

HEALTH IMPACTS OF  
ENVIRONMENTAL POLLUTION IN  
ENERGY-DEVELOPMENT  
IMPACTED COMMUNITIES

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HEALTH IMPACTS OF  
ENVIRONMENTAL POLLUTION IN  
ENERGY-DEVELOPMENT  
IMPACTED COMMUNITIES

Final Report  
Phase II

Prepared for the  
Office of Energy Activities  
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Region VIII  
Denver, Colorado 80203

Under Contract No. 68-01-1949  
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## PREFACE

This report summarizes activities conducted during Phase II of a study on Health Impacts of Environmental Pollution in Energy-Development Impacted Communities. The work was performed by Copley International Corporation (CIC) under Contract No. 68-01-1949 with the Office of Energy Activities, Environmental Protection Agency (EPA), Region VIII, Denver, Colorado. The scheduled period of performance for this phase of the project was April 5, 1977 through November 5, 1977.

### Project Participants

This project was conducted under direction of Melvin H. Goodwin, Jr., Ph.D., Epidemiologist, Director of Health Studies, Copley International Corporation. Other participants included the following:

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- . Julie Jensen, Manuscript Typist, CIC
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Officer for the Environmental Protection Agency, for his guidance and attention throughout the course of this work. Special thanks also are due to the individuals and organizations who provided information and reviewed material. The principal contributors are listed in the appendices. Many others, however, contributed time and effort to this study. This invaluable assistance is sincerely appreciated.



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## SUMMARY

A previous study of Health Impacts of Environmental Pollution in Energy-Development Impacted Communities was extended to evaluate conditions in specific communities. The communities selected for study represented various conditions of impact, sizes, geographic locations, and extent of experience in dealing with health impacts. Information was obtained concerning the health-related problems that occurred in the study communities and the methods employed to cope with these problems.

The most significant problems were related to rapid community growth and were not characteristic of either energy developments or geographic locations. The principal health issues were the provision of adequate municipal services and personal health services. Municipal services included water supply, sewage disposal, solid waste disposal, and environmental services. The most prominent issues related to personal health services concerned behavioral problems, mental health, preventive health programs, and resources for treating disease and illness. In many communities the real or apparent need for physicians and hospitals was perceived as the most important problem.

Communities that have coped successfully with health and other impact problems have done so through an orderly process of

planning. Communities that have failed to deal effectively with impacts have done no planning or inadequate planning. The most severely impacted communities, those among the first affected during the current surge of energy developments, had little opportunity for advance preparation to reduce impacts. Most of these communities have, however, made spectacular progress in alleviating undesirable conditions by concerted community effort. Many recent developments make the repetition of severe impacts unlikely or at least unnecessary for other communities. Concepts of industry-community responsibility favor collaboration and foster mutual concern in avoiding undesirable impacts. State and local governmental agencies have gained experience and support. Considerable forces have been mobilized to assist impacted communities.

Assistance in dealing with health and other impacts is generally available to all affected communities. Initiative in obtaining such assistance and in instigating arrangement for effective planning to do so must come from the individual communities. Most communities wish to initiate this process and are progressing in planning and implementation of programs.

This project was designed to provide further assistance to communities concerned with alleviating health impacts resulting from energy developments. Three products were developed for this purpose:

- . A report for use at the community level. "Handling Health Impacts--Suggestions for Communities Impacted by Energy Developments"
- . A slide series, with narrative. "Health Effects Associated with Energy Developments"
- . A collection of formats and protocols. "Procedures for Evaluating Health Impacts Resulting from Energy Development"



## INTRODUCTION

### Purpose of the Study

The overall purpose of this study was to assist the Environmental Protection Agency in evaluating the environmentally related health impacts in communities affected by the development of energy resources. The work was conducted in Federal Region VIII which includes the states of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. During the first phase of this study, conducted from January 5 through September 5, 1976, the following work was performed:

- . Procedures were developed for appraising health impacts in affected communities and the relative extent of impacts was determined.
- . The scope and adequacy of pertinent health information available in state repositories were determined and readily available material was summarized and evaluated.
- . The potential health impacts resulting from development of energy resources were identified and evaluated.
- . Approaches and economic considerations in providing health services in communities affected by energy developments were defined.
- . Formats and protocols were developed as a Procedures Manual for collecting and consolidating data needed for adequate planning to prevent or reduce adverse health effects related to energy developments.

Results of these activities were summarized in a report to EPA.<sup>1</sup>

Phase II was designed to extend the work accomplished in Phase I by obtaining more specific information from representative impacted communities. This information was to serve as the basis for a report on community strategies for dealing with health impacts. The report was to be designed for use at the community level by elected officials, health professionals, and lay persons who were confronting or anticipating similar impact situations. The deliverable products initially anticipated were the report just mentioned and a series of 35mm slides to be used in oral presentation of the substance of the report on community strategies.

During the course of this work, a strong consensus was apparent concerning guidelines, suggestions, and other materials intended for use at the community level. Most of the available material was regarded as forbidding because of length or complexity, or both. There was repeated expression from many sources indicating that information developed for local use should be brief enough to be read within 30 minutes and sufficiently straightforward to be easily understood by the intended audience. With these and similar considerations in mind, the report on community strategies was prepared as a series of suggestions for dealing with health impacts. These suggestions may be used for training and orientation for a variety of groups. The slide

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<sup>1</sup>Copley International Corporation. 1976. Health impacts of environmental pollution in energy-development impacted communities. A report prepared for the Office of Energy Activities, Environmental Protection Agency, Region VIII, Denver, Colorado. 2 vols. (An Executive Summary is available.)

series was cast in the same way and complements the suggestions. Care was taken to assure that the suggestions were compatible with procedures used or contemplated by the responsible official agencies concerned. The suggestions are included in Appendix A under the title "Handling Health Impacts--Suggestions for Communities Impacted by Energy Developments." The slide series is provided separately. The narrative to accompany the slide series is provided in Appendix B.

In addition to evaluating community experiences and developing the suggestions for dealing with health impacts, Phase II also involved revision of the Procedures Manual developed during Phase I. This Manual was prepared to meet the clearly defined need of communities for formats and procedures that could be used to evaluate the extent of health impacts and the availability of resources to reduce them. Work conducted during Phase II was designed to assess the usefulness of the Manual to impacted communities and to the official offices involved. The revised Manual is provided separately.

#### Content of This Report

On the following pages the approaches used in this study are described. Annotations are provided for the community strategies evaluated during the course of this work. Obviously effective procedures are so identified. Programs available to assist the impacted communities are listed and brief descriptions of selected programs are included with the Suggestions in Appendix A.



## METHODS AND PROCEDURES

### Objectives

Three objectives were pursued to accomplish the purpose of the second phase of this study as outlined in the Introduction.

These objectives were:

- . To determine the nature and extent of health-related problems experienced by communities impacted by energy developments and to identify the measures undertaken to cope with them.
- . To ascertain the usefulness of the Procedures Manual, developed during Phase I, and revise as necessary to assure maximum usefulness to communities in dealing with health-related problems.
- . On the basis of results obtained in accomplishing the above objectives, to prepare suggestions for community actions to cope with adverse health effects.

### Work Plan

Details of activities and the schedule of performance are outlined in a Work Plan prepared in support of this project. That Plan should be consulted for more specific information than is provided here. The following summary provides a general outline of procedures.

### Local Participants and Contacts

During the first phase of this study, the principal sources

of information were identified and contacts were developed with persons primarily at the state and regional level. Since Phase II involved study of specific communities and planning areas, efforts were made to solicit participation of individuals, governmental agencies, and industries that worked directly with communities or had access to first hand information concerning them. The following were identified as the primary source of community-specific data and information:

- . Regional and multistate agencies
  - Environmental Protection Agency - Region VIII
  - Department of Health, Education, and Welfare  
Region VIII
  - Regional Center for Health Planning
  - Department of Interior - The Oil Shale Environmental Advisory Panel
  - Old West Regional Commission
  - Four Corners Regional Commission
  - Western Governors' Regional Energy Policy Office
  
- . State agencies
  - Planning offices or departments
  - Energy offices
  - Health departments
  - Health planning offices
  - Departments of community affairs
  - University institutes
  - Bureaus of business or economic development
  - Cooperative extension services
  
- . Local agencies
  - Planning offices
  - Health systems agencies
  - Industrial councils
  - Public health agencies
  - Mental health agencies
  - Public assistance programs
  - Industrial organizations
  - Impact planners

The specific organizations and representatives that participated in this work are included in the list with Appendix A.

## Selection of Study Communities

Criteria. Attention was given to selecting communities representing various intensities of health impacts, as determined during Phase I. Other factors considered were: size of population, planning competencies, type of health effects, and length of experience in dealing with health impacts. A limiting factor was the availability of information concerning the community. If data were not accessible, or could not easily be obtained, the community was not considered for study.

Selection of Communities. On the basis of information available earlier in the study, a list of candidate communities was compiled and grouped by states. The list then was referred to one or more state planning offices for review. The reviewers were informed of the criteria for selection and requested to suggest revisions on the basis of their current familiarity with local situations. The list of communities selected for study is shown in Table 1.

## Sources of Information

Data and information were collected by three principal means as indicated below. The sources of information available for the study communities are indicated in Table 1.

Literature. A thorough search was made of regional publications pertinent to this study. In addition, local participants and contacts were asked to identify publications, reports, drafts, or data related to specific communities or sub-state regions. These requests were made by correspondence, by telephone, or

Table 1. Communities Included in Study of Health Effects Associated with Energy Developments

<u>Colorado</u>		<u>Utah</u>	
Craig	I, O	Beaver	R, I
Grand Junction	R, I, O	Castle Dale	R, I, O
Meeker	I, O	Price	R, I, O
Rangley	R, I, O	Roosevelt	R, I, O
Rifle	I, O	St. George	R, I, O
		Vernal	R, I, O
<u>Montana</u>		<u>Wyoming</u>	
Ashland	R, I	Douglas	I, O
Birney	R, I	Evanston	I
Circle	R, I	Gillette	R, I, O
Colstrip	R, I, O	Hanna - Elmo	I, O
Decker	R, I, O	Kenmerer	I, O
Forsyth	R, I, O	Medicine Bow	I
Glendive	I, O	Meeteetse	I
Hardin	I, O	Ranchester	I, O
Miles City	I, O	Rawlings	R, I, O
<u>North Dakota</u>		Rock Springs - Green River	R, I, O
Beulah	R, I, O	Sheridan	R, I, O
Center	R, I, O	Wheatland	R, I, O
Hazen	R, I, O	Wright (Reno Junction)	I, O
Killdeer	R, I, O		
Stanton	R, I, O		
<u>South Dakota</u>			
Belle Fourche	I, O		
Edgemont	I, O		

Source of Information: R Reports or drafts  
I Key informants  
O Observations

during personal visits. The list of Selected References following the body of this report indicates representative titles pertaining to specific locations or problems.

The material on specific communities was augmented by accounts of selected programs or techniques not necessarily developed in the study communities. These citations, which can readily be identified in the list of Selected References, were provided as additional sources of pertinent information.

Key Informants. Persons actually involved in dealing with impacts at the community level were the best source of detailed information concerning experiences in individual communities. Much relevant information has not been consolidated in formal reports for distribution. Consequently, individuals having knowledge of the location of essential data and information in minutes of meetings, proceedings, and similar forms must indicate the source of a great amount of essential material. Furthermore, the personal observations and impressions of informed local participants are invaluable in assessing the types and significance of health impacts as perceived by the residents, and in identifying the basis for reactions by the community.

These types of information were obtained by person-to-person discussions with individuals or small groups. In order that the persons visited could be well prepared, appointments were made at least two weeks in advance of the meeting. Contacts usually were made by telephone to enable explanation of the purpose of the meeting and to answer any questions the informant might wish

to ask. The majority of persons involved had worked with the project team during Phase I and were familiar with the purpose of the project. All were provided with a copy of the Executive Summary.

The discussions were unstructured and varied with each contact. The subjects considered depended upon the extent of information acquired prior to the meeting and the role of the informant in working with the impacted communities. Efforts were made to encourage the informant to describe the experiences with health impacts as he or she perceived them. After receiving a general account, questions and ideas were exchanged concerning specific issues.

Observations. The third means used for developing information was by direct observation of the communities. In most instances, informants suggested specific locations for examination or accompanied the observer on a visit to selected sites. More than 60 communities were visited and inspected in varying detail during the course of this work. (Not all of these communities were studied during Phase II.)

#### Review of Procedures Manual

Further evaluation of the Procedures Manual was undertaken, although extensive reviews were made during the initial phase. The additional evaluations took into account the changes in planning organizations and the recent experiences of communities. As indicated by the list of reviewers in Table 2, a wide variety of planning and operating agencies at the Federal, State and

Table 2. Reviewers of Procedures for Evaluating Health Impacts  
Resulting from Development of Energy Resources

Regional Agencies

Environmental Protection Agency  
Office of Energy Activities, Region VIII  
Mr. N.L. Hammer

Department of Health Education and Welfare  
Regional Office  
Mr. Michael Liebman, Liaison Officer  
National Center for Health Studies  
  
Mr. James E. Ver Duft, Chief  
Health Planning Branch

PACT Health Planning Center  
Mr. H. Sterling Drumwright, Associate Director

Colorado

State Health Planning and Development Agency  
Ms. Patricia L. Steuhler, Health Planner

Western Colorado Health Systems Agency  
Mr. David Meyers, Executive Director

Denver Research Institute  
Dr. Alma Lantz, Research Psychologist

Montana

State Health Planning and Development Agency  
Mr. Wallace King, Hospital and Medical  
Facilities Division

Montana Health Systems Agency  
Mr. Ralph Gilroy, Executive Director

Montana Department of Community Affairs  
Mr. Jim Richards, Planning Division

North Dakota

State Health Planning and Development Agency  
Mr. Hiram T. Waterland, Assistant Director  
Division of Health Planning

Table 2 continued

North Dakota (continued)

Western North Dakota Health Systems Agency  
Mr. James R. Boyd, Plan Development  
Associate

West Central North Dakota Regional Environmental  
Impact Statement  
Ms. Rebecca Lee, Community Affairs Specialist

Basin Electric Power Cooperative  
Mr. Mike Zainofski  
Mr. Greg Gallagher

North Dakota State Universtiy  
Mr. Don Peterson, Area Resource Develop-  
ment, Cooperative Extension Service

ANG Coal Gasification Company  
Mr. John Clement

South Dakota

State Health Planning and Development Agency  
Mr. Donald Kurvink, Director

South Dakota Health Systems Agency  
Mr. Donald Brekke, Executive Director

Wyoming

State Health Planning and Development Agency  
Mr. Lawrence B. Bertilson, Program Plan-  
ning Manager, Department of Health  
and Social Services

Wyoming Health Systems Agency  
Mr. Richard Neibaur, Executive Director

Lincoln - Uinta Counties Planning Office  
Mr. Glenn Payne

Sheridan Area Planning Agency  
Mr. Daniel E. Songer, Planning Engineer

Table 2 continued

Wyoming (continued)

University of Wyoming

Dr. George Piccagli, Director  
Health Planning Resource Center

Dr. Keith Miller, Field Coordinator  
Wyoming Human Services Project

Dr. JoAnn Shuriger Wzorek, Community  
Coordinator, Gillette Human Services  
Project

Missouri Basin Power Project

Mr. Tim Rafferty, Impact Coordinator

Utah

State Health Planning and Development Agency

Mr. Stewart C. Smith, Assistant Director  
Office of Planning and Research  
Department of Social Services

Utah Health Systems Agency

Dr. Paul J. Boumbulian, Executive Director

Department of Social Services

Dr. E. Arnold Isaacson, Deputy Director  
of Health

Department of Community Affairs

Mr. Christian P. Beck, Special Project  
Coordinator

Five County Association of Governments

Mr. Neal R. Christianson, Executive  
Director

local levels participated in reviewing the Manual.

There were two general purposes in this review. First, to solicit informed opinions as to the potential usefulness of the Manual in assessing health impacts at the community level. Second, to determine the compatibility of the suggested procedures with those employed or contemplated by the agencies responsible for evaluating impacts and for developing preventive or remedial health programs related to energy developments. In addition to evaluating these two aspects, reviewers were asked to critique approaches and techniques. The resulting material provided the basis for revising the Manual.

#### Preparation of Reports

The data and information collected and compiled as outlined above provided the basis for the following:

- . This Project Report for EPA
- . "Handling Health Impacts - Suggestions for Communities Impacted by Energy Developments"
- . A slide series and narrative for oral presentation of the suggestions for communities
- . Revision of "Procedures for Evaluating Health Impacts Resulting from Development of Energy Resources"



## OBSERVATIONS AND EVALUATIONS

This chapter relates to the first objective of the study-- namely, to determine the nature and extent of health-related problems and the measures undertaken to cope with them. One basic point should be made at the outset. Health-related problems cannot clearly be differentiated from other types of problems experienced by the impacted communities. Many of the manifest adverse effects have common causes and are interrelated, or are mutually dependent upon each other. Health-related problems cannot adequately be evaluated or solved in isolation. These issues must be considered in the context of related conditions in the entire community. Consequently, in this discussion reference is made to some problems, or issues, that ostensibly are not the principal responsibility of health agencies or health practitioners.

### Types of Health-Related Problems

The health-related problems experienced by the study communities are not uniquely associated with energy developments. The problems generally are the same that occur in any community undergoing rapid growth for any reason. In many of the study communities the undesirable conditions noted did not appear coincidental with rapid growth--they were there already. Several communities

classified as "significantly impacted" during Phase I had not been involved, at that time, with energy developments. Yet, the data available indicated adverse situations with respect to health effects. Obviously, the causal factors were not related to impacts from energy development. There is no doubt, however, that rapid population growth intensifies preexisting conditions that favor the occurrence of health problems. The issues faced by the impacted communities in removing health hazards and maintaining conditions favorable to health are essentially the same as those confronting any community.

Kinds of Health Effects. As indicated in the report of work conducted during Phase I, two general types of health effects were considered in evaluating the causal influence of energy developments.

- . Adverse effects resulting from the toxins and irritants generated by industrial activities.
- . Undesirable conditions resulting from the rapid growth of communities that are conducive to the occurrence of adverse health effects.

Data collected during Phase II corroborated the impression previously reported regarding health effects associated with industrial processes. Namely, that no wide-spread adverse health effects are likely under existing conditions. Current programs for maintenance of environmental quality appear adequate to prevent occurrence of adverse health effects in the future.

The most significant health impacts that have occurred, or that may be anticipated, are related to the rapid growth of communities. As previously indicated, these effects are of two types:

- . Those that impact community environmental services
- . Those that have direct adverse effects on people.

Community Environmental Services. The rapid influx of population to a community creates precipitous need for housing. If an adequate number of dwelling units is not available to meet the requirements of newcomers, either temporary or long-term, improvisations obviously will be made. The result has been, in the worst situations, "hobo cities" and clusters of tents without any provisions for essential environmental services such as water supply, sewage disposal, solid waste disposal, and community sanitation. Temporary arrangements that create less immediate hazards to the public health are motor homes equipped with sewage holding tanks and water reservoirs or mobile homes in established areas with sanitational services. However, most small communities, less than 2,500 population, cannot accommodate increases in population of more than 5 percent annually without overtaxing community services. Most of the communities involved in this study have experienced substantially higher rates of growth. It is not surprising that virtually all impacted communities report problems associated with public water supplies, waste water, solid waste disposal, and environmental sanitation. Such problems are, of course, attributable to inadequate housing and basically to rates of population growth that are unusual for the communities affected. As indicated in the following section, there are no indications that diseases occurred as a result of inadequate environmental services.

Direct Health Effects. Health impacts that have a direct effect on people also are of two types:

- . Those that cause disease or illness among the affected population.
- . Those that reduce the effectiveness of personal and public health services.

Disease and Illness. The report for Phase I indicated some of the possible consequences resulting from environmental contamination, such as increase in communicable diseases associated with inadequate water supplies, sewage disposal, and solid waste disposal. Although environmental contamination did occur in some communities, there were no reports of increased incidence of disease. The potential occurrence of disease because of inadequate environmental services apparently was avoided by adequate enforcement of existing laws, ordinances, and regulations.

Health problems not directly associated with environmental services were quite a different matter. The rapid growth of communities, especially the small ones previously without much industrial activity, often caused considerable trauma among the initial residents. The newcomers, likewise, frequently exhibited problems associated with adjustment and acceptance. Stressful conditions experienced by both groups often were reflected in antisocial behavior. Alcoholism was the most prominent problem, with resulting increases in crime and accidents. Crowding, lack of recreational facilities, inadequate day-care facilities for children, social isolation, and related conditions were responsible for increase in instances of child abuse and mental illness.

School-age children in families new to the community frequently had problems associated with transition and adjustment. The result for the community was often more juvenile delinquency, including drug abuse.

Personal and Public Health Services. Other effects of rapid population growth are reflected in overtaxing the capacity of available resources to provide personal and public health services. Many communities reported inadequacies of personnel to make inspections necessary to enforce sanitation regulation. Similar deficiencies were noted in services of public health nurses to provide immunization, maternal and child services, and home health care.

Equally prominent as problems with housing and community environment services, were reports of inadequate medical services. More accurately, the problem was perceived as an inadequate number of physicians and insufficient medical facilities.

Summary. Health-related problems reported or observed in the study communities related to the following:

- . Housing
- . Environmental services
  - water supply
  - waste water treatment
  - solid waste disposal
  - sanitation
- . Public health services
  - preventive services
  - health education
  - home health services
- . Personal health service
  - therapeutic services

There is certainly nothing new in this list of issues facing boomtown communities. The effect of rapid community growth has been exhaustively, often tediously, reported. Further descriptive case-history studies that reiterate the obvious are unlikely to make further contributions to solutions. Situations in the impacted communities simply cannot be summarized as sharply defined, quantitated problems that can be associated with equally straightforward solutions. Much in the way of "how-to-do-it" information can, however, be developed from studying the approaches undertaken in various communities.

#### Community Approaches to Deal with Health Impacts

In this section, the extent of health impacts and community experiences in dealing with them are summarized. The purpose in examining ways that communities dealt with health impacts was to develop some idea of an optimum approach, or at least effective approaches. It was not anticipated that the ideal model would be found in a single community. However, some highly efficient and apparently effective programs have been organized. Efforts in selected communities are described briefly in Appendix A and are not included in this section. The following material provides details and critiques that are not appropriate for the Suggestions for Communities (Appendix A).

Extent of Health Impacts. Wide variation was apparent in the intensity of health impacts among the study communities. Some of the communities that typify boomtowns, such as Rock

Springs and Gillette, Wyoming were among the first areas to experience precipitous impacts from energy developments. The colorful account of Rock Springs, provided by former Mayor Paul J. Wataha provides an insight to underlying causes of severe impacts that are representative of occurrences in many of the communities initially affected.<sup>1</sup>

Inaccurate data were available on projected employment. Industries estimated that in 1971 employment would be 385 persons and by May 1974, 920 persons would be employed. The actual employment in 1973 was 3,000 persons. The population projected for 1990--26,000 persons--actually was reached in 1973 and 1974, 17 years ahead of schedule. Although the community leaders were comfortable with an annual rate of growth of about 5 percent, they were not prepared for the doubling of population in less than four years.

Examples of the extent of impact are numerous. For instance, in 1970 the City of Rock Springs permitted 78 sewer connections, 980 in 1973, and 1,220 in 1974. Police arrests were 1,460 in 1970 and 3,600 in 1974. During this period the police force increased from 15 to 35 and police fines from \$34,000 to \$114,700. The city budget increased from \$671,000 in 1970 to \$5,500,000 in 1975. Health-related problems are reflected in these evidences of impact. More specifically, services at the emergency room at the local hospital were quadrupled. The sewer

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<sup>1</sup>Wataha, Paul J. Presentation to The 26th Annual Utah Economic Development Conference. Salt Lake City. August 20, 1975.

system which was operating at 65 percent of capacity became inadequate. All health facilities were "overrun."

The Rock Springs experience is an example of, probably, the most intense type of impact. Other communities have similar experience but the majority have been affected to a lesser degree. The magnitude of impacts seemed to have little relation to the type or effectiveness of community response. The question naturally arises as to why the impact was so severe in communities like Rock Springs and not as bad elsewhere.

In the first place, Rock Springs and a few other communities were among the first of the "present generation" of energy-development boomtowns. As indicated above, population estimates were grossly inaccurate. This was due, in part at least, to the fact that several major industries were undertaking developments simultaneously but independently. Each development separately would significantly stimulate growth but the combined effect could not be assessed by anyone. Furthermore, in the early 1970s planning organizations, development councils, and other informational and regulatory offices at the federal, state, and regional levels were either not in place or had scant experience in dealing with situations like Rock Springs. Industries too, were relatively inexperienced in working collectively with communities to allay the development of the type of conditions that did occur. Equally important is the fact that the communities generally lacked both the experience and resources to anticipate the magnitude and implications of the development. Under

the circumstances then existing, timely and effective action by the first of the modern boomtowns could hardly have been expected.

Conditions now, at the end of 1977, are quite different. Most everyone involved has had more experience and is sensitive to the need to minimize impacts. Furthermore, there is wide appreciation of the advantages of doing so. Rather than reduce the efficiency of work forces by competitive hiring, industries collaborate in projecting employment needs and in recruitment. Siting laws for major facilities are in force in some states. Planning and regulatory agencies are better prepared to anticipate impacts and to deal with them. The public generally is aware of the consequences of boomtown growth, both the negative and positive aspects. Informed decisions now are easier and better founded, whether to oppose, accept, or exploit. In other words, there is a general awareness of options available to communities involved with energy developments. More objective and effective decisions can now be made, in terms of desired outcomes, regarding management of current impacts or in encouraging future growth. Under present circumstances, it is unlikely that situations such as those in Rock Springs or Gillette will again occur. At least such developments are not inevitable.

This is not to imply that all problems of impact are solved or that remedial programs are in place everywhere that they should be. Certainly, there are and will be the potential for other boomtowns and there is the danger of severe impact in

many other communities. The point is that mechanisms are available which will enable communities to avoid or reduce undesirable effects of rapid growth. Obviously, these mechanisms must be mobilized and applied if undesirable effects are to be minimized. The experiences of communities in dealing with impacts provides indications of how this may be done, and with what results.

### Community Experiences in Dealing with Health Impacts

As indicated previously, health impacts must be considered in the context of related impact problems. Discussion, in this summary, of general community approaches to impact alleviation includes the health-related problems. Specific references to health issues are applicable to other problems as well. It simply is not possible to consider one type of impact alone. Also, generalizations must cautiously be evaluated. No two communities are alike. Each has unique physical conditions and population. Obviously, actions appropriate for one community may not be applicable in another.

In examining the ways that impacts were handled, the communities may be considered in three groups:

- . The "first generation" of severely impacted communities.
- . "Intermediate" communities--those recently involved in energy developments.
- . Communities that anticipate impact.

Severely Impacted Communities. The first generation of severely impacted communities characteristically had little opportunity to prepare. As indicated above, this may have been

due to lack of adequate notice of the developments that were planned or already taking place. In other instances, the mechanisms simply were not available to anticipate the extent of impacts or to evaluate the potential consequences. Local planning organizations generally were not in place and assistance from other levels of government was not available or not sought. In some instances there wasn't time to get help and in other cases its existence was not known.

Communities where impacts developed precipitously, or appeared to do so, had little opportunity to do anything but react to emergencies or the most urgent needs. Means at that time were not available for immediate financing to expand facilities and services. Responsible officials had to make day-by-day decisions and often endure day-by-day criticism, simply to avoid disaster and minimize the number of crises. The realistic objective at that stage was to keep up. There was little opportunity for advance planning.

Gradually gains were made in reducing the frequency of emergency issues and more orderly processes began to evolve. Many factors contributed to these changes; community leaders acquired experience, assistance was obtained from state and Federal sources, and industrial organizations were formed. These developments had the combined effect of realigning local governmental structure to handle impacts more effectively, acquire needed technical personnel, and developing planning competencies. The planning process involved establishing priorities for orderly

corrective programs and preparing for future needs. The critical point is that this came about through cooperative efforts of all levels of government, industry, and the general public. The necessity of cooperation was learned the hard way in many places but the fact now is well established, although not always heeded.

Problems of the severely impacted communities have by no means disappeared. In many places intense impact still exists and is anticipated for sometime to come. But planning mechanisms are in place and gains are being made in reducing or eliminating problems. Uncertainties persist about sources of funds and many communities are skeptical about too much reliance on Federal guidelines or money.

Recently Involved Communities. Approach of communities in dealing with health impacts has been more varied among the recently involved communities than with the first, severely impacted communities. Developments did not occur so abruptly in the recently impacted communities. There generally was advance, usually ample, notice of planned industrial activity. Time was available for more deliberation and responses generally were more adequately considered. At least the opportunity was available to select a logically derived course of action. However, this was not always done. It is informative to consider some of the factors that influence the effectiveness of communities to deal with impacts.

- Size. Most small communities, those with a population of about 1,000 or smaller, do not have the capacity to handle the types of impact typically associated with energy developments.

Generally there is no one around that is knowledgeable or who has been involved in the planning and developmental processes necessary to deal with the impacts, especially those related to transient and temporary populations. There is probably no one locally who knows the entire scope of services that will be required by newcomers. Determining the magnitude of need depends upon accurate demographic data that usually have to be developed locally. Small communities are hard pressed to cope with Federal regulations. Even if appropriate assistance is sought and promptly received, it is unlikely that means would be available to address the most urgent needs within a year. But many communities don't know where help is available or how to ask for it. Probably the majority of communities want help. Those that don't probably don't want the responsibility.

Size, of course, was not the critical factor in influencing the extent of impact. Information, in many instances, had not been provided to communities concerning how to organize and how to get help to meet impacts. Some communities reported that information available at the state level was not promptly sent to the affected communities. Many small communities relied on the state government to solve local problems. When this didn't happen, the feeling developed that faith in the state government had been misplaced. Often the easiest, and perhaps the most obvious, course was an appeal to industry for assistance.

- Attitudes of Local Government and the General Public. Nothing appeared to have as much affect on the intensity of impacts

experienced by the recently impacted communities as did local attitudes about energy developments and community involvement. The factors associated with overt opposition to energy developments and the posture of complete detachment are not considered in this report. Such reactions have been adequately, perhaps laboriously, treated in many of the descriptive reports. Representative accounts are cited in the list of Selected References included in this report. The following were among the factors, observed or reported, that appeared to have the most influence on impacts.

--Recognition of Problems and Placement of Responsibility.

Some communities have indicated attitudes of fierce independence. The local citizens desired to develop solutions without any assistance or interference from outside the community. Help was neither desired or sought. This attitude often was accompanied by a tendency to ignore, or overlook, the existence of problems until a crisis developed. As indicated in the previous section, most small communities do not have the competence to handle impact problems without outside assistance.

Another, less frequent, expression suggested that since industry was responsible for the problems, let industry handle it. This position ranged from complete detachment, "let them handle it and they better do it right" to presentation of extensive lists of expectations to industry. In some instances these were tantamount to demands.

--Willingness to plan. Further indications of independence is reflected in attitudes toward planning. There is, or has been, wide spread opposition among the small communities to adopt

any form of zoning or regulation of land use, "a man has a right to do what he wants with his land." Planning is suspect as another level of bureaucracy, something that is done in communistic countries. Although planning often has been resisted before, or in the early stages of impact, most communities generally come to accept the process when conditions get bad enough. In some cases, the responsible officials have sometimes directed the planners to accomplish specific tasks, not necessarily in the context of a community plan; for example, "get rid of the trailer parks." Such an approach often lead to development of effective community plans, but not necessarily so.

Planners have not always been effective, even though they may have been adequately trained and competent. Many were young, recent university graduates who were unable to relate well to the community. This was especially true when the community was reluctant to accept them. In some instances elected officials preferred to exercise intuitive judgement, regardless of evidence produced by planners, on the basis of long established concepts of value. This was not always either good or bad.

Another very important aspect of planning is collaboration with other jurisdictions. Many problems, especially those related to provision of health services, must be resolved on a regional basis. Yet there is a widespread preference among many communities to "go it alone." This has resulted, in some cases, in bitter competition among communities, especially among professional segments of the community. For example, medical groups

and hospitals have found cooperation difficult because of intensely competitive attitudes. Community pride (?) has resulted in constructing, or trying to, duplicate facilities beyond foreseeable needs, "if they have a hospital we will have one too."

--How Problems are Handled. Some elected officials and governing bodies prefer to deal with problems incrementally by making decisions on each issue as it arises. This often is done without guidance from an articulated plan. Each request for a building permit or business license is considered separately on the basis of the "merit" in each instance. Again, this process has not been all bad. Some decision makers have maintained a "hard line" and not permitted development that detracts from aesthetic and other societal values of the community, as perceived by the decision makers.

One disadvantage of this process, which excludes substantial consistent input from the public, is that minor issues may displease a significant segment of the community. The ensuing uproar may be reflected in changes at the next election. The continuity of approaches and value judgements among elected bodies are tenuous, at best.

The matter of involving the public in planning and decision-making processes is an issue in itself. Many officials point out that attendance of citizens at important and well-publicized meetings is poor. For example, there has been considerable indifference to discussion of priorities for use of revenue-sharing funds or to review of building codes for land use

plans. (Such indifference has not been apparent when tax issues were on the agenda!) In some instances advisory groups want to make heavy decisions without adequate information and experience. On balance, however, the participation of the general public, as well as governmental and industrial groups directly concerned, seems highly desirable. As discussed in Appendix A, effective mechanisms for orientation and training are readily available. There are, however, some communities that felt there wasn't enough time to go through a training process--too much to be done.

--Effective Organization. Many communities appear to have dealt effectively with health and other impacts, judging by present conditions and attitudes of residents. In these communities the leaders and the processes used in meeting impacts can easily be identified. There is nothing obscure about the way that things were done. Those who should know are fully aware of the details. Assistance was sought from district and state planning agencies soon after the possibilities of impact were apparent. Someone or some organization, agency, political entity, or industry took the initiative to develop a group to initiate planning. The initiators include elected officials, representatives of industry, professional organizations, civic groups, governmental programs, volunteer agencies, and other types of organizations. The public was adequately informed and involved from the inception of the process.

The process of organizing planning activities and details of the processes used in selected communities are given in

Appendix A. The general consensus from the communities that had dealt with impacts most effectively indicate easy access to assistance, both technical and financial. Planning and implementing programs to minimize impacts obviously has maximum effect only when done collaboratively with participation of all levels of government.

Communities Anticipating Impact. Some of the communities currently planning for anticipated impacts have developed efficient planning organizations and are in the process of implementing plans. On the other hand, there are communities for which impacts are equally imminent that are doing little if anything to prepare for them. Some outstanding examples of effective advance planning are described briefly in Appendix A. The activities in Wheatland, Wyoming and Mercer County, North Dakota are especially interesting. Detailed accounts of these and other activities are cited in the references included in Appendix A.

Summary. Means for avoiding undesirable health impacts from energy developments are available to all communities in the Rocky Mountain-Prairie Region. Technical assistance and funds for advance planning and for implementing remedial and preventive programs generally are accessible. State agencies are sensitive to community needs and are prepared to collaborate in dealing with local problems. Industry, in by far the majority of cases, is a willing partner in community activities to alleviate impact.

The initiative for community action must come from the community. Timely action is essential to mobilize the resources

that are available. Recent untoward effects from energy developments usually have occurred because adequate information was not available to communities or because communities failed to appropriately use resources that were available.



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APPENDIX A

HANDLING HEALTH IMPACTS

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SUGGESTIONS FOR COMMUNITIES  
IMPACTED BY ENERGY DEVELOPMENTS

HANDLING HEALTH IMPACTS

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SUGGESTIONS FOR COMMUNITIES  
IMPACTED BY ENERGY DEVELOPMENTS

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF ENERGY ACTIVITIES

DENVER, COLORADO

1977

## WHAT THIS IS ALL ABOUT...

These Suggestions were designed to help communities, especially small ones, to deal with health impacts associated with energy developments in the Rocky Mountains - Prairie Region. These are not directions for handling specific problems. They are indications of some ways that citizens can go about deciding what kinds of actions are best for their own community. They are "how-to-do" suggestions rather than "what-to-do" directions. Efforts were made to provide practical suggestions for communities that are already dealing with impacts as well as for communities that expect impacts in the future. Some of the types of assistance that a community may need are outlined, together with sources of help and how to get it.

You won't find in these Suggestions a list of clearly defined "problems" and equally straightforward "solutions." The situations faced by impacted communities are just not that simple. The problems that develop must be handled in ways which are appropriate for the specific community where they occur. The technological approaches may be the same for every community but local decisions have to be made as to what is acceptable to the community, how much the citizens are willing to pay, and many other factors. Such determinations require an orderly process. The purpose of these Suggestions is to indicate some ways that this may be done.

As indicated later on, a community cannot deal with health problems in isolation. A variety of other issues -- education, recreation, law enforcement -- must be considered at the same time.

If you have not already done so, you will want to read the Action Handbook for Small Communities Facing Rapid Growth<sup>1</sup>. This Handbook is a "how to manage" manual for impacted communities. These Suggestions are designed to complement the portions of the Action Handbook relating to health and medical services.

Another aid that you also may want to use at the outset is a slide series, with narrative, entitled "Health Effects Associated With Energy Development." This is available from the U.S. Environmental Protection Agency, Office of Energy Activities, Denver.

These Suggestions are based on a study, extending over more than 18 months, of health impacts experienced by communities and how they were handled. From first hand accounts, direct observations, and reading many reports, an effort has been made to provide a brief summary of what was done in the communities, and what worked and didn't work.

Many persons requested that these Suggestions be brief and readable in one short period that might be available to busy people. Requests were made to eliminate details that could be obtained elsewhere -- just give an overview and sources of information. An attempt has been made to follow this sound advice.

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<sup>1</sup>Briscoe, Mephis, Murray and Lamont. 1977. Action Handbook for Small Communities Facing Rapid Growth. Prepared for the U.S. Environmental Protection Agency. (Contract 68-01-3579).

## WHAT TO EXPECT

Residents of communities impacted by energy developments are fully aware of the undesirable conditions that may occur. Rapid population growth may quickly exhaust the resources available for providing personal and government services. If the annual rate of growth is much over five percent, most small communities (less than 1,500 persons) have difficulties in providing for the newcomers; that is, unless adequate preparations for them are made in advance.

As many new people move in, available housing is quickly occupied. The new residents then must make temporary arrangements for housing in the community or commute to nearby towns. The temporary arrangements may result in tent cities, mobile home areas, trailer parks, and various types of improvised housing. If not carefully managed by the community, possibilities develop for the occurrence of unsanitary conditions that may have serious effects on the health of everyone -- initial residents and newcomers alike. A variety of personal services may also be affected. Recreational facilities soon may become overcrowded. The number of doctors and other health personnel may not be adequate to take care of the additional population. Such shortages create additional threats to health.

The citizens of a community are the only persons who can prevent such undesirable conditions or eliminate them if they already have developed. Let's now look at some of the ways this can be done.

## WHAT CAN BE DONE

Several courses of action are available to communities in dealing with health impacts:

- A community can do nothing and let events take care of themselves.
- The decision makers can deal only with emergency situations.
- The responsible officials can consider each issue as it is presented and make a decision on their evaluation of each individual case.
- Planners can be employed to advise the responsible official concerning each issue.
- A program can be developed to prepare plans for the community that will serve as a guide for community development and as a basis for making decisions.

These various approaches, and many variations, have been used by impacted communities. Some have resulted in near disasters. All communities that have coped effectively with health impacts eventually developed some type of organization to prepare a community health plan that serves as a basis for decisions. The most effective plans were prepared with extensive citizen participation. These plans generally reflect a concensus of the community regarding needs and priority. Hence, they are better supported and more easily implemented than are plans prepared without involvement of the general public. Before making a decision not to develop a systematic plan, talk to officials in communities where impacts came so quickly that time was not available for planning. Ask them for suggestions. (See References and section on "Sources of Information and Assistance")

## HOW TO DEAL WITH HEALTH IMPACTS

### Kinds of Health Impacts

First, we should be specific about the things we are going to consider. Our concern is the undesirable health effects associated with energy development. There are two kinds:

- Effects resulting from the toxins and irritants (pollution) generated by industrial processes.
- Effects caused by rapid growth of communities.

Industrial Pollution. The control of industrial pollution is a state-level responsibility and is carried out in accordance with Federal guidelines and enforced by both Federal and state laws and regulations. Most of the industrial developments in the Region are modern and generally employ the most advanced method for pollution control. The probability of serious health hazards from industrial sources is remote. This doesn't mean, however, that dangerous pollution might not occur under some circumstances. Monitoring programs maintained by the responsible state agencies are designed to detect such hazards and to take appropriate control measures should conditions warrant.

Rapid Growth. By far the most significant health effects that communities have to handle are those associated with rapid population growth. There are two types of such effects:

- Impacts on community environmental services.
- Direct, adverse effects on health of people.

The types of environmental services that are most commonly affected

include water supply, sewage disposal, solid waste disposal, and environmental sanitation. Direct adverse effects on people include increases in rates of communicable diseases, mental illness, alcoholism, drug abuse, accidents, and other problems. The lack of adequate health and medical services has been perceived as the most important direct health effect in most communities.

### Approaches to Cope

We already have indicated in several ways, the necessity of a systematic approach in dealing with health impacts. This will be mentioned several times more before the end of these Suggestions! Regardless of the form it takes, some type of planning organization is essential to prepare for orderly community growth that will preserve the values and provide the services desired by the community. Otherwise the way is open for intuitive decisions. Such decisions often are based on inadequate information and stand a good chance of being less than the best course of action.. Simply reacting to emergencies, though sometimes necessary, may be equally undesirable.

Appropriate planning, on the other hand, provides a means for making the best possible decision under prevailing circumstances. As far as health impacts are concerned, the planning process involves the following:

- Evaluating health problems and the needs for health services.
- Consideration of alternative ways to alleviate the problems defined and provide the services needed.
- Assessment of resources available, or attainable, in the community and determining further needs to carry out the alternative programs.

- Providing the resulting information in proper form to assist decision makers in selecting the most appropriate program--considering cost, community preferences, efficiency, and other factors.
- Assisting operating agencies with implementing programs selected by decision makers.
- Assisting responsible officials with evaluating effectiveness of both new and established programs.
- Recommending modification of programs to operating agencies and decision makers as changes are indicated.
- Preparing periodic analyses of health conditions and recommendations for dealing with health problems.

The "decision makers" referred to may be a city council, county supervisors, or other legally responsible governing body. "Operating agency" may be a department of local government, a volunteer organization, or a contractor responsible for a specific function in the community. Examples are a local health department, a mental health center, and a child day care center.

Does all this seem complicated? It really isn't. If you think about the items in the above list, you probably will conclude that many of the activities are being performed already. Some of them probably are being done without adequate data that the planning process would provide. Hence the decisions that are made may not be reliable. Any community that wants to do so can develop a planning organization that is appropriate to meet local needs. An organization consisting of only one person may be adequate for some communities. Others may require a large staff, depending on the size of the community and the extent of the impact.

Relation of Health Problems to Other Types of Impact. Although we are considering how to deal with health-related problems in these

Suggestions, impacted communities must deal with a wide variety of other issues. Most of the problems faced by an impacted community are interrelated. For example, health, education, recreation, and law enforcement are all interrelated. What we say about health impacts applies as well to many other problems. Some communities that have not yet developed programs to cope with health impacts already have planners who are developing programs in related areas. It is essential that planning for health programs be related to these efforts.

Approaches to community planning are outlined in the Action Handbook. The steps outlined in the Handbook are generally applicable to most aspects of community planning, including planning to deal with health impacts. In these suggestions we are providing some additional details related to health issues. We also are emphasizing some of the material in the Handbook by repeating it here.

One point we wish to emphasize is the necessity for community involvement in planning. Citizens of the community must understand the necessity and purpose of planning. In some areas planning has been interpreted as an infringement on individual rights. Land use planning especially is suspect because it results in "telling a man what he can and cannot do with his own land." Most persons, however, now appreciate the necessity of collective action and individual compromises to protect community values. Still, many communities prefer to "go it alone" and not get involved with other jurisdictions. Many small communities that do not have the necessary personnel and other resources to cope with impact situations have found this course to be very costly in the long run. Not only

is money wasted but the community often has been stuck with avoidable problems that will remain for a long time.

However, the decision is up to the community. It is unlikely that any one can, or would try to, force the community to do anything contrary to the prevailing concensus. Those who may seem persuasive are simply pointing out the consequences of various courses that may be pursued.

### The Health Services Task Force

The Handbook indicates how a Community Impact Committee may be organized and outlines how specific issues and problems in the community may be addressed by task forces. These Suggestions are made especially for the task force concerned with health impacts. Such a task force may consider health services exclusively, or health services may be included in the work of a task force with other responsibilities.

As promised in the Introduction, these Suggestions are brief. They provide a general overview of how a community may deal with health impacts. More details for operation of the Health Service Task Force are given in a compilation of formats and protocols entitled "Procedure for Evaluating Health Impacts Resulting from Energy Developments." This report is available from the Office of Energy Activities, U.S. Environmental Protection Agency, Denver.

### Specific Problems

As indicated before, these Suggestions are not concerned with technical details. They are not step-by-step instructions. So, in commenting on how to deal with some problems we will only

suggest sources of assistance or where detailed information can be obtained. With this in mind, let's consider each kind of health impact indicated earlier in this section.

Industrial Pollution. We will have little further comments concerning this type of impact. Communities should be familiar with the monitoring programs mentioned previously and should be alert to changes that might result in increased risks to health. It is highly unlikely, however, that communities would need to deal individually with problems of industrial pollution.

Health Impacts Resulting From Rapid Community Growth. As indicated before there are two kinds of these impacts.

--Impacts on Community Environmental Services involve water supplies, waste water treatment, solid waste disposal, and environmental sanitation. Municipal services and matters relating to physical facilities usually will not be the direct responsibility of the Health Services Task Force. However, the Health Services Task Force will want to participate in planning these services. The adequacy of current services and plans that may be developed for additional service should be evaluated as to effectiveness in protecting the public health.

In most states, the Department of Health, or a department providing the usual services of a health department, has responsibility for approving the design of physical facilities and operations of community environmental services. Guidance should be sought from the appropriate state agency early in the planning process. It is unwise to make commitments for consultants or

incur other expenses until the extent of assistance available from state or Federal agencies is determined.

--Direct Impacts on the Health of People will be the primary concern of the Health Services Task Force and will require most of its attention. Many health problems in the community, and ways to handle them, will be apparent. Other problems that may be equally important may be less obvious. Be sure to have your Health Systems Agency involved in the work of the Task Force at an early stage. This will give you an idea of what assistance is available and will suggest some ways of undertaking various tasks. The operating state departments that have responsibilities for specific programs also should be consulted as you undertake work on various problems. All states have offices responsible for programs in public health, mental health, alcoholism, drug abuse, and other areas related to local health problems. Look over the lists of References and "Sources of Information and Assistance" for material or contacts that may be helpful.

#### A Special Word About Personal Health Services

One of the most perplexing, often controversial, and certainly the most expensive problem that the Health Service Task Force will have to deal with is the matter of planning for personal health services. To most people, "personal health services" involve only the treatment of illness or injury. The need for personal health services is perceived as a need for physicians and hospitals. Some communities have spent a great deal of money in attempts to recruit physicians and other health personnel. By far, the

majority of such efforts have been unsuccessful. Other communities have attempted to attract physicians to the area by constructing hospitals or providing other types of medical facilities. This has not worked well either. Such facilities are costly to construct and maintain. Often they prove to be inappropriate for the needs of the community and do not attract the desired personnel. Many have been converted to other uses and essentially all of them result in a financial burden, and the community is still without the desired medical service.

How then does a community arrange to obtain the needed health and medical services? In the first place, the "needs" must be defined. The instances just described--recruitment of a physician or construction of a medical facility--may be among the possible ways to provide certain medical services. They may be possible answers to a problem. But an apparent inadequate number of physicians is not the real problem. The real problem is inadequate services. Having more physicians residing and practicing in the community may be a possible solution. Certainly it is not the only solution and may not even be the best. Yet, many thousands of dollars have been wasted in pursuing a perceived solution to an inadequately defined problem. For many communities, the most practical way to provide personal health services is by a Physician's Assistant or a Nurse Practitioner. Public Health Nurses and Emergency Medical Technicians also can provide many of primary medical services in small communities. This may seem involved, but it really isn't. As suggested before, planners and others can be of great help to a community in working out such

problems.

The protest often is heard: "But I know we need a doctor, we don't have one--or we don't have enough!" The fact is, the doctors services are needed, not necessarily that he or she be in residence and work full-time in the community. Dr. Bond Bible, Director of the Department of Rural and Community Health for the American Medical Association has clearly described the situation.

"It is certain that many small communities which once had their 'own' physician will never again have one of their own. It has become clear that for some sparsely populated rural areas, solutions completely different from the traditional physician in residence must be sought. In some areas, emphasis may be needed on expanded transportation and communication capabilities, use of new allied health professionals better understanding of individual health practices, and development of emergency care and self-help methods to ensure rural health coverage. Multiple communities in a logical service area will need to plan together to develop health care systems on an area basis so that they can attract appropriate health manpower working in a group to provide home, clinic, and hospital care."

"Today, organizing health care systems in sparsely populated areas requires multi-institutional arrangements on a geographical basis. To accomplish this will require courage and foresight on the part of community leaders and health care professionals. Some institutions may have to change their missions or actually close down. Some must be helped to expand. Ambulatory, primary care and group practice units must be built. Rescue squads must

have trained staffs and new equipment to handle acute emergencies until they reach the appropriate hospital. No rural community can handle it alone."<sup>1</sup>

Communities should plan and develop the type of health services, both personnel and facilities, that are appropriate but not excessive to meet the needs of the area. This must be done on a regional basis so that all of the needed services are available to the community but not necessarily provided in facilities physically located within the community, or by personnel that reside in the community. Arrangements should be made, however, for local access to emergency services and services of other types that are continuously or frequently needed. Most important, mechanisms should be developed to permit ready access to the entire systems of health services. This is to assure that the type and level of services required are secured promptly when needed.

How does a community go about making these arrangements? Get the planner to help. They know the techniques for planning regional health services and can assist in identifying the options that are available to the community. The planners cannot, however, do the job for the community. They can assist with some of the technical aspects and provide information on experiences in other areas. The participation of citizens of the community is essential to determine local needs and preferences regarding delivery of health services. Also, the local residents

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<sup>1</sup>Studdt, W.B., Jerold G. Sorensen, and Beverly Burge. 1976. Medicine in the Intermountain West. Olympus Publishing Company. Salt Lake City.

are in a better position to explain the advantages and disadvantages of the various options to others. This process is essential for developing a consensus of what the community wants and what the citizens are willing to support and pay for.

Also, seek comments from communities that have used various systems for providing health services. See how the various ones worked out. Proposals should be sought from organizations that develop rural health services for rural areas and contract to operate them. See the "Examples of Successes and Innovations" in a following section.

## WHERE TO GET HELP

Many resources are available throughout the Rocky Mountains-Prairie Region to assist communities in developing and implementing plans to deal with health impacts, as well as other problems related to energy developments. A list of such resources in each state, and those that are available to all the states, is included with these Suggestions.

In each state a number of departments and offices can provide essentially all of the assistance needed by the communities. If information concerning these resources are not available in the community, contact with the appropriate representative should be made by letter or telephone. Often someone from the agency or office will be able to visit the community and explain what assistance is available. At least it is well to learn what is offered, even if the services are not requested.

The following are some of the sources you may want to contact.

Health Planning Agencies. Each state has a State Health Planning and Development Agency, although not necessarily with this title, and one or more Health Systems Agencies. These agencies are involved in a collaborative Federal-State-Local program concerned with planning, developing, and regulating health services. This program was recently organized, or reorganized, and some of the agencies are relatively new. Many currently are concerned with mandated tasks and are occupied with development of

state or regional plans. Nevertheless, these agencies<sup>2</sup> can assist communities in approaching health problems in ways that will be compatible with activities of other health planning organizations.

Each community is part of a Health Service Area that is the responsibility of a specific Health Systems Agency. In some instances sub-area planning activities are under way. To assure the necessary relationship and support, communities should get in touch with their Health Systems Agency at an early stage.

State Planning Office. The State Planning Office which is designated by various titles in different states, is the focal point of community planning in most states. As indicated before, planning to deal with health impacts should be done in concert with other aspects of community planning. Collaboration is essential for establishing priorities and orderly allocation of funds. In addition, many programs can be mutually supportive so that sometimes two or more related problems can be solved more satisfactorily together than they could be separately.

State Offices of Community Affairs. The names vary, but most states have an office that serves as a community advocate in dealing with other state agencies and with appropriating bodies. Depending on the individual states, a variety of programs are available to assist individual communities. In most instances, help can be provided in developing an entire local planning program or in assisting with specific programs or problems. In some states, the office of community affairs has regulatory responsibilities.

Cooperative Extension Service. Agricultural extension agents have long been involved in community activities. They are excellent initial contacts for information on how to get started in dealing with impact problems. Most state extension services have developed materials that may be used to inform citizens of pending problems and approaches to solutions. Extension services maintain extensive contacts and serve as good sources of information concerning the availability of resources from other agencies.

Operating Agencies. In dealing with specific problems--such as water supplies, health facilities, and mental health services--you may wish to get in touch with the state or regional agency that has responsibilities for these types of programs. Technical assistance often is available for helping communities in defining local problems and implementing local programs.

University Institutes. State universities address a variety of issues that concern impacted communities. Review the list of "Sources of Information and Assistance" for your state to find the ones that would be helpful in your work.

Health Services Organizations. Two organizations in Utah have worked with impacted communities in providing medical services. They are the Health Systems Research Institute in Salt Lake City and the Utah Valley Hospital in Provo. The programs and approaches of these organizations are somewhat different. Both are involved in providing direct medical and administrative services in a variety of situations. Specific arrangements are tailored to needs of the community and resources available. You may

wish to obtain literature (see References) from both organizations and consult with them concerning the circumstances in your community.

Chambers of Commerce. The local Chamber of Commerce is often an important resource in developing and carrying out plans to handle impacts. The principal industrial and business organizations in the community usually participate in activities of the Chamber of Commerce. Many of the essential contacts and sources of support can be developed when the Chamber shares leadership in community planning.

## EXAMPLES OF SUCCESSES AND INNOVATIONS

There are many outstanding examples of successes and innovations in dealing with health impacts in the Rocky Mountains-Prairie Region. Some representative ones are briefly described in this section. You may wish to secure information directly concerning these programs from the sources indicated in the References and the section on "Sources of Information and Assistance."

Severely Impacted Communities. Rock Springs, Green River, and Gillette, Wyoming, and Colstrip, Montana are representative of the first communities to be severely impacted by energy developments. References to articles concerning these communities are listed in References. You may wish to examine these accounts for insight as to what can happen when there is not adequate information concerning developments soon enough to enable effective preparation to avoid impact. Also, to review the processes used to alleviate impacts.

Effective Preparation in Advance of Impact. Among others, the advance preparation that is in progress at Wheatland, Wyoming and in Mercer County, North Dakota are outstanding examples of industry-community collaboration to minimize impacts. The project near Wheatland involves the construction and operation of a 1,500 megawatt generating station by six consumer-owned electric utilities that developed the Missouri Basin Power Project. The community was advised of the development about two years in advance of construction. An impact alleviation task force was organized

jointly by community leaders and industry representatives soon after the announcement. Staff members of the Missouri Basin Power Project served as advisors to the Platte County Impact Alleviation Task Force from the beginning. The Task Force was provided with the most accurate information concerning population projections and other data that would affect requirements for local services. As a result, existing and anticipated problems were identified at an early stage and plans were developed for handling them. Timely implementation of these plans assured that impacts would be minimal. This is not to say that no problems developed, or that the task was easy. The Wheatland (Platte County) story is an interesting one and is worth reviewing.

Developments in Mercer County have been along similar lines. There, two primary industries are involved; Basin Electric, one of the participants in the Missouri Basin Power Project, and A.N.G. Coal Gasification Company worked cooperatively with community leaders to develop the Mercer County Task Force. Both companies have full-time impact planning coordinators.

Personal Health Services. The health planners can give many local illustrations of effective arrangements for personal health services in a variety of situations. For example, the Health Systems Research Institute has worked with the city of Sundance, Wyoming in staffing and operating the local hospital. This hospital provides services in the nearby community of Moorcroft at a mobile clinic. At Castle Dale, Utah, the Utah Valley Hospital

has similarly assisted the community in operating a local clinic. There are many other examples--ask the health planner.

Local Planning Organizations. Examples of outstanding local planning agencies are available for every state. Ask the State Planning Office for information concerning activities that are most similar to those planned for your community. The Sheridan Area Planning Office in Sheridan, Wyoming has produced a variety of excellent community reports. These reports have provided the basis for plans that have been effective in coping with impacts.

Industrial Councils. Many communities are concerned with activities of several different industries. In some instances, the industries have formed a local association that serves as a focal point of contact and cooperation with the community. The Southwest Wyoming Industrial Association, with offices in Rock Springs, is an example.

Wyoming Human Services Project. This university-based program has operated in Gillette and Wheatland, Wyoming. Advanced students are trained at the University of Wyoming to work in impacted communities for a year after graduation. Team members work in such areas as public administration, public health, mental health, and social services. Half of each week is spent as a regular staff member in a human services agency. The remaining time is spent with the team working on projects related to the improvement of human services within the community. This program has resulted in development and evaluation of new planning approaches and programs to deal with impacts.

Information Systems. Impact assessment and information systems have been developed in some states. These programs develop data and provide direct local assistance. The Regional Environmental Assessment Program (REAP) in Bismarck, North Dakota is collecting baseline data and is monitoring and cataloging a variety of information useful to impacted communities.



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### Slide-tape series

Environmental Protection Agency. Health effects associated with energy developments. Office of Energy Activities, Denver, Colorado. (Contact Mr. N.L. Hammer, Environmental Protection Agency, Office of Energy Activities, 1860 Lincoln Street, Denver, Colorado 80203.)

North Dakota Cooperative Extension Service. The following three sets are available:

1. Prime Farmland
2. Extension's Community Development Program
3. Coal Development and its Impact on the community of Washburn, North Dakota.

(Contact Mr. Don H. Peterson, Area Resource Development Agent, County Extension Office, Washburn, North Dakota 58577.)

Utah Valley Hospital. Health care for rural America, a unique prescription. (Contact Mr. Mark Howard, Director of Rural Health, Utah Valley Hospital, Provo, Utah 84601. Telephone 801/373-7850).



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APPENDIX B

NARRATIVE FOR SLIDES

- - - - -

HEALTH EFFECTS ASSOCIATED WITH ENERGY DEVELOPMENTS



## NARRATIVE FOR SLIDES

### HEALTH EFFECTS ASSOCIATED WITH ENERGY DEVELOPMENTS

1. Health effects associated with energy developments are the concern of many communities in the Rocky Mountains-Prairie Region.
2. The Environmental Protection Agency's Office of Energy Activities in Denver, Colorado prepared this series of slides to assist communities in dealing with health problems that may occur as a result of energy developments.
3. The development of Western energy fuels is affecting an extensive area of the country.
4. More than 200 communities in the states of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming already have experienced some impacts as a result of energy developments.
5. Many more communities will be involved as additional energy resources are developed.

6. One consequence of industrial activity has been the rapid growth of communities.

Data for the state or regional populations do not always reflect the extent of growth in the affected communities.

7. However, the impact on individual communities is tremendous-- in some communities the population has more than doubled in three or four years.
8. Rapid growth of any community, especially small ones, may quickly exceed the capacity for providing personal and governmental services.
9. Inadequate services may give rise to a variety of problems that adversely affect personal and community health. Poor sanitation, disease, mental illness, crime, and accidents are just a few examples.
10. When all available housing is occupied, newcomers make what temporary arrangements they can.
11. Inadequate water supplies and facilities for sewage disposal may result in increases of communicable diseases.
12. Accumulation of garbage and other solid wastes may harbor rats and insects.

13. Crowding and other adverse living conditions often result in stress.
14. The need for mental health services has increased as much as tenfold in some areas.
15. Rapid population growth also is associated with increases in crime, delinquency, alcoholism, child abuse, and other anti-social behavior.
16. In fact, the list of problems and the services that may be affected is long indeed. Housing, Schools, Recreation, Medical and Health Services, Law Enforcement and Public Safety, Water Supply, Sewage Disposal, Solid Waste Disposal, and Transportation are among the most prominent.
17. The principal concern in this discussion is how to avoid or eliminate undesirable health effects.

One must recognize, however, that health is influenced by a variety of factors.

18. In fact, most, if not all of these services and problems, are interrelated.

What we have to say about health effects applies generally to many other concerns.

19. In considering ways to deal with undesirable health effects, we should look at three types of information:
- First, the characteristics of the communities and the way of life of the people that live in them.
  - Second, the types of health effects that may occur as a result of energy developments and the possible consequences of conditions that may develop.
  - Finally, we want to consider some of the things that may be done to avoid adverse conditions or to eliminate problems that already have occurred.
20. Let's look at some of the prominent characteristics of the communities that will be affected by energy developments.
21. In the first place, most of the communities are small. More than half have, or originally had, less than 1,000 residents; and more than 80 percent have, or had, population of less than 2,500.
22. Larger centers of population, over 25,000 persons, are widely scattered and the majority of communities are not within two hours driving time of a city of such size.
23. The population in most of the communities was stable or declining during the previous decade.

24. The way of life has been generally quiet. Many residents have lived in the community all of their lives and most have been satisfied with the way things are, or were.

25. Community and personal services have evolved to meet the desires and expectations of a stable population.

The way of life in most communities reflects a strong desire to preserve the integrity of the environment and a tranquil life-style.

26. Energy developments inevitably bring changes to these communities.

27. There are more people.

The age distribution of the population usually changes.

More community environmental services are needed.

The need for government services increases, and the newcomers may be accustomed to more services than have been provided in the community.

28. As indicated earlier, many of the changes may result in conditions that affect the health and well-being of both the old and new residents.

For our purpose, these health effects may be considered as two types:

1. Effects attributable to the industrial processes.
2. Effects associated with the rapid growth of communities.

29. The control of pollution that may result from industrial activities is a state and Federal responsibility.

The occurrence of adverse health effects from such sources is unlikely if existing air-quality and water-quality regulations are enforced.

30. By far the most significant health effects that have been, or may be, experienced by energy-development impacted communities are those associated with rapid population growth.

These effects are of two types:

31. --Those that impact community environmental services, and-
32. --those that have direct adverse effects on people.

33. The community environmental services that are affected most often include water supplies,

34. sewage disposal,

35. and solid waste disposal.

36. Direct adverse health effects on people include:
- increase in rates of mental illness,
  - increase in alcoholism and drug abuse,
  - increase in accidents, and
  - lack of adequate health and medical service.
37. Let's now consider ways to avoid or to reduce some of these objectionable health effects.
38. Examination of some impacted communities reveals that many problems have been dealt with satisfactorily.
39. For example:
- Timely expansions have been made of water supplies and sewage disposal systems,
40. --sanitational services have been developed,
41. --health facilities have been provided and staffed.
42. There are, however, many communities that still face substantial problems and, some that have not been as successful as other communities in solving their problems.

Why the difference in the effectiveness of response by various communities?

43. In one word, the answer is PLANNING.

44. When the first communities were affected by the current surge in energy developments, there simply was not enough time or resources for adequate advance planning.

Officials and the general population had little alternative to reacting in the way that seemed best to handle emergencies or problems that appeared to be most urgent.

45. There was much uncertainty in the early days. Sometimes, communities were not aware of impending industrial activity far enough in advance to do much about it.

46. Data on schedules for construction, size of work forces, and anticipated number of permanent residents often were inaccurate or not available.

47. Few of the smaller communities had the trained personnel to do the planning.

Sometimes community leaders lacked the knowledge or will to take appropriate actions.

State and regional organizations in some areas, were not sufficiently developed to provide needed consultation and other assistance to the communities.

Planning money was difficult to come by, especially "front end" money.

48. For whatever reasons, either lack of planning or wrong decisions resulted in costly problems for some communities.

- Permanent sewage treatment facilities were built to service temporary residents. The "permanent" residents now must pay the bonded indebtedness.
- Installations of more costly water distribution systems than were necessary to accommodate temporary population have been made.
- Hospitals and clinics, built to attract doctors, or for other reasons, are inappropriate for the needs of the community and cannot be staffed. Still, they must be paid for even though they can't be used effectively.
- Some communities have spent large sums in attempts to recruit physicians when having a physician in residence was not the best way to provide the needed services.

49. Adequate community planning to cope with the adverse health effects associated with energy developments depends upon several factors:
50. -- 1. Notification of plans for industrial developments far enough in advance so necessary planning can be accomplished and necessary actions taken.
51. -- 2. Initiation of planning in the communities early enough to allow time for appropriate arrangements before impacts develop.
52. -- 3. Development of an organization with the necessary expertise and experience to deal with both technical and social aspects of problems.
53. -- 4. Preparation of a plan based on objective evaluation of problems, consideration of available alternatives, and practicality of timely implementation.
54. -- 5. And, obviously the plan must be implemented in time to accomplish its purpose.
55. All of this may seem overwhelming to some communities. There are many questions:
- Who is going to do it?
  - Is help available?
  - How to get started?
  - What is the first step?

56. The most important thing to remember is that the planning must be a community process.

Although the elected officials are required to make many of the decisions, the general public must contribute ideas and express preferences.

In all probability some technical assistance from outside the community will be needed.

Still, the citizens of the community must indicate what they want and understand the things the professional planners do.

The plans produced will be useless unless they are what the community needs, and unless local people can carry them out.

57. So, the first task is either to organize a Community Impact Committee, or to augment the existing local planning organization.

The Community Impact Committee should include representatives of the various organizations and publics concerned with the consequences of energy development.

For example: elected officials, professional organizations, volunteer agencies, industrial organizations, farming and ranching interest, and many others should be involved in work of the Committee.

Also, inclusions of persons from outside the community may be desirable. For example: representatives from Federal, state, or regional planning agencies, and technical experts should be included.

58. At a very early stage the Committee should determine what assistance is available from state and regional agencies.

Although the names of the agencies vary among the various states, every state in the Rocky Mountains-Prairie Region has an energy office, a state planning office, a department of local affairs, an agricultural extension service, and others, depending on the specific state.

59. In addition, every state has operating departments concerned with health, transportation, sanitation, public safety, and other areas.
60. In many states, various university departments have special programs for communities impacted by energy developments.
61. Joint planning agencies have been organized at the sub-state level.
62. With regard to health planning, each state has a State Health Planning and Development Agency and each area of the state is served by a Health Systems Agency that has the responsibility for health planning.
63. Although the extent of assistance varies among the states, there is a great deal of specialized help and counsel available for the asking.
64. The Community Impact Committee will probably want to organize into a series of task forces or work groups depending on local needs and desires.

For example: various communities have developed groups concerned with health services, emergency medical services, recreation, law enforcement, and communtiy environmental services.

65. As work progresses, work groups may be formed to gather data, conduct surveys, and perform other basic tasks to support work of other task forces.

In some communities special surveys have been conducted to determine specific desires or perceived needs of the citizens.

66. In organizing the Committee and the individual work groups, advice and guidance should be sought from the professional planners and the responsible state and regional agencies that have been over the ground before.

67. Fortunately, a great many examples are available from which ideas can be obtained as to various ways to proceed, and, in some cases, ways not to proceed.

68. The planning procedures must be tailored for each individual area.

The process really isn't complicated as long as we remember that mistakes, and often expensive ones, may be made if the planning group simply votes on "solutions" before the problem is defined and objectives are established.

Ask the planners! They can give a lot of examples to illustrate that decisions based on results of orderly planning are easier to live with than are intuitive actions.

69. For instance, the proper location of health and medical facilities is a very complex matter.

The specific needs of the community must be taken into account. The scope of services required to meet these needs must be determined. Then the type of facility in which these services should be provided can be decided.

Ask the health planners before investing a lot of money in a facility that may not be necessary--and won't do the desired job anyway.

70. Health and medical services must be planned on a regional basis.

This assures that adequate services are available and accessible to persons who need them.

And equally important, the providers of health services--physicians, nurses, physicians assistants, pharmacists, and the rest of the team--have access to the needed supportive services.

71. Efficient health services can be provided only by a team--not just an individual. Much money and effort have been spent in attempting to recruit personnel without planning for other essential components of the system.

72. Experienced organizations are available to plan the medical and other personnel requirements based on the defined needs of a community.

73. Such needs must be met effectively--to the satisfaction of the residents--without excessive, unnecessary costs.

The main consideration is to provide the needed health services in a manner that is practiced and acceptable in each community.

74. The process of planning health services, and making other provisions to cope with impacts is not easy. But it can be done effectively through cooperation of the community, industry, and governmental agencies.

75. To summarize:

- Communities must be aware of firm schedules for energy developments far enough in advance to make adequate preparations.

76. - Community planning must be initiated as soon as plans for energy developments are definite.

77. - A community impact committee must promptly be organized. This committee must include representatives of all interests, the general public, and technical experts.

78. - Plans to avoid impacts must be developed.
79. - And action must be taken before undesirable conditions develop.
80. When a community becomes aware that rapid population growth will occur, organization for community planning should begin at once.

The first step is to get in touch with the state and regional planning offices.

If information is needed regarding these offices, write or call the Office of Energy Activities, U.S. Environmental Protection Agency, Denver, Colorado 80203.

81. The end.

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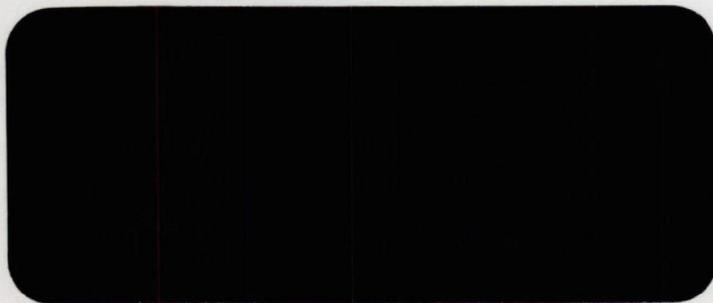
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