Maybe it will say that this person needs to be investigated a little further in the next two years. We have our own laboratory which does most of our own work, and I'm sure at times they still call on the state for special procedures, but this is an area that I suspect needs expanding to make this type of service available to small employers throughout the State. I think another area that needs to be thought of in planning like this is a need for better understanding of the risk involved in hiring handicapped people. I have people come to me, for instance, that have been turned down in several other places. I think the difference is that I'm here on the premise and I'm able to make the decision. What you really need to do is be selective. There is no reason for not hiring diabetics, if they are controlled and if they have no problems. The same thing applies to heart disease. I've employed several people lately that have had heart surgery done at the University of Iowa. One would think right off hand, Gee, who would want to hire somebody like this. If they are well and in good condition and a good employee, a lot of times, they make better employees than somebody who is healthy. They appreciate the fact that it isn't easy for them to get a job.

I think most of our smaller industries need some type of guidelines for health hazards. We are in the process now of setting up safety rules and safety standards throughout our state. I regularly get these. My only objection to some of them is that they're rather lengthy and rather comprehensive. We can comply with them at the Maytag Company, but I doubt if some of the smaller companies can.

Some of the things need to be simplified a bit along this particular line.

Another service that we provide is immunizations. Tetnus for instance has been a problem in Iowa. We have many people that work for us that are farmers and we don't have wounds of the type that tetnus is a problem. So the tetnus immunization program that we use is to protect the people from what occurs to them on the outside. We carry on an extensive safety program. Many small industries do not carry on the same type of safety program that we do, but they would if they had the know how and the help of some state agency.

Q - Would you as an industrial physician care to give us an assessment of the healthful and the unhealthful working conditions in Iowa.

Dr. Walker - I've had a little experience with the small industries through certain people in them. Without being critical of them at all, in some small plants it is quite deplorable. A lot of it is lack of know-how. I've been associated with industry in the South-Eastern part of the United States and I don't know if it's any worse here than it is anywhere else. The larger industries are generally aware of these things and go to any amount of expense to handle it.

Q - Basically, is this just an attitudinal problem on the part of management?

Dr. Walker - I think thisis true, and this is even truer in my company. When I want to institute something, like area conservation, I am the one who has to sell it.

Q - What does your company say about immunizations when you aren't working with contagious agents in the Maytag Company?

Dr. Walker - The only one other than tetnus that we give at the present time is flu vaccine. We don't give the other types, we do cut down on absenteeism this way.

Q - You're a good investiment to the company then, if you can stop absenteeism and all of these other things?

Dr. Walker - The point that I was trying to bring out is in a lot of small companies it is the attitude of the management that it is not their responsibility to protect the health of the employees. He is contracted to do a service for them at a fixed fee and that's where the obligation ends. I think the attitude is

changing. Twenty-five years ago there was not really much of this attitude. A lot of it has been brought on by labor unions. I have to sell them on the cost involved, and its long-run advantages. As time goes on, management finds out that it does pay off.

Dr. Herrick - What suggestion do you have for a committee like this that is working in worker's health?

Dr. Walker - It seems to me that we need to be more concerned with smaller industries.

Comment - The change in the development of the worker from the man who you used to hire and hand him a shovel is the big reason for this. Now you get money invested in making that individual a productive employee. You can't afford to have him off whether he incurs an injury in the plant, or if he incurs some infectuous disease away from the plant. It still dosen't keep him on the job.

Dr. Walker - This is true, and the very question you asked is really the key to it. This committee ought to help instill this attitude in the management of industry throughout the state. The worker is worth something, and anything that we do to keep him on the job, saves money.

Q - Is there any mechanism now Doctor for identifying health attitudes in work environment excluding industrial agents. Are there any associations that deal with noise and the effects of durt and dust?

Dr. Walker - Yes, for example, with noise we have a state committee on the Conservation of Hearing. In our Tuberculosis survey the State Tuberculosis Association was helpful.

Comment - One of the comments in this very area that I think is worthy of consideration by this committee is the fact that in general when you're dealing with legislation in industry, you are dealing with something outside of state health limits. There has been a tendency, however, in state governments to exempt state governments and organizations from laws and regulations that apply to other people. As a case in point, your State Universities, which are really families of thousands of kids, have not necessarily been subject to the require-

ments of having specifications for sewers and water supplies approved by the State Department of Health as would be required by the city.

Comment - Dr. Walker, you said that John Deere did not have an industrial physician and they are the largest employer in the state. The second largest employer in the State, the University of Iowa, doesen't have an industrial physician to work with the people on physical planning or anything else.

Dr. Walker - If there is any question about it, this is a thing that does cost money. The only question is, will it save money in the long run? I'm sure that the Maytag Company saves many more dollars than they pay me and my nurses.

Q - I think it boils down to another point, is health a right or a privilege?

Comment - The only way we are going to upgrade the workers environment is to take the TLV's or threshhold limit values and go out in a surveillance program and go into the industry. Until you go in and review and appraise the conditions and let them know what they really are, we are still going to be plugging holes in the dike in Industrial Hygiene. If this committee can help sponsor this type of thing, then we are really going to get into the small industries that you are talking about. Until we do we are only going to be touching those where people have died and fell ill.

Comment - I think I have a comment to that, particularly because we did have an industrial hygiene program to the industry of Iowa and the State Department of Labor which was developed back in 1937. The enforcement agency still remaines in the Department of Labor, but we did set up a service to industry. We had the equipment for dust sampling, vapor sampling, gas sampling, and we pointed out the use of threshhold limits where there was possibly a potential hazard, but we didn't get a lot of requests from the industry you mentioned - the smaller ones that needed it. We did have the law enforcement capacity authorization. We did make requests when the labor department responded with a question. We did make investigations. We did it because it was a service that we felt was a well rounded environmental health program for the state. Unfortunately, lack of funds and manpower resulted in a curtailment of this activity.

PROBLEMS OF HOUSING AND HEALTH

Thomas Corothers, Health Officer

Sioux City

Dr. Herrick - Next, let's go into housing. We have Thomas Corothers, Director, Sioux City Health Department. Tom is going to discuss Housing and Health.

THOMAS COROTHERS: (This talk consisted largely of slides and subsequent commentary)

I have a few slides here. I'd like to just start out by saying that the condition under which many of our people of Iowa live is appalling. Most of the individuals in the state do not believe that the conditions that I am going to show you do exist. These conditions exist in every city, every town, and they exist in rural areas. When we stop and consider housing, we never think that a house has a lifetime or a useful expectancy, that it's going to wear out. When we think about our clothes, our automobile and a few other commodities, we are a nation of thrower-aways. We don't think about our housing eventually getting down to the point that it should be taken out of circulation or thrown away. The average frame house has a life expectancy, depending on maintenance, of about 75 years. A lot of our cities and towns in Iowa today were built in the early 1900's and many of these houses are still standing. They have been picked up by individuals who we refer to as slum lords. Now I have to talk about Sioux City rental figures here. Now lets take a look at what these people are getting for $65 a month or more, and I'll talk as we go along. This is a typical home which is not fit for individuals to live in. You can drive around the rural areas, you can drive around any of the cities, and pick out homes of this category. This is another home that was not completely finished, the workers who started working on it never completed the home and brought it into standards. A welfare family moved in it and brought it down so that it was necessary for our department to declare it unfit in which to live. In all of these homes you are looking at, families were living and were moved out. Now here's an environmental problem where a family living in the shack in the background has the usual problem of junk automobiles, trash, and etc. We have tagged in Sioux City, about eleven hundred of these homes, since the inception of the housing program. Their landlords are moved to either straighten them up to standards, or tear them down. These are in the process of demolition. Here we get into an economic factor, when these

houses get about so old, they are just going to have to be torn down. They can't be fixed up because it is too costly. These are some conditions inside the home, you see the plaster loosening up, the paper coming off of the walls. (Incidentally, this particular house rented for $85 a month.) Quite a few people are housed in Iowa today and I can't help but feel that this is an important area that we should be getting into. Chapter 413 of the State Code of Iowa is badly outdated. It was last re-worked back in 1921, and is not applicable today. There are some problems as far as rate of entry go. It's impossible to get any entry into a person's home if they really refuse to let you in. We have initially about 1½% refusal rate of people. Gentlemen there has to be some way that someone in authority can get into these homes and determine whether or not these types of conditions exist. Normally, we don't expect that they do, but we do find them out in the good areas of a city where a family has moved into what looks like a decent house from the outside. When you get inside, however, you find a cobbled up wiring, busted plumbing and this type of environmental condition. We talk a lot about disturbed children. How can children help but be disturbed when they are raised in this type of environment and sent to our schools. This is only part of the problem. Part of the problem lays with, and I am going to tread on some toes here, with the State Department of Social Welfare. Should we allow taxpayers dollars to be paid to slum landlords with this type of housing? Send some social workers into these types of homes to service these families to see what their conditions are and to see what we can do about them. Like I said, we tagged eleven hundred in Sioux City, we've torn 700 out of the community, about 200 of them have been fixed up and the rest of them we are in the process of working on now.

Q - How many problems like that are the problems of the landlord, and how many of them are the problems of the tenant?

Corothers - Well, I feel this way. The landlord buys this type of property because of income value. You can't get decent people to live in them, so he goes out and seeks the type of individual which really deteriates the property, but it's a two-way street there.

Q - When you evict these tenants that pay $75 or $85 a month for these homes, what do you provide for them?

Corothers - We have provided them, within this rent range, safe and sanitary houses. It's not brand new houses, by any chance. It is available in the city. I'll grant you after taking eleven hundred out we're starting to run thin. We are going to have to into some new type of free housing. But we do have adequate housing for these people.

Comment - It looked to me like you were taking pictures of the debris and junk of people who needed education more than you were taking care of bad construction.

Corothers - You do have this problem, of education and the problem of enforcement and policing, and you also have the problem of the structure and the type of individual that buys this type of property.

Q - You mentioned that you have difficulty making an inspection which is required by Chapter 413. Will you elaborate?

Corothers - Now it is my understanding that Chapter 413 makes it a requirement that the State Health Department require annual inspections. We always have a little difficulty getting into apartments, but we always get in. But I don't think that a health officer or anybody should knock on the door and say that I am coming in. I think there should be some provision in our state law that will allow health officers to go before the magistrates of competent jurisdiction to show that this house has not been inspected, that it is in the routine block inspection area, and allow the owner to have an opportunity to have a hearing if he wishes. Then the court could say that 10:00 a week from next Tuesday, he will expect to have these people allow inspection of the home.

Q - Outside of community support, what kind of problems have you had in keeping up with community action on this controversy.

Corothers - I think I went about this the right way when I started the program. I spent approximately two years talking to Kiwanis, Rotary, Women's Church Groups. I was showing pictures like this and talking about the conditions and saying that we've got to have a new housing code. I did have the community support at that time and I think I still have it.

Q - Do you inspect the hotels, motels on the same routine basis?

Q - This is within the city limits? What happens when we get a quarter of a mile out?

Corothers - The State has to handle it and they don't have the personnel or manpower to do an adequate job of it.

Q - Are your greatest problems outside of the city limits?

Corothers - Well, yes, nobody has worked that area. You have all kinds of these environmental conditions setting out there that are not being handled. $50,000 a year is what this program is costing Sioux City. That buys seven inspectors, three secretaries and takes care of the demolition money which is $12, 500 a year.

IOWA'S WATER SUPPLIES

Ted Wilrich, Professor

Agricultural Engineering
Iowa State University

DR. TED WILLRICH:

I was asked to talk about Iowa Water Supplies. I feel that there were many in this room who were equally qualified to discuss the subject, but in talking with John, he told me that many would already be on the program. If I wanted to attend the meeting, I had to speak. So wanting to attend, I said I would.

Let's talk a little about Iowa's Water Supplies. I wish I had a set of slides to show all of the deplorable conditions that I have observed as far as private water systems are concerned to really illustrate to you vividly some of the problems that I have observed around the state.

First of all is the occurence of water born disease. We do not have good figures for Iowa. Neither do we have good figures for the United States. Unfortunately, many of these water born diseases are not reportable. Consequently, no record is made of them. Of those that have been reported in the United States, however, the occurence of water born disease is about one per ten thousand population annually. This is about the same for both public and private water systems. So we do have a problem. This is an environmental health problem as related to water supplies.

Standards have been established for drinking water. The Public Health Service, the State Department of Health, the American Water Works Association and others have established standards. There are many constituents of water than can affect health. If we were to pick out a few of these constituents that were of importance we would consider some of the chemical impurities and some of the bacteriological constituents. Generally, we know that the ground water in Iowa is high in minerals. There are some formations that do yield a water that is highly mineralized. A high concentration of total desolved solids that is sufficiently high in sulfates can cause an undesireable effect when consumed in high quantities.

Another chemical constituent that is both a naturally incurring impurity and introduced pollutent in Nitrate. That has received a considerable amount of increased attention in recent years. Nitrate may be a source of hemoglobin anemia in infants and interference of one kind or another in livestock. There are a number of sources of nitrates as indicated, they may be naturals such as the

decomposition of organic matters in soils or introduced such as the decomposition of any human waste, animal waste, animal maneurs, the nitrite spread as artificial fertilizers, the nitrate received in rainfall. There are a number of sources of nitrogen that are applied to the ground surfaces. Water moving down through the soil carried this water down into the shallower water bearing formations. This problem recognizing the usual source of generally being of concentrated de-composing organic matter, either animal waste or human waste, recognizing that these are generally predominate contributors. The problem can be avoided by proper well location and construction. In otherwords, avoiding those areas immediately downgrading from decomposing organic matter or concentrated matter. Rather than locating a shallow well downhill from the farmstead where you would expect the highest concentration of decomposing materials, to either locate it at some other point. If a shallow water bearing formation is to be developed for developing a deeper bed rock formation, the well location and well construction are both important in avoiding the nitrate problem. Some of the extremely higher nitrate levels found in waters are often due to direct entrance of polluted water. So this is where proper well construction certainly comes into place. Literally, a chemical or general area of chemicals that we might consider would be pesticides and petroleum products. We know that practically all pesticides are potentially toxic. They definitely can contribute to odor problems also. Those situations where pesticides have entered the dry water supplies and into wells have generally been introduced situations. Not one was where the pesticide was applied as recommended on field crops and was moving down the soil into the ground water formation into the well. More often a direct entry or direct introduction into the well either through back leaks or accidental spillings in the immediate proximity of a well itself, was the cause. We have numerous cases reported each year of back siphoning of pesticides into wells. Also, situations where pesticides have saturated the soil in the immediate vicinity of a well, not necessarily due to spillage but due to improper storage of pesticide containers. Many of these containers, (all containers)

are generally of a metal product that can corrode, or of a glass product that can be broken. You find that spillage does occur due to perforation or breakage of pesticides that are improperly stored in the vicinity of the well. Consequently, we need safer storage and handling methods. The same thing is true generally of the petroleum trinine products. However, not as toxic, they do cause undesireable taste and odor problems. Again, it is a matter of generally improper storage and handling of petroleum products that contributes to the entrance of these materials into ground waters.

I think probably the area where we are most concerned or have the greatest concern are the bacteriological contaminants, pollutents getting into the water supply. The are producing the disease causing bacteria and viruses. We do know that many diseases can be transmitted by a water born organism. Unfortunately, many of these diseases are mineral-gastro groups. As a matter of record, all public water supplies are chlorinated and are disinfected to destroy pathogenic bacteria if they do exist. We proceed on the assumption that the probability is high that they do exist in surface water supplies. Many water supplies where ground water is resource, are chlorinated to eliminate the possible foreign disease transmission. A few carbonic surface water supplies are chlorinated to destroy bacteria and all other water born pathogents. A few private ground water supplies are being chlorinated. We're seeing more private water supplies being chlorinated in Iowa for the destruction of not only disease causing organisms but also nuisance causing organisms such as the iron bacteria and the sulfate reducing bacteria.

Unfortunately, in some cases, we are seeing chlorination being substituted for proper well location and construction or re-composition as needed. Mr. Corothers mentioned that the houses have deteriorated with age, and I think we have to recognize that many of our wells have suffered gross deterioration with age. Many of our wells were also constructed during this period and with time, they have corroded. They have perforated. Many have failed to the point that they can no longer yield an adequate part of the water, so they are no longer in use. Many of these wells no longer in use have not been properly closed or sanded. They have been abandoned without proper closure. As long as they remain open they continue

as a portal for pollution directly into ground water formations.

The well drillers and the plumbers, are practicing in the rural areas without a need to show any competency or any expertise whatsoever. This is a totally lacking area in the State of Iowa. There is no required knowledge of these practicing tradesman except in those areas where plumbing inspectors do provide a certain amount of supervision. I might say that there are a few counties that have adopted the Iowa Plumbing Code. Story County is one. They have budgeted the money for a county sanitarian, but they cannot hire a qualified person. In other counties they have not established a financial procedure by which such personnel can be employed. So again we come down to the same three categories Dr. Herrick identified earlier as major needs; money, manpower, and expertise.

RECREATIONAL WATERS AND WATER POLLUTION

Robert Morris, Associate Director

State Hygienic Laboratory
Iowa City

DR. ROBERT MORRIS:

This is an enormous topic that you have assigned to me. If I just stick to the topic I can discuss Recreational Waters in five minutes and discuss water pollution in 50 hours, but I am not going to do it that way. I am going to start out by identifying what we mean by pollution, and then work into the discussion of recreational uses. People could take 15 minutes at least trying to define pollution. A relatively acceptable definition of Pollution is anything that gets into the water that deteriorates its use from intended purposes. These purposes, primarily in the order of what I think is important, are first of all public water supplies. This is the first demand. The second one is the protection of the quantity. It's a little hard to put recreation into sequence. It gets involved in the quality part of it, because most of the recreation is involved with fishing, swimming, and things of this nature. So I am going to put water recreation halfway between water supply and quality. We have to protect these two things without question.

The industrial use of water is important but it is rather non-specific. There are only a few things in the quality of water that are important as far as industrial uses. I am not going to discuss them because that is not my topic.

The next major classification in defining pollution is its use for agricultural purposes. In Iowa we are blessed with lots of water. Most of it is of comparatively good quality. So from an agricultural standpoint, the water is usable almost any place in the State of Iowa.

Now to go back to my topic of recreational water supplies, I am going to shock you a little bit when I say that I don't think that the public water supply demands are as critical as they are for the aquatic department, and in discussing recreation, I will go in between these two things. Recreational water supplies are primarily evaluated by the bacterial levels.

People in these public health fields who are evaluating the bacterial quality of recreational waters do not rely upon a single specimen. It's an average of at least five taken over a 30 day period, and even that isn't good enough for us. In the final analysis for water people swim in and immerse in, we'll probably

give a sanitary survey by a qualified engineer or some person with the proper scientific background. There isn't much chance of people or personal ~~entravants~~ getting into that water supply. I would rather know that there was no sewage plant below the water that I was going to swim in. If there are many feed-lots located in the general area that feed their run-off into this supply, then I would place my calculated risk on the quality of that water rather than on a whole series of bacterial analysis. This may sound funny coming from a water control man, but it's a fact. If there is no obvious chance to decontaminate it, this is better than a laboratory analysis. So, what I am really saying is the two should go together. This is the thing that we try to practice. We do evaluate our surface waters bacteriologically as much as staff, time, and money will permit. Certainly you must never rely on a single analysis or place a lot of dependence on the sewers and refineries. Now this is for primary recreation.

For secondary recreation such as wading and boating the limit is 1,000 per liter of these organisms. In Iowa we do not have this intermediate classification. We have accepted and adopted by Water Pollution Control Commission, the 2,000 for public water supply and 200 for public recreation. Every area which has been designated as recreation in Iowa should reach this standard. Are we finding very many of them that are not? No. It would take a staff far beyond what we have to do it. We have tried hard to get the municipal laboratories, of which there are 17 or 18 to do some of this kind of work. It's a slightly different task than they normally do for drinking water, but it's quite similar. I don't think our central laboratories, such as the State Hygienic Laboratory will ever get the job done in evaluating recreational waters, if we do it from a sample source. They will have to involve the municipal laboratories that are around the state. Some of them, for instance, Mr. Corothers lab up in Sioux City doesen't even use surface water for their supply. They are most interested, however, in doing this type of work because they have a public health feeling of responsibility for the waters in the area.

Turbidity is important not because it hurts the individuals swimming, but you can't see them in the water. One of the hazards is that you will jump or

dive into turbulent water and hit a hidden obstacle. If someone is distressed and drowning, you can't see where he is under the water. Many people drown because you can't find them soon enough. People fall out of boats and just don't come up. If the water was clear, you could see where they were and rescue them. So turbidity polludity of water supplies is important and we have very few of what we would classify as clear waters in the State of Iowa.

Most of our waters are polluted enough so that they are dangerous with respect to swimming. I'd like to make one comment on this. Most practically all of our surface waters are what should be classified as unprotected waters. If you really want to swim, your best chance of doing it is in a well-controlled swimming pool where the water is relatively clear, where you can control the chlorine usage and you can meet bacteriological standards. So with respect to recreational waters, you can't consider them as unprotected. While we use these values, we're great dependents of the newspapers and many of us professionals use them as they really believe them. A lot of us say, don't swim in the rivers or lakes at all, but most people won't get away with this. I swim in them, I immerse in them and will continue to do so. If I was real impressed with the risk, I would stay out.

The aquatic department in recreational waters is somewhat different. Fish are really not affected. They are not significant carriers of the diseases that will be evaluated by bacterial tests. They have another very important aspect in recreational water, and that involves oxygen quality. People don't need it, industry wishes that they didn't have it, but the fish have it in approximately five parts per million. From a recreational standpoint, our surface waters have to have plenty of dissolved oxygen. Many types of industrial wastes tend to deteriorate this and certainly so do the waste coming from our sewage plants.

In addition to dissolved oxygen, we are very much interested in the pesticide problem that we discussed before. We have had a program for better than 10 years now for the evaluation of the pesticides in a number of elected streams. Ten sampling points across the state. We are convinced that the pesticide levels in our waters are adequately low. We are not concerned about them. We have checked

the less edible portion of the fish, and according to our results they are very low. I don't consider it to be a problem. I would like to make one other comment dealing with the pesticides. There is no agreement. There are no standards with respect to how much the human being can have without having an adverse affect. This is something that is under study right now. Iowa is one of the states that is involved in this. We have no absolute standards for fish. We have no absolute standards for water, we have no absolute standards for pesticides and the human being himself. I think the food industry is now having to put a fixed recommendation on the level of pesticides on animal flesh products. There are suggested criteria, but there is so much disagreement with it and such a great lack of actual truth in the information. In our surface waters, the nitrates that Dr. Willrich has talked about is practically no problem. Surface water nitrates are normally low. This is a problem of the ground water supply. So as far as nitrates in recreational water, this is not important. I don't think the actual gross contamination of our streams is an industrial problem or one of supply. There are certain short reaches in streams where we do have contamination conditions, but the streams in Iowa compared to what we find in other states, are at a relatively high degree of quality. All this in the newspapers about us having dirty streams is practically all talk. There are short areas and we know where these are. The facilities and the forces here in Iowa will accomplish the cleaning up of these few specific areas far more rapidly than the Federal Government is trying to force us to do.

There are pollution areas. There is no question about it. Some of it comes from industry and some of it comes from municipal sewage plants. The bulk of our problem across our state as a whole is primarily of agricultural origin. Most people don't know this. When most of them are confronted with the information, they refuse to accept this. This is where our nitrogens come from. This is where our basic in-flow of pesticides come from. There are a hundred and fifty-thousand sources of import in this. It's hard to control under contributive sources. We're talking about seven other vicinities, and three or four other areas.

The problem in recreational quality of water is bacterial wealth. At the low stream level when the input of bacteria from the municipal sewage plant and industry is at its highest, we find the lowest bacterial level. Believe it or not, when it rains the river water is diluted by more water, and the bacterial levels go up. Where does it come from? The input from industry and the cities have not changed, so there is only one source left. It's coming off the soil from the agricultural industry. Not just from feedlots, but from the general usage and the deposition of agricultural livestock deposits on the soils. It comes off, and here's where we get to the point where we can't meet the standards. This is controversial, but certainly our bacterial levels are higher.

Dr. Herrick - Now do we have questions for Dr. Morris and Dr. Willrich?

Q - We hear about the increased use of fertilizers, particularly the artificial type. There is reason to believe that this increased use dissolves the more nitrates. On the economic theory that the farmer is going to use only as much fertilizer as the crop will deplore. If that's the case, how is it going to get to the ground?

Answer - Well, this is probably an economic situation right now. Where nitrate fertilizers have been decreased in cost over the years. Now we're not just shooting for an automobile, but even higher. They are using more than they would probably expect to recover in the crop. No question about this.

Dr. Morris - Putting the nitrogen on the ground in the fall for next year's use does have much longer and greater opportunities for reaching streams. The answer that it is really happening shows beautifully right here in the city of Des Moines. Approximately ten years ago, the normal nitrate level was around five or ten quarts per million, as nitrates in the Raccoon River. The excursions have always been below that and were fairly small. Now we find the excursions above the average which is someplace around 20, reaching a high of 43 quarts per million in the Raccoon river, with a high of I think 37 quarts in the drinking water supply of Des Moines. In spite of the fact that we're getting high nitrates coming into at run-off occurage, we are noticing a raise between the nitrates and the bacterial levels. If it was coming from the North, the bacteria would rise as the nitrate rose. We're getting a greater rise of nitrates for a smaller rise of bacteria which

tends to suggest the fact that these nitrates are not coming from natural maneurs but is probably coming from the application of nitrate fertilizers. This tends to suggest the source of where these things are coming from. By the way, chemists can't tell the difference between Nitrate coming from maneur and nitrate coming from fertilizer. These rations, I think are interesting in this respect.

Dr. Herrick - Dr. Morris and Dr. Willrich, thank you both. Are we doing the best that we can possibly do? If not, what would you recommend to this committee?

Dr. Morris - There are many things that can be done. The agricultural deterioration of stream water, Water Pollution Control, Soil Conservation, and finally application of the correct amounts of fertilizer, the maneurs coming into our supply of water, many problems could be delineated. You are discussing drilling a well, the well driller should be qualified. Do we have the machinery now? Or do we need the Boards of Health to make an authorization to initiate the mechanism to control the construction of new wells. I see no reason why they can't also require the proper closure of used wells. Money, time and manpower are something else. Popping up constantly is County Boards of Health. It looks to me that legally we have established a dumping board in the State of Iowa. This has happened in other states. We have a problem in the State of Iowa that on the County Boards of Health, we don't have people who are knowledgeable, or are aware of the problems.

Dr. Willrich - I think in some cases they are aware of it, but for example take the case of Story County. The County Board of Health has plenty of money for the County Sanitarian, but they can't find a qualified man to hire for six thousand dollars a year.

Q - Dr. Morris, would you swim in Lake Okoboji?

Dr. Morris - If I had the opportunity to, yes.

Comment - In Iowa we haven't had any necessity really to penalize. Industry must be able to show that they are polluters. I think industry has been forthright in wanting to go ahead and do what they can. For example, we show an industry to be a polluter, most of them approach the problem. Municipalities are essentially doing the same thing.

Dr. Herrick - I want to thank Dr. Morris and Dr. Willrich for appearing and for their contributions. This is a very important subject. We'll move on to our last speaker, and we didn't put him last because he's the worst. Dr. Robert Bauman, Professor of Civil Engineering, Iowa State University is going to discuss Solid Waste Disposal.

SOLID WASTE DISPOSAL

Robert Bauman, Professor Civil Engineering

Iowa State University

DR. BAUMAN:

Thank you Mr. Chairman. You know, a year ago I was a flat top World War II Veteran who was out-of-date and out of contact with students. My daughter said to me as she left for college, "Dad, I would like to see you with hair." One of the things that surprises me is that in growing a little hair on my head, I found out that the students come back into your office because they can communicate. You begin to learn of some of the problems that you really have that you don't realize you do have. After one of these conversations with a bunch of students, they simplified everything by saying, "You know your fathers, (meaning thier grandfathers) were concerned with only one thing in life. That was educating their kids. My age group took that education and looked at the living that we had. We all had a pie about that big.(relatively small) And in the last twenty years we made a pie that was big enough for everybody. My kids and your kids look around and say, "We got the education, we got the pie and it's big enough, but we're not cutting properly." One of the things that they try to put across in the Universities is the fact that all you people talk about is money. The shortage of it. We don't have enough. One of the points that we make is that our priority system and what we do with the money is at fault. This matter of Solid Waste Disposal is typical of the problems which the young poeple today are talking about. Without trucks, Americans would soon die. You can go out on the Interstate and go down on the streets in Des Moines, and all you see is trucks loaded with food, clothing, with luxuries, our televisions, our automobiles, our building materials. We use these things without the realization that our problem is that whatever that darn truck brings in to the city at some time in the future, we've got to get rid of. We've got to dispose of it. There is nothing that we do that is going to change the amount, the weight of material that we got to get rid of. The only thing we change is really the time period that we have in order to get rid of it. The problem of what we do with all of the materials, solid waste and the liquid waste that we have is a problem which we have given absolutely no priority to in our thinking. There-in lies our solid waste disposal

problem.

Now I am not going to take the time to go into a lot of definitions, I'll limit the talk to about three. Garbage - in the term garbage we include anything that is a food product that will decompose. Rubbish - we classify as anything that is non-compressable which is going to stay there for a long time because it isn't going to decompose. When we mix the rubbish and the garbage then we have refuge.

Stop and think for a minute that in this country we dispose of a hundred million tires per year and thirty million tons of paper which was manufactured that we have to dispose of. Every single year we dispose of 48 billion cans. Now, ten years ago, we used to have galvanized cans which once we knocked the tin off by rough handling, the iron would go into solution and would soon disappear. We found out that we could flip-top the caps by making them out of aluminum. The aluminum cans stay there forever. Now $200 a ton for which the Aluminum Alcoa is paying for the retun of aluminum cans, means that the housewife has to gather up something like 50 or 60 aluminum cans for each penny she gets in return which is economical nonsense. We have 26 billion bottles that we have to dispose of each year. And the federal government has just awarded a contract to somebody to make the tin cans out of plastic. I mean the bottles out of plastic, so when you break the bottles you can flush them down your water closet, and they will dissolve. Then instead of solid waste problems, there are water pollution problems. There are over 4 million tons of plastic.

The problem that we have first of all is a problem of collection. If you are going to combine the food materials with the rubbish, then you will have to have a completely different collection system. It is safe to say that if you are going to have waste foods in containers outside, you are going to have to pick up the thing two or three times a week. If you separate, you can pick up the rubbish at longer intervals and waste foods up at different intervals. The problems then stem from once we have collected it. What do we do, and what do

we do with it in Iowa.

In most cases we find the closest (in order to minimize the trucking cost) least valuable land and we take it out and dump it. Almost invariably that happens to be on the banks of a river and we proceed to dump the stuff over. Pretty soon we have not only a solid waste disposal problem, but a stream pollution problem. I personally have visited dozens of dumps in Iowa. There I would find a 25 pound sack of pesticides in the dump located either in water or in a flood plain of a river, so the first high water will disintegrate the container for pesticides and take it down stream. I don't think there is any question that dumps produce water pollution problems, fly problems, rat problems, burning problems, floating paper problems. They are a health menace. They're a nuisance. They should be prohibited. I understand that in the very near future, open dumps are obsolete as far as Iowa is concerned. Obviously dumps are the least costly of the methods of handling waste.

The next step up we get to those sanitary land fills. What do we mean by sanitary land fills. All we mean by sanitary land fills is to pick an optimum location, dig a hole, deposit all of this junk that we want to get rid of and cover it up again in a way that is as sanitary as possible. According to current practice, we require about one acre of land per year per each 10,000 people. Now one acre for 10,000 people was established back when we used to produce about 2½ to 3 pounds of total refuse per person per day. Today, we are producing about 5 pounds of refuse per person per day. So it won't be many more years before we will be talking about 2 acres per year per 10,000 people. What does that mean in Iowa? It means that in Iowa we need somewhere between 275 and 500 acres per year just for the disposal of solid waste in the current accepted method of sanitary landfill. There are certain benefits from sanitary landfill operations. First of all, if it is properly done, there are no rats. Secondly, we can control and reduce flies. We cover the material up. The heat that is generated by the decomposition of the materials tends to disinfect the waste and ultimately

we can turn the area into a useful park. Normal refuse weighs about 500 pounds per cubic yard. If we mill it and grind it, which we are not yet doing, we can probably increase the weight to 900 to 1100 pounds per cubic yard and reduce the volume of sanitary landfill approximately by half. The cost in Los Angeles for operating sanitary land fills is probably 60¢ and a $1.00 per ton of waste material disposed of. In Iowa, I would expect that these costs would be doubled because Los Angeles has the economics of size. But, you can't say that that is really a good system either. I don't believe I have ever seen a sanitary land fill located but what you didn't have to go through a whole series of lawsuits or threats of lawsuits because of the location of a dump or sanitary landfill next to an inhabited area.

The next step up would involve incineration. By incineration, we merely mean the collection of refuse in a location, the separation of the materials into the decomposable, the burnable, and the non-burnable, and then the actual burning of the decomposable material at a temperature that is high enough to prevent odors under conditions that are closely controlled enough to prevent air pollution. You end up with approximately, between 20 and 40% of the original volume of the combined refuse still to dispose of in the form of aluminum cans, bottles, car bodies, and ash which still present a disposal problem. You still have to have a sanitary land fill even with an incinerator. The land for ash alone is approximately one-fifth of an acre per ten thousand population per year. Now, in addition, when you use incinerators, you have to use water and we use approximately 2,000 gallons per ton of refuse and we create a water pollution problem. The cost in New York City of backfeed incinerators runs about $11 per ton of waste disposed of. If you use a continuous feed incinerator, the cost might drop down to $7 or $8 per ton of waste disposal. These costs are probably three and four times the cost that we are now spending for sanitary land fills in this State.

The next step up the ladder and one that is used in other areas of the world, not so much in Iowa, is the use of composts. In a composting plant, we try to separate the combustible materials from the non-combustible materials, grind up the combustible materials and treat them under an aerobic thermofillio decomposition process to convert the organics to a stable organic humus fertilizer. The only thing is that the cost of doing this is significantly higher than the cost of incineration. We can buy commercial fertilizers and commercial feed for our animals that are so far cheaper than composts. In this country, the chances of success of a compost plant are almost impossible. What does this mean? What this means is that we have not yet really given any serious consideration to the long term need for the complete reuse of our raw materials, and our waste materials. (Remainder of Dr. Bauman's presentation and the questions and comments which followed it were not recorded due to failure of the recording machine.)