



A Profile of Iowa's Local Systems

November 2001

Environmental Health
A Profile of Iowa's Local Systems

A project conducted

by

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A report submitted to Iowa Department of Public Health and Iowa Department of Natural Resources by Jacqueline M. Comito.

The opinions, findings and conclusions expressed in this publication are those of the author and not necessarily those of the IDPH and IDNR.

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ONE

INTRODUCTION

Water quality is an area of great concern to Iowa citizens. In a study conducted by Iowa State University in November 1996, eighty-four percent of Iowa citizens surveyed believed surface water pollution was a serious problem. There is good reason to be concerned, as evidenced by the 1998 Iowa Drinking Water Supply report which showed 408 maximum contaminant level violations in Iowa's public water supplies. The most common contaminants as reported were non-acute coliform bacteria, acute coliform bacteria and nitrates.

In response to citizen concern, the Iowa Water Quality Action Plan was developed to improve the water quality in this state. Initiated by the Iowa Environmental Council and developed by a broad cross-section of Iowans, the comprehensive plan was released in January 1998. The plan included recommendations for additional and better research on water quality, particularly research that involves local citizens and communities, which can lead to local solutions. Citizens also voiced concern for improved water quality in Governor Vilsack's 2010 Visioning sessions, with soil and water quality identified as a key concept in the blueprint for Iowa's future.

One important aspect of water systems that is often overlooked is the linkage between contaminated public waters and human waste disposal. Point source pollution (i.e. raw human sewage from illegal septic system discharge through a pipe directly into streams) is a serious problem in Iowa and is a contributing factor to the overall level of contaminants found in the state's public water supply. The Iowa Department of Natural Resources estimates that there are 200-300 rural communities in Iowa that lack a centralized wastewater treatment system. In these situations, there are two likely scenarios for human waste disposal: 1) Inadequate septic systems are discharging raw human sewage to the surface within the community or 2) Raw human sewage from failing septic systems is collected in a tile and discharged in a nearby stream or to the surface immediately outside the community.

Many of Iowa's counties lack qualified staff to inspect on-site wastewater treatment system installation and properly implement a countywide environmental health program. Despite the existence of Iowa Administrative Codes concerning wastewater treatment, these communities seem uncertain as to where the responsibility for human waste disposal lies: the local board of health (LBOH), the county board of supervisors (CBOS), or environmental health workers (EHW).

In addition to the health benefits to cleaner air and water, many in Iowa recognize that effective environmental health systems play an important role in the economic health and sustainability of every community. Currently, there is no statewide baseline data that profiles local environmental health programs, including the barriers that local communities experience in meeting their environmental health regulations.

History of Environmental Health Systems in Iowa

In 1866, the State of Iowa set up the jurisdiction of local boards of health. At that time, it was established that each county should have a board consisting of five members and they were provided with rule-making authority (rules are subject to approval by the county board of supervisors). It was not until 1966 that local boards of health were given authority over private septic systems and private water wells. This law was rewritten in 1971. At this time, local boards of health were given the authority to employ environmental health personnel to deliver services. Prior to this year, environmental health in Iowa received limited attention. Today there are no minimum requirements for becoming a local environmental health official. In addition, there are no formal environmental health training programs in Iowa.

Iowa code defines "environmental health services" as "services focused on assessing and controlling the impact of people on their physical environment and the impact of the environment on them." Laws covering environmental health programs include:

Chapter 137 of the Code of Iowa

- Sets up jurisdiction of local board of health
- Provides rule-making authority
- Provides authority to employ environmental health personnel to deliver services
- Allows local boards of health to issue penalties

641 Iowa Administrative Code Chapter 77

- Establishes requirements of local boards of health
- Identifies three core functions and 10 essential services of public health
- Identifies structure and membership of the local board of health
- Requires local boards of health to provide minutes of meetings to the Iowa Department of Public Health

Chapter 455B.172 of the Code of Iowa

- Requires local boards of health to be the administrative authority over private septic systems and private water wells

Chapter 331.302 of the Code of Iowa

- Identifies the process for establishing county legislation under the board of supervisors

Chapter 657 of the Code of Iowa

- Identifies what constitutes a nuisance
- Allows for actions to abate and collection of penalties
- Covers feeding lots, shooting ranges, and animal feeding lots

Chapter 167 of the Code of Iowa

- Use and disposal of dead animals

Significance of Environmental Health Study in Iowa

In the spring of 2000, the Iowa Department of Public Health and the Iowa Department of Natural Resources teamed with Iowa State University Extension to Communities, Iowa Department of Economic Development and Iowa Rural Development Council in hiring private consultant Community Based Solutions to research environmental health systems in Iowa. What resulted was much needed research in the first step towards empowering local communities to improve the quality of Iowa's drinking water as well as their overall environmental health programs.

The goal of the project is to gain a better understanding of the overall nature of the environmental health programs in all 99 Counties in Iowa. This project assesses the relationship of the local boards of health with the local environmental health programs and the ability of these communities to deliver quality services. This project evaluates the perceptions of the three organizations that share responsibility for environmental health in each county: local environmental health worker, the local board of health and the county board of supervisors. It is important to understand each organization's involvement with the local environmental health programs and to what level they communicate with each other. Each organization was surveyed to assess their ability to adequately meet the needs of their community in regards to environmental health.

This report supplies needed baseline data so that state and local officials may create plans which may sustain and improve Iowa's environmental health systems, thus improving the overall quality of life for Iowans.

Study Design

In the fall of 2000, an Environmental Health Project Task Force was formed. The members included: Ken Sharp of the Iowa Department of Public Health, Carl Wilburn with Carroll and Crawford County Environmental Health, Brent Parker of the Iowa Department of Natural Resources, Beth Danowsky with Rural Development Council, and Susan Lambertz of the Iowa Department of Economic Development along with consultants Jacqueline Comito of Community Based Solutions and Mary Holmes who is with Iowa State University Extension to Communities. In the months that followed, the task force helped design the research tool Comito would use to conduct the study. In January 2001, surveys were mailed to every local board of health member, every county supervisor and every environmental health employee in the state.

After three mailings and some phone calls, 74% (or 73 supervisors) of the 99 county board of supervisors responded to the survey. Ninety-seven percent (91 employees) of the sanitarians sent surveys responded; 97% of the local boards of health members (216 LBOH members) are represented in the sample. This response to the survey was excellent and is a strong representative sample of Iowa's environmental health programs.

In August and September 2001, consultants Comito, Holmes and Samantha Solimeo visited three counties in Iowa to conduct the final stage of the project: on-site visits with the local environmental health employees, officials and citizens. The data collected from these visits is used to more fully understand the information obtained in the quantitative survey.

In October 2001, Comito gave a preliminary presentation of the data during a session at the Iowa Environmental Health Association Fall Educational Conference held in Marshalltown. In addition to over 30 environmental health employees from various counties in Iowa, Ken

Sharp (IDPH), Brent Parker (DNR), Mary Holmes (ISUE) and Steve Quirk (IDPH) were also in attendance. The session ran for 1.5 hours and was successful in opening lines of communication and illuminating important issues key to the understanding and improvement of environmental health systems in Iowa.

Demographics of Sample

Surveys were sent to every sanitarian, board of health member and supervisor in all of the 99 counties. The goal was to have each county represented by an individual in each group. Although we did not meet this goal, the return rate was extraordinarily high and overall we are pleased with the level of participation and representation of the counties in this study.

The following table shows the county, the number of surveys sent and the number of surveys received from each of the groups. A “0” in the sent column means that there was not an environmental health worker employed by the county in which to send a survey:

	CBOS		EH Worker		CBOH		Co. Total
	<i>Sent</i>	<i>Received</i>	<i>Sent</i>	<i>Received</i>	<i>Sent</i>	<i>Received</i>	
Adair	5	0	0	0	5	2	2
Adams	5	5	0	0	5	3	8
Allamakee	3	1	1	1	5	2	4
Appanoose	3	2	2	1	5	3	6
Audubon	3	0	0	0	5	2	2
Benton	3	2	1	1	5	1	4
Black Hawk	5	1	1	1	5	0	2
Boone	3	0	1	1	5 m 1	2	3
Bremer	3	1	1	1	5	1	3
Buchanan	3	2	1	1	5	4	7
Buena Vista	5	0	1	1	5	1	2
Butler	3	1	1	1	5	3	5
Calhoun	3	2	1	1	5	6	9
Carroll	5	1	1	1	5	2	4
Cass	4	0	0	0	5	2	2
Cedar	5	1	1	1	4	2	4
Cerro Gordo	2	1	2	2	5	2	5
Cherokee	5	1	1	1	5	2	4

Chickasaw	4	2	1	1	5	4	7
Clarke	2	1	1	1	5	1	3
Clay	5	1	1	1	5	5	7
Clayton	3	0	1	1	5	2	3
Clinton	2	0	1	1	5	3	4
Crawford	4	2	0	0	5	1	3
Dallas	3	1	1	2	5	3	6
Davis	2	0	0	0	5	1	1
Decatur	2	1	1	1	5	1	3
Delaware	2	0	2	1	4	4	5
Des Moines	2	1	1	1	5	3	5
Dickenson	2	1	1	1	5	1	3
Dubuque	2	1	2	2	5	2	5
Emmet	5	1	1	1	5	3	5
Fayette	3	2	1	1	4	3	6
Floyd	2	0	1	1	5	5	6
Franklin	3	0	1	1	5	1	2
Fremont	2	0	1	1	5	0	1
Greene	4	2	1	1	5	3	6
Grundy	4	1	1	1	5	1	3
Guthrie	4	1	1	1	5	3	5
Hamilton	2	1	1	1	5	1	3
Hancock	2	1	0	0	5	2	3
Hardin	2	1	1	1	5	2	4
Harrison	2	1	1	1	4	1	3
Henry	2	2	2	1	5	2	5
Howard	2	1	2	1	5	3	5
Humboldt	4	3	1	1	5	1	5
Ida	2	0	1	1	5	1	2
Iowa	4	0	2	0	5	1	1
Jackson	2	0	1	1	5	2	3
Jasper	2	1	1	1	5	4	6
Jefferson	2	1	1	1	5	2	4
Johnson	4	1	1	1	5	1	3
Jones	4	1	1	1	5	3	5
Keokuk	2	1	1	1	5	2	4
Kossuth	4	1	1	1	5	3	5
Lee	2	1	1	1	5	1	3
Linn	2	1	1	1	5	3	5
Louisa	2	1	1	1	5	1	3
Lucas	2	1	0	0	4	1	2
Lyon	4	0	1	1	5	1	2
Madison	2	0	1	1	5 m 1	4	5
Mahaska	2	1	1	1	5	3	5
Marion	2	0	1	1	5	1	2
Marshall	2	0	1	1	5	2	3
Mills	2	1	2	1	5	2	4
Mitchell	2	1	2	1	4	2	4
Monona	2	1	1	1	5	4	6

Monroe	2	0	0	0	5	2	2
Montgomery	2	2	1	1	5	4	7
Muscatine	4	1	2	1	5	1	3
O'Brien	4	2	1	1	5	4	7
Osceola	4	1	1	0	5	1	2
Page	2	1	1	1	5	2	4
Palo Alto	4	2	1	1	5	4	7
Plymouth	4	1	1	1	5	1	3
Pocahontas	4	1	1	1	5	3	5
Polk	4	0	4	1	5	3	4
Pottawattamie	4	0	2	2	4	3	5
Poweshiek	2	1	1	1	5	3	5
Ringgold	2	1	1	1	5	1	3
Sac	2	1	1	1	3	1	3
Scott	1	0	1	1	5	0	1
Shelby	2	0	1	1	6	0	1
Sioux	4	1	2	1	5	3	5
Story	2	0	2	1	5	3	4
Tama	2	1	1	1	5	4	6
Taylor	2	0	1	1	4	2	3
Union	4	0	1	1	5	3	4
Van Buren	2	1	1	1	5	2	4
Wapello	2	1	3	1	5	3	5
Warren	2	1	2	2	4 m 1	1	4
Washington	2	0	1	1	5	3	4
Wayne	2	2	1	0	5	1	3
Webster	4	1	1	1	5	2	4
Winnebago	2	1	1	0	5	1	2
Winneshiek	4	4	1	1	5	3	8
Woodbury	4	1	1	1	7	2	4
Worth	2	1	1	1	5	1	3
<u>Wright</u>	<u>4</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>5</u>	<u>1</u>	<u>3</u>
	289	94	109	91	473	216	401

Because one focus of this project is to assess the relationship between a local Board of Health (LBOH), local environmental health programs and a community's ability to deliver quality services, the data is presented from the perceptions of the three groups surveyed. This presentation enables us to understand each organization's involvement with local environmental health programs and at what level they communicate with each other.

In addition, we thought it valuable to our understanding of the environmental health systems if we looked at variations among counties classified as urban or rural. To achieve this goal we adopted the Iowa State University's Midwest PROfiles Rural/Urban Classification. This system groups counties into four categories based on a specific set of criteria: *metro* (counties included in metropolitan areas of less than 1 million population), *urban* (nonmetro counties with urban populations of 20,000 or more), *rural adjacent* (nonmetro counties with urban populations of less than 20,000 that are adjacent to metropolitan counties) and *rural non-adjacent* (Nonmetro counties with urban populations of less than 20,000 that are not adjacent to metropolitan counties).

After reviewing the data and noting very little differences between the larger two classifications, we decided it would be more relevant to this study to collapse the *metro* and *urban* category into one classification *metro/urban*. The following table shows the different classifications, the counties that fall into the classifications in Iowa, and the percentage of the sample in each classification:

ISU – Midwest PROfiles Rural/Urban Classifications		
<i>Metro/urban 19% of sample</i>	<i>Rural adjacent to metro 33% of sample</i>	<i>Rural non-adjacent 48% of sample</i>
Black Hawk, Cerro Gordo, Clinton, Dallas, Des Moines, Dubuque, Johnson, Lee, Linn, Marshall, Muscatine, Polk, Pottawattamie, Scott, Story, Wapello, Warren, Webster, Woodbury	Adair, Benton, Boone, Bremer, Buchanan, Butler, Cass, Cedar, Cherokee, Clarke, Clayton, Crawford, Delaware, Fayette, Greene, Grundy, Guthrie, Harrison, Ida, Iowa, Jackson, Jasper, Jones, Louisa, Lucas, Lyon, Madison, Marion, Mills, Monona, Montgomery, Plymouth, Shelby, Tama, Washington	Adams, Allamakee, Appanoose, Audubon, Buena Vista, Calhoun, Carroll, Chickasaw, Clay, Davis, Decatur, Dickinson, Emmet, Floyd, Franklin, Fremont, Hamilton, Hancock, Hardin, Henry, Howard, Humboldt, Jefferson, Keokuk, Kossuth, Mahaska, Mitchell, Monroe, O'Brien, Esceola, Page, Palo Alto, Pocahontas, Poweshiek, Ringgold, Sac, Sioux, Taylor, Union, Van Buren, Wayne, Winnebago, Winneshiek, Worth, Wright

The organization of the data in this way offers yet another perspective of each county's ability to adequately meet the needs of their community in regards to environmental health.

Overview of Report

The purpose of this introductory chapter is to provide the reader with a historical perspective regarding environmental health systems in Iowa. This chapter also reveals the significance of the project, outlines the study design and looks at the sample. Because human resources are the heart of environmental health services, the second section explores the demographics and perceptions of the participating environmental health employees, board of health members and county board of supervisors. The next section will provide a profile of the environmental health systems including perceived problem areas and programs. The fourth chapter focuses on the financial aspect of the environmental health system using ISU's Midwest

PROfiles for urban and rural county classification. The final chapter overviews the major issues and provides recommendations for a systems approach to future actions.

TWO

PROFILE OF ENVIRONMENTAL HEALTH PARTICIPANTS

Of all those sent surveys, 74% percent (94 supervisors) of the 99 County Boards of Supervisors responded, as did 97% (91 employees) of the sanitarians and 97% of the County Board of Health members (216 members). This chapter provides a profile of the respondents that make up the environmental health system and offers a better understanding of their perceptions toward the organization of the system.

Demographics of Local Environmental Health Systems Participants

The characteristics of Iowa's local Board of Health members, county Board of Supervisors and Environmental Health employees paint a more meaningful picture of the system when compared and analyzed.

Comparison of Basic Demographics CBOS, EH Workers & LBOH			
	<i>CBOS</i>	<i>EHW</i>	<i>LBOH</i>
Average Age:	58 years	49 years	59 years
Gender:			
<i>Male</i>	88%	83%	54%
<i>Female</i>	12%	17%	46%
Year elected/began position	1994	1991	1992
Held elected office (or other elected office)	44%	17%	9%
Years in elected position	9	7	9
Residency of respondent:			
<i>Within city</i>	40%	62%	55%
<i>Outside city</i>	60%	38%	45%
How many year lived in county	45	27	39

where serve?			
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All three groups have been in their current position on an average of 8 to 11 years. It is interesting to note that the environmental health workers have been in their positions slightly longer than the CBOS and LBOH respondents. Of the 44% of Supervisors who have held a different elected office, 49% served on the school board, 22% served on the city council, 12% were township trustees and 10% were mayors. Sixty-seven percent of the 17% of environmental health workers were city council members prior to their current position.

The rural/urban categories were also used to look at the above demographics for the three groups and there was very little variation. In other words, the average age, gender, residency, years in position and whether a respondent has held an elected office does not significantly change when one compares the rural counties with the urban/metro counties.

Education levels for the respondents also did not vary when one looked at the categories of rural to urban/metro. The following table compares the education level and area of study among the three groups of respondents:

Comparison of Education			
	<i>CBOS</i>	<i>EHW</i>	<i>LBOH</i>
Highest level of Education:			
<i>High school diploma</i>	49%	34%	23%
<i>Some college or AA</i>	14%	16%	7%
<i>Bachelor degree</i>	34%	39%	35%
<i>Masters degree</i>	3%	9%	10%
<i>Doctorate/professional degree</i>	0%	2%	25%
Area of study (for those with degrees):			
<i>Business</i>	44%	14%	10%
<i>Agriculture/animal science</i>	12%	9%	8%
<i>General science</i>	12%	42%	1%
<i>Medical</i>	4%	3%	61%
<i>Liberal arts</i>	12%	12%	8%
<i>Education</i>	8%	0%	5%
<i>Social/criminal</i>	2%	3%	3%

<i>Technical</i>	6%	17%	4%

Respondents who serve on the LBOH have the highest level of education with 25% of them holding doctorates or professional degrees (20% are medical doctors). Of the 70% of LBOH with bachelor degrees or higher, 61% are trained in a medical field. Of the 50% of environmental health workers with bachelor degrees or higher, 51% have degrees in science or animal science and 17% have degrees in a technical area. Of the supervisors with bachelor degrees or higher, 45% put business as their area of study. The educational statistics suggest that the LBOH and EHW have more education in areas relating to environmental health than the CBOS. As set out by the Iowa Code, LBOH are in an advisory position to the CBOS with the Supervisors having final approval over any action suggested by the LBOH. These statistics suggest a few questions. Are the LBOH and EHW adequately fulfilling their roles as advisor to the CBOS? If yes, what explains the large differences in what the LBOH and EHW perceive as environmental health risks in the county and what the CBOS reported as risks?

It can be argued that the occupation of the individuals who make up the environmental health system has an impact on the decisions made by the groups. The chart below compares the employment status and occupation of the individuals responding to the survey who serve on the LBOH versus those serving on the CBOS. It is interesting to note that 41% of all the Supervisors who responded are farmers while 11% of the LBOH reported their occupation as farmer. It is also significant that 31% of the LBOH are retired and that a majority of the LBOH and Supervisors either work part-time or are retired.

Comparison of Employment Status & Occupation		
	<i>CBOS</i>	<i>LBOH</i>
Employment status:		
<i>Unemployed</i>	1%	1%
<i>Homemaker</i>	1%	3%
<i>Full-time</i>	29%	12%
<i>Part-time</i>	55%	53%
<i>Retired</i>	14%	31%
Occupation:		
<i>Professional - Medical</i>	1%	51%
<i>Professional</i>	8%	12%
<i>Managers/administration</i>	---	5%
<i>Sales</i>	1%	2%
<i>Clerical</i>	---	1%
<i>Food service</i>	---	1%
<i>Labor</i>	4%	1%
<i>Farmer</i>	41%	11%
<i>Service</i>	6%	2%
<i>Self-employed</i>	6%	1%
<i>Craftsperson</i>	8%	2%
<i>Elected official</i>	24%	4%
<i>Religious</i>	---	1%
<i>Education</i>	1%	6%

In the *urban/metro* category, 64% of the CBOS are paid elected officials and only 18% of them are farmers. A little over 60% of the CBOS in the *rural adjacent* and *rural* categories reported their occupation as farmer. None of the LBOH in *urban/metro* category reported their occupation as farmers while 80% in this category responded that they were in the medical field or some other profession.

THREE

ORGANIZATION OF ENVIRONMENTAL HEALTH PROGRAMS

When asked if the CBOS clearly understood the role of the local environmental health programs, 57% of County Board of Supervisors said they did, 45% of the environmental health workers felt they did, and 62% of local Boards of Health representatives replied “yes.” When asked to circle the programs for which their environmental health worker was responsible, the answers also varied:

<i>Percentage that circled the listed program:</i>			
	CBOS	EHW	LBOH
On-site wastewater	92%	100%	89%
Private water wells	96%	96%	98%
Nuisances	73%	89%	80%
Food safety	28%	33%	45%
Tattoo/tanning inspections	33%	43%	43%
Pool inspections	30%	39%	46%
Funeral home inspections	33%	42%	36%
Other	4%	32%	11%

The purpose of this next section is to explore the extent to which the above answers seem an accurate depiction of what each group understands to be their role and the role of the other participants. This section contains a broad description of the organization of the environmental health systems in Iowa from the perspective of the key participants in the system. All three

groups were asked to respond to the same questions so that we could compare their answers and analyze the variations when significant.

Iowa Code and Environmental Health Programs

The fact that 43% of the CBOS felt that they did not clearly understand the role of the local environmental health programs is troubling (state officials and EHW interviewed felt that if the CBOS were honest that percentage would be considerable higher). Because Iowa Code places the LBOH under the jurisdiction of the CBOS, the supervisors appoint members to the LBOH as well as approve any rule, penalty or service deemed necessary by the LBOH. It is unclear who is responsible for training and educating the CBOS. The data below shows that the CBOS have high confidence in the qualifications of the LBOH and their staff (86%) but that they have differing ideas of what is needed in their counties in regards to environmental health risks (see next section). Many CBOS rely on the members of the BOH (which they appoint) and the EHW (which they hire or approve the hire) for their knowledge and understanding of environmental health risks. Iowa Code clearly places the CBOS as ultimately responsible for the environmental health of their counties and yet the study finds that the CBOS do not understand the Iowa Code pertaining to environmental health and their own environmental health programs. The following tables represent the responses to the questions pertaining to the Iowa Code and the county/city rules and regulations.

<i>Percentage that responded “yes” to questions:</i>			
	CBOS	EHW	LBOH
Are you familiar with Iowa Code Chapters 137 and 455B?	32%	79%	43%
Are you familiar with rules of the Iowa Department of Public Health and the Iowa Department of Natural Resources?	34%	95%	42%
Does the local Board of Health have county/city rules and regulations consistent	88%	87%	89%

with state laws for the protection and improvement of public health?			
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Well over half of the CBOS and LBOH are unfamiliar with Iowa Code and state rules that pertain to environmental health programs but they are mostly certain that their county rules and regulations are consistent with these laws. Many of the LBOH members we interviewed in the field felt like they hired an environmental health worker to know the specifics of the law and it was unnecessary for them to be familiar with Iowa Code. The supervisors that we interviewed echoed the same sentiment. The EHW seem most familiar with state laws and regulations and it is clear that their perceptions on the environmental health risks in their county differ somewhat from the LBOH and differ greatly at times with the CBOS.

We also asked each group to tell us what year the CBOS approved the above rules and the most recent date that the rules had been amended. Again the answers varied among the three groups. Eighty percent of the LBOH respondents seemed to not know the answer to the question; 70% of the CBOS also did not seem to know the answer, while 28% of the EHW did not answer the question.

The Local Boards of Health

Chapter 137 of Iowa Code sets up the jurisdiction of local boards of health allowing for each county to have one. The Iowa Administrative Code 641 Chapter 77 establishes requirements of LBOH identifying its three core functions and 10 essential services relating to public health. Environmental health is just one of their many responsibilities. For 52% of the counties, a department other than the local Board of Health handles some of its environmental health programs. At the very least, every LBOH is required by law to be the administrative authority over private septic systems and private water wells.

Most counties have 5 BOH members as stipulated by Iowa Administrative Code. It is the authority of the County Board of Supervisors to appoint individuals to the LBOH. When asked if prior to a member's appointment to the local Board of Health, the CBOS explained his/her responsibilities, 53% of LBOH respondents answer "no," while 71% of CBOS respondents answer "yes" to this question. It is unclear from the survey whether the CBOS is explaining responsibilities prior to appointing individuals to the LBOH. What is clear is that a majority of LBOH respondents felt like they were not adequately informed to their responsibilities prior to accepting a position on the LBOH.

The Administrative Code also stipulates that LBOH meet at least quarterly with additional meetings when necessary. The respondents to this survey were not in agreement as to the frequency of the LBOH meetings.

When does LBOH routinely meet throughout the year?	CBOS	EHW	LBOH
<i>Once-a-month</i>	41%	35%	27%
<i>Once-a-month, plus additional meetings</i>	15%	9%	11%
<i>Quarterly</i>	23%	25%	20%
<i>Quarterly, plus additional meetings</i>	13%	22%	32%
<i>Every other month</i>	8%	8%	10%
<i>Once-a year, plus additional meetings</i>	---	1%	---

While it is not surprising that the CBOS have a different idea of when the LBOH meet, it is surprising that there is a difference between the environmental health worker and LBOH responses to this question. In many counties the EHW reports to the LBOH and should be aware of the monthly activities of the Board. The average EHW has been in their current position for 10 years. A second possible explanation for the variance among the three groups is that the LBOH does not uniformly meet throughout the year. The lack of a consistent schedule can lead to uncertainty among members and staff as to what is expected from the group and those who work with the group.

When asked whether the members of the LBOH and their staff are qualified to address the environmental health needs of the county, the majority of the respondents said “yes”. CBOS respondents were more likely to answer “yes” to this question than the other two groups:

<i>Percentage that responded “yes” to this question:</i>			
	CBOS	EHW	LBOH
Are members of the local Board of Health and their staff qualified to address the environmental health needs of the county?	95%	86%	87%

According to Iowa’s Administrative Code, LBOH are responsible for safeguarding the

community’s health. This goal is pursued through three core functions: assessment, policy development and assurance. They define “assessment” as the “regular collection, analysis, interpretation, and communication of information about health conditions, risks, and assets in a community.” “Policy development” is defined as the “development, implementation, and evaluation of plans and policies for public health in general and priority health needs in particular, in a manner that incorporates scientific information and community values and in accordance with state public health policy. “Assurance” is the “encouragement, regulation, or direct action so that programs and interventions that maintain and improve health are carried out.” Respondents were asked to assess the extent to which LBOH fulfilled these responsibilities in regards to the environmental health issues:

<i>Percentage that responded “yes” to questions:</i>			
	CBOS	EHW	LBOH
Does the local Board of Health adequately inform, educate, and empower people about health issues within their county?	80%	64%	86%
Does the Board of Health take a leadership role to adequately monitor, diagnose, evaluate and develop policy pertaining to environmental health programs?	86%	61%	84%

A little more than a third of the EHW sampled feel that the LBOH is not doing the job required of them. Whether the perception is accurate is less important than the fact that they view the Board in this light. The CBOS response is difficult to understand. In an earlier question when asked if they clearly understood the role of the local environmental health programs, 43% responded that they did not. So, the CBOS could be saying that in regards to environmental health programs, they are not clear as to the role of the programs in their county but they feel confident that the LBOH is doing a good job.

County Environmental Health Worker

According to IDPH records, there are 109 employed environmental health workers in the state of Iowa. A few of the larger counties have 4 fulltime employees while a small percentage of the smaller counties either share an employee with another county or go without an environmental health worker. For 49% of the counties, the environmental health worker is a fulltime county employee with several different job responsibilities such as emergency management, E911, zoning, etc. *Rural* counties and *Rural adjacent* to metro counties were more likely to have environmental health employees who are responsible for several different jobs in the county.

Although Chapter 137 of the Code of Iowa provides the LBOH with the authority to employ environmental health personnel to deliver services, every county seems to approach the hiring and supervision of their environmental health worker differently:

<i>Who is responsible for hire/supervision of the sanitarian?</i>			
	CBOS	EHW	LBOH
CBOS	51%	29%	45%
LBOH	36%	49%	41%
LBOH & CBOS	11%	16%	11%
Other	2%	6%	3%

The EHW seems to have a different idea of who hires and supervises the position than the LBOH and the CBOS. Perhaps these counties have not clearly defined each group's responsibilities in regards to their environmental health programs.

There is slight confusion as to how often the EHW in each county provides reports to the LBOH:

<i>How often does EHW provide reports to LBOH?</i>			
	CBOS	EHW	LBOH
Monthly	47%	40%	33%
Every other month	4%	6%	8%
Quarterly	35%	41%	37%
Other	14%	13%	22%

The EHW seems more aligned with the CBOS on this question than the LBOH. Do the three groups clearly understand what is expected of the EHW in regards to their position?

<i>Indicate how many hours a week is spent fulfilling sanitarian duties?</i>			
	CBOS	EHW	LBOH
Average hours per week	28	35	35

As stated above, 49% of the counties have EHW who have additional responsibilities. In a 40 hour week it is difficult to see how the EHW is able to spend 28-35 on sanitarian responsibilities as well as serve as county engineer, E911, emergency management agent, weed commissioner, etc. The following chart shows the additional programs and the percentage of EHW who report that they are responsible for these programs:

<i>Program</i>	EHW reported responsible for:
Engineer	6%
Zoning	35%
E911	14%
Emergency management	11%
Conservation board	1%

Weed commissioner	12%
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The next chapter looks more closely at the perceived environmental health risks in Iowa and the extent to which counties have a program to address the risk.

FOUR

PERCEPTIONS OF ENVIRONMENTAL HEALTH RISKS AND EFFECTIVENESS OF PROGRAMS

Respondents were asked to indicate the extent to which 13 environmental health conditions were risks in their counties using a six number scale that went from *not at all serious* to *extremely serious*. When the respondents did not mark an answer, we represent that as a *no response* rather than factoring it in as a missing value. In addition, they were to tell us if they had a program to address the problem and if the program was effective. This section continues to present the data from the perceptions of the three groups that were surveyed because this helps assess the relationship between the local board of health and the county board of supervisors to local environmental health programs and the ability of communities to deliver quality services. In addition, we looked at variations among counties based on the ISU Midwest PROfiles Rural/Urban Classification and found that there was none.

Lead-based Paint

A majority of the respondents seem to agree that deteriorating lead-based paint in older buildings is a *moderately serious* to *serious* problem in their communities. CBOS are slightly more likely to say that it is not at all a problem but for the most part the three groups seem to be in agreement as to the risk of lead-based paint.

<i>Deteriorating lead-based paint in older buildings</i>			
	CBOS	EHW	LBOH
Not at all serious	12%	4%	5%
Somewhat serious	22%	17%	16%
Moderately serious	17%	32%	26%
Serious	14%	18%	19%
Very serious	12%	10%	9%
Extremely serious	5%	8%	10%
No response	18%	11%	15%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	77%	50%	64%
Is this program effective in resolving the problem?	67%	28%	47%

Where they are not in agreement is whether the county has a program to address the problem and if the program is effective in resolving the problem. A substantially higher number of CBOS feel that they have a successful program that addresses the problem than EHW. Twenty percent fewer LBOH respondents felt like the program in place was effective in resolving the risks of lead-based paint in their communities.

Private Wells

A majority of all respondents reported that contamination of private wells by E. coli was a *moderately to extremely serious* problem in their county. EHW were slightly more likely to see this risk as more serious than the CBOS and LBOH. More than twice the number of CBOS and LBOH respondents than EHW failed to answer this question. That may suggest a lack of knowledge in this area or an uncertainty as to the public health risk.

<i>Contamination of private wells by E. coli</i>			
	CBOS	EHW	LBOH
Not at all serious	5%	7%	6%
Somewhat serious	15%	16%	21%
Moderately serious	25%	30%	32%
Serious	23%	17%	13%
Very serious	9%	14%	5%
Extremely serious	5%	9%	7%
No response	18%	7%	16%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	72%	83%	67%
Is this program effective in resolving the problem?	61%	66%	53%

It is curious why only 67% of the LBOH answered “yes” when asked if there was a program that addressed the problem of contamination of private wells by *E. coli*. Remember, one of the LBOH responsibilities as stipulated by the Code of Iowa is administrative authority over private septic systems and private water wells. So, either the EHW are mistaken as to whether there is a program or the LBOH and CBOS are unaware of the program in several counties.

Twenty-four percent of the EHW reported that the contamination of private wells by nitrates was a *very serious* to *extremely serious* problem in their county. Only 13% of the CBOS and 17% of the LBOH felt that the same way. Although the CBOS is ultimately responsible for approval of the environmental health programs in their county, where do they get their information on the risks if not from the EHW or LBOH? It is unclear from the differences in perspective if the two groups are looking at the same information regarding the environmental health problems in their counties.

<i>Contamination of private wells by nitrates</i>			
	CBOS	EHW	LBOH
Not at all serious	5%	2%	5%
Somewhat serious	15%	20%	12%
Moderately serious	26%	27%	28%
Serious	23%	20%	22%
Very serious	8%	14%	11%
Extremely serious	5%	10%	6%
No response	18%	7%	16%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	72%	86%	68%
Is this program effective in resolving the problem?	61%	58%	50%

Again, it is difficult to understand how there can be such a difference in opinion between these three groups as to whether there is a program in place that addresses specific problems when it is the role of the CBOS to approve programs as recommended by the EHW and LBOH.

For the most part all three groups do not view contamination of private wells by Atrazine as a significant environmental health risk in their counties although almost 1/4 of all the respondents failed to answer this question. If the *no response* represents a lack of knowledge in this area, it is somewhat alarming that 1/4 of the EHW, CBOS and LBOH surveyed do not have adequate information in which to answer this question. Such a response indicates a need for greater understanding of environmental health risks and appropriate training as to the risks in the local communities. In the next chapter, you will see that a majority of respondents feel their training is adequate but their lack of response on several of these important questions suggests that their knowledge is limited.

<i>Contamination of private wells by Atrazine</i>			
	CBOS	EHW	LBOH
Not at all serious	17%	19%	9%
Somewhat serious	19%	19%	18%
Moderately serious	22%	20%	21%
Serious	15%	13%	12%
Very serious	1%	4%	6%
Extremely serious	1%	1%	7%
No response	25%	24%	27%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	46%	27%	40%
Is this program effective in resolving the problem?	42%	22%	32%

The CBOS and LBOH seem to be in disagreement with the EHW as to whether there is a program in place to address this problem. One possible explanation of the difference in opinion might be that the EHW are not responsible for these particular programs in their county and hence are unaware of their existence.

Fifty-eight percent of the EHW feel that abandoned wells are a *serious to extremely serious* problem in their county while only 38% of CBOS and 32% of LBOH hold this opinion. The gap between what the CBOS and LBOH perceive as a problem and what the EHW see as a problem is possibly a bigger problem than the abandoned wells in their counties.

<i>Abandoned wells</i>			
	CBOS	EHW	LBOH
Not at all serious	11%	3%	7%
Somewhat serious	15%	10%	21%
Moderately serious	17%	22%	26%
Serious	28%	26%	18%
Very serious	5%	19%	6%
Extremely serious	5%	13%	8%
No response	19%	7%	14%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	87%	90%	81%
Is this program effective in resolving the problem?	77%	70%	65%

However, the three groups mostly agree on whether there is a program that addresses the issue and the effectiveness of the program. Unlike some of the other health risks discussed in this study, most counties seem to have an effective abandoned well program in place.

Sewage Systems

The Iowa Department of Natural Resources estimates that there are 200-300 rural communities in Iowa that lack a centralized wastewater treatment system. Fifty-six percent of the EHW respondents reported that inadequate community sewage systems are a *serious* to *extremely serious* issue in their county. Thirty-four LBOH respondents and 36% of the CBOS saw this problem as *serious* to *extremely serious*. It is difficult to understand from this survey why there would be such a difference in perspectives between the individuals who do the work and the groups that are in authority.

<i>Inadequate community sewage systems</i>			
	CBOS	EHW	LBOH
Not at all serious	13%	7%	12%
Somewhat serious	17%	12%	22%
Moderately serious	15%	12%	13%
Serious	15%	25%	16%
Very serious	17%	19%	11%
Extremely serious	4%	12%	7%
No response	19%	13%	19%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	56%	43%	59%
Is this program effective in resolving the problem?	46%	35%	49%

If the EHW is accurate in their depiction of the problem than by their accounts many counties are without an effective program to handle the very serious issue of inadequate community sewage systems.

In the situation of illegal surface discharge from private sewage systems, the EHW is more likely to see this as a serious problem in the county than the CBOS and LBOH. Although for a little more than 20% of counties, all three groups rate this as a *very serious to extremely serious* environmental health risk in their county.

<i>Illegal surface discharge from private sewage systems</i>			
	CBOS	EHW	LBOH
Not at all serious	12%	1%	6%
Somewhat serious	11%	12%	16%
Moderately serious	23%	21%	23%
Serious	19%	24%	19%
Very serious	14%	21%	13%
Extremely serious	4%	15%	9%
No response	17%	6%	14%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	73%	86%	73%
Is this program effective in resolving the problem?	57%	57%	53%

More than two thirds of the counties have programs in place that address the issue of illegal surface discharge from private sewage systems.

Food Safety

This is another area where the three groups seem to have the same perspective on the seriousness of improperly prepared and served food in their county. Respondents from *urban/metro* counties were much more likely to list this as a more serious problem than their colleagues from *rural adjacent* and *rural* counties.

<i>Illness resulting from improperly prepared/served food</i>			
	CBOS	EHW	LBOH
Not at all serious	35%	19%	22%
Somewhat serious	16%	25%	28%
Moderately serious	12%	15%	13%
Serious	6%	4%	6%
Very serious	5%	9%	6%
Extremely serious	1%	4%	5%
No response	25%	24%	20%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	46%	42%	49%
Is this program effective in resolving the problem?	40%	33%	44%

Less than 50% of the counties have a food safety program in their county.

Air quality

Indoor air quality is seen by the three responding groups to be the least significant environmental health risk when rated by its seriousness and when compared to the other environmental health risks in their county.

<i>Indoor air quality</i>			
	CBOS	EHW	LBOH
Not at all serious	28%	16%	20%
Somewhat serious	28%	22%	22%
Moderately serious	16%	24%	15%
Serious	7%	13%	11%
Very serious	1%	3%	2%
Extremely serious	---	---	3%
No response	20%	22%	27%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	30%	28%	24%
Is this program effective in resolving the problem?	26%	16%	19%

Less than 1/3 of the counties have programs that address issues of air quality. It would be interesting to know what specific problems those programs are addressing. Less than 50% of the programs in place are reported as being ineffective.

Agricultural Contaminations

One of the more controversial issues facing rural Iowa today is that of agricultural contaminations. Over the last five years there have been numerous media attention to the issue of animal confinement systems and water and air pollution. CBOS in areas where these confinements exist told us that they receive lots of complaints on the part of their citizens. The regulation of animal confinement systems and agricultural run-off is mostly in the hands of state officials with county officials having limited control.

Thirty-nine percent of the EHW, 37% of LBOH and 29% of the CBOS reported that surface/groundwater contamination by animal confinement systems was a *serious to extremely serious* risk in their county. It is difficult to know from this study what information they are using in which to assess the risk.

<i>Surface/groundwater contamination by animal confinement systems</i>			
	CBOS	EHW	LBOH
Not at all serious	9%	9%	7%
Somewhat serious	22%	15%	12%
Moderately serious	22%	22%	24%
Serious	10%	20%	16%
Very serious	15%	11%	10%
Extremely serious	4%	8%	11%
No response	18%	15%	20%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	47%	18%	38%
Is this program effective in resolving the problem?	39%	11%	28%

Since the regulation of animal confinement systems mainly rests with the state it would be interesting to hear from the 47% of CBOS who say they have a moderately successful program to address this issue, what exactly they are able to do in their counties to reduce the risk.

The issue of surface water contamination by agriculture field run-off does not seem to get the same notoriety as the issues surrounding animal confinement systems. However, the groups responsible for environmental health systems rate this as serious if not slightly more serious than the animal confinements systems. Twenty-six percent of CBOS, 36% of LBOH and 41% of EHW rated agriculture field run-off as a *serious to extremely serious* risk to surface water.

<i>Surface water contamination by agriculture field run-off</i>			
	CBOS	EHW	LBOH
Not at all serious	6%	12%	7%
Somewhat serious	21%	11%	13%
Moderately serious	26%	23%	21%
Serious	17%	23%	17%
Very serious	7%	16%	9%
Extremely serious	2%	2%	10%
No response	21%	13%	23%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	28%	13%	31%
Is this program effective in resolving the problem?	22%	10%	23%

Once again, the variation in responses between the CBOS, LBOH and EHW is difficult to understand. It is possible that counties have programs in place that do not come under the jurisdiction of the EHW and that might explain the differences in perspectives. The variation in perspectives does seem to suggest that communication among the major participants in the environmental health system is weak in many of the counties throughout Iowa.

The fact that one fifth of all the respondents were not able to address the issue of pesticide exposure as a risk in their counties is disturbing. There obviously is no assessment in place to even weigh the impact of pesticide use on public health in their communities. It would be wrong to interpret a *no response* as an indication that it is not at all serious when that is one of the choices. On 3% of the surveys, respondents wrote that they did not feel qualified to answer the questions on this particular page as well as the rest of the survey.

Slightly over 50% of all respondents feel that exposure to pesticides are a *moderately serious to not at all serious* risk to their communities.

<i>Exposure to pesticides</i>			
	CBOS	EHW	LBOH
Not at all serious	14%	12%	8%
Somewhat serious	20%	15%	19%
Moderately serious	21%	27%	20%
Serious	16%	14%	14%
Very serious	8%	10%	9%
Extremely serious	1%	1%	7%
No response	20%	21%	23%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	28%	9%	28%
Is this program effective in resolving the problem?	22%	8%	22%

Three times the percentage of CBOS and LBOH respondents said that they had a program to resolve the issue of exposure to pesticides than EHW. There is obviously a knowledge gap between what the EHW understands to be the environmental health programs in their county and what individuals in the two authoritative groups see as the issues and programs. It is hard to discern from this survey why such a gap exists but easy to conclude that the three groups do not adequately share information among themselves.

Recreational Waters

All three groups seem to think that swimming pools and recreational waters held a minimal environmental health risk to their communities. The almost 10% of the counties who rated this as a *serious to extremely serious* environmental health risk were *metro/urban* areas which have several public swimming pools or locations of recreational waters who have been experiencing some pollutant issues over the last few years.

<i>Swimming pools and recreational waters</i>			
	CBOS	EHW	LBOH
Not at all serious	28%	17%	21%
Somewhat serious	28%	28%	23%
Moderately serious	15%	21%	18%
Serious	4%	4%	10%
Very serious	1%	3%	3%
Extremely serious	1%	1%	2%
No response	23%	26%	23%
	<i>Percentage that responded "yes"</i>		
Do you have a program that addresses this problem?	46%	47%	47%
Is this program effective in resolving the problem?	42%	41%	38%

Perhaps one of the reasons that swimming pools and recreational waters are not seen as a serious environmental health risk is because 40% of the counties have effective programs to resolve problems.

Differing Perspectives

The above section does not paint an accurate picture of the environmental health programs in Iowa but it does give us a better understanding of the relationship among the LBOH, CBOS and EHW. The greatest barrier to effective environmental health programs through Iowa seems to be the lack of a cohesive perspective on the risks and needs in each county. The issue of poor communication was stressed during the field visits to three specific counties during August and September of 2001. The participants in these meetings told us that environmental health programs and policies were often fragmented because environmental health

is split all the way from the federal agencies to the local communities. Some of their greatest concerns were poorly trained environmental staff and poorly educated County Boards of Supervisors and local Boards of Health. They stressed that there was a lack of communication on both the local and state levels. They also stressed that there was a lack of public awareness, which they felt resulted in a lack of adequate funding for the necessary programs to address the serious environmental health risks in their communities.

The next section looks more closely at the resources available to counties for the environmental health system. Specifically it looks at the average budgets for environmental health programs, the allocation of these funds from specific programs and the extent to which respondents feel they have adequate training and staff to fulfill their responsibilities.

FIVE

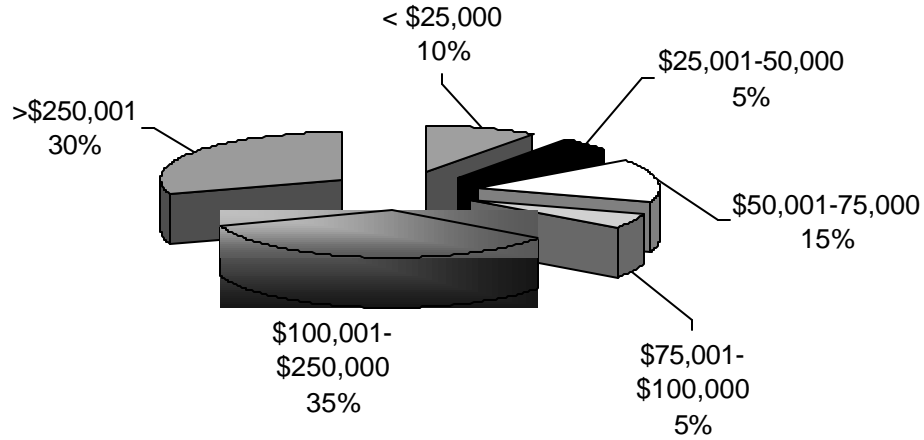
EVALUATION OF RESOURCES FOR THE ENVIRONMENTAL HEALTH PROGRAMS

This chapter explores budgetary and training information as reported by the respondents to the survey. The budgetary information was compiled using only the responses of the environmental health workers because the other two groups gave the total public health budgets for the county rather than just the budget for the environmental health programs. The questions concerning budgets were designed to gain a general idea of the available environmental health resources rather than a detailed account of expenditures. The financial data is presented using ISU's Midwest PROfiles Rural/Urban Classification. The organization of the financial data in this way offers the best perspective of each county's ability to adequately meet the needs of their community in regards to environmental health. Later in this chapter, we look at questions that concern human resources and training needs from the perspectives of the EHW, CBOS and LBOH.

Cost of Providing Programs

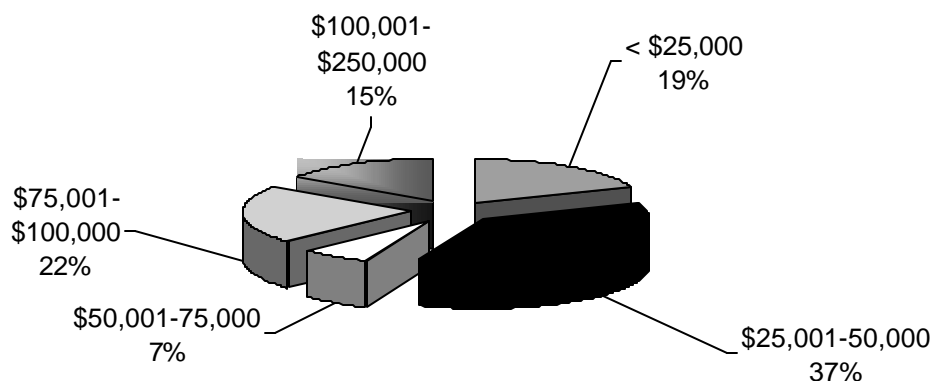
We asked the respondents to give a breakdown of their county's environmental health allocations and the sources of the revenue. Fifty-five percent of the counties in Iowa have environmental health budgets of \$50,000 or less. The following three graphs show the budgetary differences among *urban/metro*, *rural adjacent* and *rural* counties.

Metro/Urban Range of EH Budgets - \$250K Average



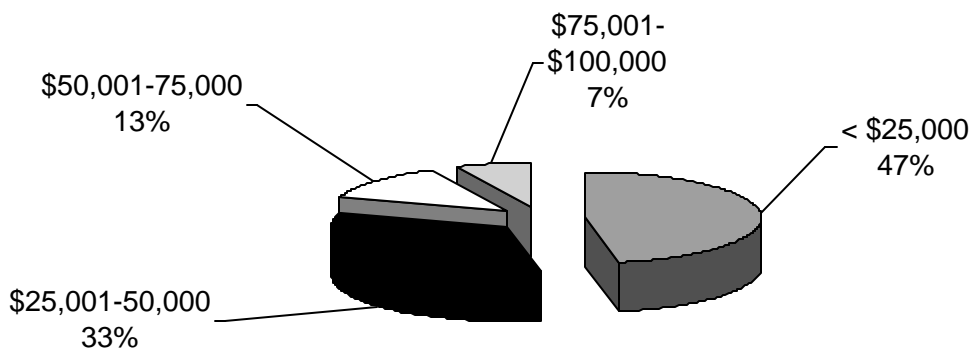
The average budget for the *urban/metro* counties is \$250,000. Thirty percent of these counties have budgets of \$75,000 or less with 10% having budgets of less than \$25,000. Thirty percent of their budgets are over \$250,000. Many of these counties have more than one environmental health employee and have to meet the needs of an urban base of 20,000 people or more and half of the counties in this category have metropolitans. Several of the programs in these counties contract with the smaller counties in their regions to enable them to meet their local environmental health needs. Only 39% of the respondents from *urban/metro* counties felt like they had the necessary financial resources to meet the environmental health needs in their counties.

Rural Adjacent Range of EH Budgets - \$65K Average



When compared to the *metro/urban* counties, the average yearly budgets for the *rural adjacent* counties drops dramatically to \$65,000. Fifty-six percent of these counties have yearly budgets of \$50,000 or less. Most of these counties employ at least one environmental health worker. Eighty-three percent of the EHW reported that they had responsibilities in their county beyond their job as an environmental health employee. Forty-eight percent of the respondents from *rural adjacent* counties felt they have the necessary financial resources to address the environmental health needs of their counties.

Rural Range of EH Budgets - \$33K Average



The average yearly budget for rural counties is \$33,000. Twenty-three percent of the counties have budgets of \$15,000 or less. Fifty-seven percent of these counties have environmental health workers who reported that they are responsible for other jobs within the county such as emergency management, zoning or E911. Fifty-two percent of the respondents from *rural* counties felt like they had the necessary financial resources to meet the environmental health needs in their counties. Sixty percent of their budget comes from grants or the state.

When we look at the yearly budgets and the funding resources, we see that the counties with fewer dollars available to them rely more heavily on the state and grants to address their environmental health needs. The table below gives the breakdown of funding sources for the three county classifications:

<i>Breakdown of environmental health Allocations</i>			
	Urban/Metro	Rural Adjacent	Rural
Grants/State	23%	43%	60%
User Fees	32%	22%	13%
Taxation	45%	35%	27%

The *urban/metro* counties get a higher percentage of their yearly budget from taxation and user fees than the other counties. This makes the environmental health programs less vulnerable to federal and state budgetary fluxes. *Rural* counties have almost half the amount of funds available to them as the *rural adjacent* counties but not half the amount of responsibilities. The *rural* counties also have a high reliance on the state and grants, which makes already stressed budgets vulnerable to state and federal budgetary cuts. CBOS and LBOH in the more rural counties stressed to us that they were extremely reluctant to charge their citizens user fees for environmental health services. They were also extremely reluctant to issue fines and penalties for violators of state and county regulations. The *rural adjacent* counties are much more likely

to charge fees and issue fines and penalties because they are experiencing a growth of housing development as the metro areas continue to sprawl.

Representatives of county board of supervisors were much more likely to report they had the necessary resources available to address the environmental health needs of their county. Almost half of the CBOS respondents who told us that they had the funds they needed to address their county’s environmental health needs live in *rural* counties. Since 43% of all of the CBOS reported not understanding the role of the environmental health programs in their communities, it is difficult to understand how they know they have the necessary resources to address these needs. At least half of the counties feel like they are understaffed in regards to environmental health programs.

To Address the Environmental Health Needs of the County, does your LBOH have necessary			
	CBOS	EHW	LBOH
	Percentage that responded “yes” to questions:		
Financial resources?	66%	36%	39%
Equipment?	64%	42%	50%
Staffing?	71%	43%	57%

Training Needs

According to interviews with LBOH and EHW, one of the greatest barriers to effective environmental health programs in their areas is the lack of trained personnel and LBOH members and the lack of uniform regulations throughout specific regions. When asked about training needs on this survey, the majority felt like the EHW was adequately trained to meet the demands of their job. What this survey does not ask is if the job is adequately addressing the environmental health risks in their communities. Again, CBOS seem out of touch with the feelings and concerns of the EHW and LBOH as a higher percent of them reported that they felt the EHW received adequate training and had enough time during the workweek to train. When

one considers that the EHW spends an average of 33 hours a week on environmental health services and that 56% of them perform jobs in their county beyond the environmental health services, it is difficult to understand how they have time to adequately train for any of those jobs

<i>Percentage that responded “yes” to questions:</i>			
	CBOS	EHW	LBOH
Does the local EHW receive adequate training to meet demands of job?	94%	81%	81%
Does local EHW have time needed during workweek to train adequately?	86%	63%	68%

It is alarming that 41% of the LBOH respondents felt like they lacked the proper training and education to address the environmental health needs in their counties. In 48% of the counties, the EHW also seem to lack confidence in the knowledge of the LBOH. A majority of the respondents felt like their county offered the EHW adequate training to do the job although the LBOH were less likely to say this was true. It is unclear as to the nature of local training and who is doing the training.

<i>Percentage that responded “yes” to questions:</i>			
	CBOS	EHW	LBOH
Is there adequate training available for the EHW in your county?	71%	76%	62%
Does your LBOH have the training/education to address the environmental health needs of the county?	81%	52%	59%

The answers to the questions below are somewhat confusing. The majority of the respondents feel like the state agencies offer the necessary technical assistance but only a little more than half of the EHW and LBOH find the materials that come from the state easy to understand. Seventy-two percent of the CBOS report that state agencies supply easily

understood materials in which to educate LBOH and CBOS on environmental health risks and yet 43% are still uncertain as to the role of the environmental health program in their county.

<i>Percentage that responded “yes” to questions:</i>			
	CBOS	EHW	LBOH
Do state agencies offer the necessary technical assistance to your LBOH and EHW to address the environmental health needs of the county?	67%	67%	62%
Do state agencies offer training and education at convenient locations for your EHW to attend?	75%	65%	66%
Do state agencies supply easily understood materials in which to educate LBOH and CBOS on environmental health risks?	72%	56%	57%

Whose Responsibility Is It?

The Code of Iowa places the responsibility of environmental health in the hands of the CBOS and LBOH. As this study suggests, the CBOS and LBOH (and EHW) have at times dramatically different perspectives on the environmental health risks in their counties and the ability of their programs to effectively resolve these risks. There is a broad gap in many instances between the opinions of the CBOS and that of the LBOH and EHW. The Code specifically set up this system so that the LBOH and EHW would advise the CBOS as to the environmental health risks and needs in their county. The results of this survey suggest that there is a breach in the flow of communication among these three groups.

The final question on the survey asked the respondents to tell us who *should* address the environmental health risks in their counties and fund the environmental health programs. Almost every respondent circled more than one answer.

Whose responsibility should it be to address environmental health risks and fund environmental health programs?			
	CBOS	EHW	LBOH
Federal Government	60%	54%	50%
State Government	77%	84%	85%
County Government	46%	70%	63%

The fact that 54% of the CBOS felt it should not be the responsibility of county government to address environmental health risks and fund environmental health programs perhaps explains their seemingly lack of understanding of the role of the environmental health programs in their areas.

SIX

A LOCAL ENVIRONMENTAL HEALTH SYSTEM IN CRISIS?

Every community in Iowa faces the ongoing and ever increasing responsibility to provide environmental health programs to their populations. The environment in which environmental health systems exist is ever changing, initiating the need for on-going evaluation and adaptation of the system. This research provides baseline data needed to direct the next stage of the local and state environmental health strategic planning process.

Summary

This research was designed to more clearly understand the current state of environmental health systems in Iowa.

Current Environment

- In 1996, an ISU study revealed that 84% of Iowa citizens surveyed believed surface water pollution was a serious problem
- A 1998 Iowa Drinking Water Supply study reported 408 maximum contaminant level violations in Iowa's public water supplies
- There are no minimum requirements for becoming a local environmental health official in Iowa
- There are 109 local environmental health employees in Iowa

- Every county is required by law to have a local board of health with a minimum of five members under the jurisdiction of the CBOS
- 41% of CBOS are farmers; 51% of LBOH are medical professionals
- At the very least, every LBOH is required by law to be the administrative authority over private septic systems and private water wells.
- Iowa DNR estimates that there are 200-300 rural communities in Iowa that lack a centralized wastewater treatment system

Current Organization of Programs

- 53% of LBOH reported not being adequately informed of responsibilities by CBOS prior to appointment to board; 71% CBOS said that their LBOH was adequately informed of responsibilities
- A little more than 1/3 EHW feel LBOH were not doing job required of them
- 55% of EHW feel the CBOS does not understand the role of environmental health programs in counties; 43% of CBOS report not understanding the role of local environmental health programs
- In 49% of the counties, EHW are fulltime county employees with several different job responsibilities
- Uncertainty as to whether it is CBOS or LBOH responsibility to hire and supervise the county EHW

Current Level of Programs

There is little consensus among the CBOS, LBOH and EHW as to the health risks in their county and if there is an effective program to address the risks. Look at the perceptions toward the following three environmental health risks:

- 44% of EHW felt that contamination of private wells by nitrates was a *serious to extremely serious* problem in their county; 37% of CBOS had same concerns
- EHW report 86% of their counties have a program to address nitrate contamination of private wells but only 50% of these programs are effective
- CBOS reported a fewer number of nitrate contamination of private well programs (72%) but felt like 80% of these were effective
- 58% of the EHW reported abandoned wells as a *serious to extremely serious* environmental health risk in their county – only 32% of LBOH had same concerns
- 86% of the counties report a program to address abandoned wells with 83% of these programs effectively resolving the problem
- 31% of EHW felt that inadequate community sewage systems was a *very serious to extremely serious* risk to their areas; 21% of CBOS and 18% of LBOH agreed with this assessment
- A little more than half of the CBOS and LBOH reported having an 80% effective program to address community sewage systems while only 43% of the EHW said there was such a program in place

Current Cost of Providing Programs

- 55% of counties have yearly environmental health budgets of \$50,000 or less
- 30% of *urban/metro* counties have yearly environmental health budgets of \$75,000 or less; 39% of *urban/metro* counties felt environmental health funds were inadequate to meet needs
- 57% of *rural adjacent* counties have yearly environmental health budgets of \$50,000 or less; 52% of *rural adjacent* counties felt the funds were adequate
- 23% of *rural* counties reported yearly environmental health budgets of \$15,000 or less; 48% of *rural* counties felt these funds were adequate

- 60% of *rural* county environmental health budgets comes from grants or state funds
- Half of the CBOS who felt environmental health funding was adequate live in *rural* counties
- 41% of LBOH felt they lacked proper environmental health training and education; 81% of CBOS felt the LBOH had environmental health training and education necessary
- 48% of EHW lack confidence in LBOH awareness of environmental health needs
- 44% of EHW found the state did not supply easy to understand materials concerning environmental health
- 54% of CBOS indicated that they think environmental health should not be the responsibility of county government

Voiced Issues by Environmental Health Workers

- Poorly trained environmental health staff and LBOH
- Uninformed CBOS
- Surface and ground water quality
- Inconsistent regulation enforcement
- Sewage and waste water disposal
- Confined animal feeding operations

Voiced Issues by Local Board of Health Members

- Lack of public awareness

- Interference of special interest groups
- Aging population in Iowa
- Inability to communicate adequately with CBOS
- Lack of awareness of environmental health risks on part of CBOS
- State Board of Health is not flexible enough for county needs

Voiced Issues by County Board of Supervisors

- Inadequate funds available for environmental health programs
- Lack of good communication between state and local governments
- Need more training for EHW
- Too many state regulations and interference with local programs
- Lack of understanding of role in environmental health programs

Improving Iowa's Environmental Health System

Problems with individual counties are smoke signals that the statewide system needs attention. It is the responsibility of every community to identify strengths and weaknesses in their environmental health system, implement modifications and optimize programs for the health of all their citizens. The central issue is whether a community's environmental health system results in optimal individual health (clean water, clean air) and reduction of illness due to environmental factors. Each system should be based on local needs and be consistent with regional, state and national standards. The success of the system requires multi-jurisdictional participation and planning. The community must be willing to fund both the program it develops and to review its efficacy. There must be established goals to measure the capacity of the system in order to inform the system of how well it is meeting its goals so that adjustments can be made to the system before it fails. Strong quality assurance and continual systems evaluation is the hallmark of every successful existing system.

As important as it is to look at issues that surround environmental health, these issues obviously signal that the system itself needs attention. In order to understand environmental health as a system, it is necessary to look at the components that make up the system. The state of the system in this case is its capacity to assess and control the impact of people on their physical environment as well as the impact of the environment on them. The inputs to the system include physical equipment, number of personnel (EHW), participants (CBOS & LBOH), supplies and finances. The outputs include all of the inputs that are expended or depleted, including personnel who leave the system and the depletion and pollution of natural resources such as water. The previous chapters of this report provide clear data on inputs and outputs as well as the environment in which the system exists.

Negative feedback loops control the inputs and outputs, either of which can be adjusted to maintain the system capacity. In order for the feedback loops to work, there must be an established goal to measure capacity of the system. The goal in this case might be the establishment of effective programs to address contaminated wells and inadequate sewage systems within your service area. Negative feedback loops can be designed to inform the

system of how well it is meeting its goals so that adjustments can be made to the system before it fails. Information flows are one important way to effect change in a system. Weak information flow is the greatest barrier to improving local environmental health systems in Iowa. With the establishment of a goal, new information flows may be needed to monitor the progress toward or away from that goal. Who receives that information and what they do with it will greatly affect the system. In this situation, it is clear that the role and responsibilities of the CBOS, EHW and LBOH need to be discussed, negotiated, clearly stated and followed. Frequent and accessible information is imperative to a system that is set up to be self-monitoring.

Here are your choices:

- Do nothing and the system will change anyway (someone will come in and change it)
- Move ahead and change the system – you can design and develop a system that is rooted in local needs and implemented by you
- Or, anything in between the first two options

The four most powerful ways to affect a system are:

- Change the rules of the system
- Re-organize the system
- Set new goals for the system
- Change the mindset out of which the system is built (most powerful of all)

Change the rules of the system

The rules of the system define its scope, boundaries and degrees of freedom. Some of the rules that affect Iowa's environmental health programs are beyond the scope of the local system – federal and state environmental health regulations would be one example. State agencies such as Iowa Department of Public Health and the Department of Natural Resources need to supply clear guidelines to environmental health risks, state laws, rules and expectations.

An example of rules that can be changed is the establishment of clear guidelines as to the supervision and responsibilities of the local EHW.

Re-organize the system

The most stunning ability of humans is the power to re-organize. Humans are capable of adapting to changes by changing their social structures. Sometimes this happens over long periods of time, such as the trend toward urbanization in response to technological advances in agriculture. Other times the change is quick and dramatic, such as the re-organization of school districts in response to falling enrollments. The most compelling reason to re-organize is to better meet the goals of the system:

- Effective feedback loops need to be developed so that environmental health risks are being appropriately and accurately monitored and evaluated.
- Key participants in the environmental health system need to redefine the communication between the EHW, LBOH and CBOS so that those in power can make informed decisions.
- Counties need to consider sharing services and programming regionally.
- State agencies need to address the ways in which they train local environmental health participants including the training of CBOS.

Set new goals for the system

Too often the goals of the system are vague or non-existent. People within the system don't recognize or are unfamiliar with the goals of the entire system. Individuals confuse their own personal goals with the goals of the system. The data certainly suggests that the CBOS, LBOH and EHW have different goals for the environmental health program in their counties. If the goal for an environmental health program is to use the least amount of tax dollars possible and encourage the expansion of agri-businesses, it produces a very different system than one that sets as its goal to provide top environmental health services to all citizens in the county. To use the systems approach to problem solving, setting the goals of the system is a top priority:

- Consider how large you want the system to be – county, regional, etc.

- Consider the role of the public in environmental health risks
- Honestly evaluate county's ability to address environmental health risks
- Do not be afraid to admit weaknesses

Change the mindset out of which the system is built (Paradigm)

Goals are set to line up with paradigms, underlying belief systems about how the world works. If everyone within the system is happy with the goals that are set, they most likely share the same mindset. If some are unhappy and the system never seems to be fully functional, it is likely that some parts of the system are operating under different paradigms. This study shows the ways in which the LBOH, CBOS and EHW are functioning under different paradigms. Until those differing paradigms are revealed and examined, it is unlikely that the goals will be agreed upon and that the system will become fully functional.

Creating common goals

This research provides a clear picture of the present state of the environmental health systems in Iowa. The next step is to assess the nature of the conflict among county environmental health participants in regards to the environmental health programs. Once the assessment of conflict has been completed, attempts need to be made to reduce or resolve it.

All the participants in Iowa's environmental health system from state legislators to state agencies, boards of supervisors to boards of health, environmental health workers to everyday citizens need to appreciate the long-term implications. If an unfulfilled local environmental health system fails to assess and control the impact of people on their physical environment and conversely the impact of the environment on people, the results will directly affect the quality of our water, our air, our food and, ultimately, the quality of our lives.