HEALTH IMPACT PROJECT

ADVANCING SMARTER POLICIES FOR HEALTHIER COMMUNITIES

www.healthimpactproject.org

Health Impact Assessment for Shale Gas Extraction

IOM Roundtable on Environmental Health
Workshop on HIA of Shale Gas Extraction

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A collaboration between Robert Wood Johnson Foundation and The Pew Charitable Trusts.

THE PEW CHARITABLE TRUSTS

Robert Wood Johnson Foundation

Health Impact Assessment: National Research Council definition

A systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program or project on the health of a population and the distribution of those effects within the population. Health impact assessment provides recommendations on monitoring and managing those effects.

National Research Council, 2011

Health Impact Assessment

- Informs decision making on a specific proposed action—legislation, new regulation, permit, growth plan, etc.
- Identifies potential risks and benefits of the proposal
  - Sometimes quantitative, more commonly simple qualitative/descriptive approach.
  - Broad perspective: considers how multiple factors (economy, employment, environment, etc) affect health
- Emphasis on inter-agency collaboration
- Includes input from stakeholders: regulators, industry, community.
- Offers recommendations to address data gaps, establish monitoring framework, maximize benefits, and minimize any risks.

Natural Resource Development HIA

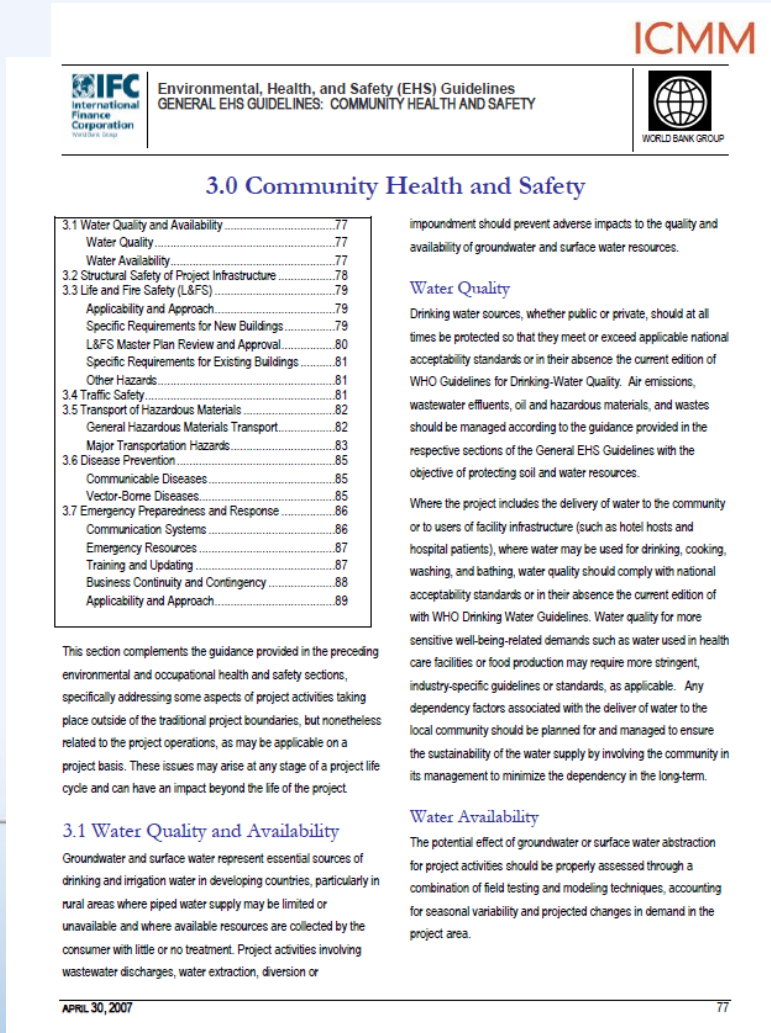
Industry and development banks use routinely

World Bank and IFC: part of evaluation standards for large development loans

Multinational Corporations: eg large oil and mining companies:

Business case for HIA

- Lower business costs
- Corporate social responsibility
- Healthy workforce
- Risk management



ICMM

IFC International Finance Corporation

Environmental, Health, and Safety (EHS) Guidelines
GENERAL EHS GUIDELINES: COMMUNITY HEALTH AND SAFETY

WORLD BANK GROUP

3.0 Community Health and Safety

This section complements the guidance provided in the preceding environmental and occupational health and safety sections, specifically addressing some aspects of project activities taking place outside of the traditional project boundaries, but nonetheless related to the project operations, as may be applicable on a project basis. These issues may arise at any stage of a project life cycle and can have an impact beyond the life of the project.

3.1 Water Quality and Availability

Groundwater and surface water represent essential sources of drinking and irrigation water in developing countries, particularly in rural areas where piped water supply may be limited or unavailable and where available resources are collected by the consumer with little or no treatment. Project activities involving wastewater discharges, water extraction, diversion or impoundment should prevent adverse impacts to the quality and availability of groundwater and surface water resources.

Water Quality

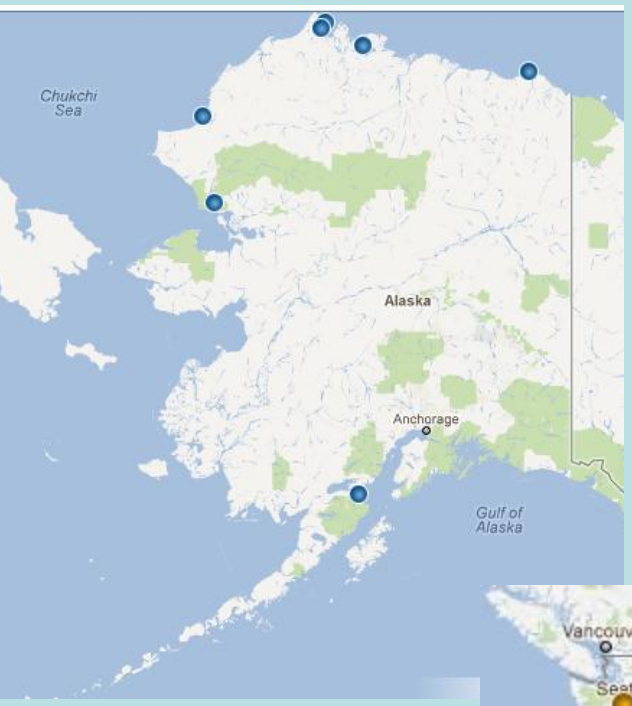
Drinking water sources, whether public or private, should at all times be protected so that they meet or exceed applicable national acceptability standards or in their absence the current edition of WHO Guidelines for Drinking-Water Quality. Air emissions, wastewater effluents, oil and hazardous materials, and wastes should be managed according to the guidance provided in the respective sections of the General EHS Guidelines with the objective of protecting soil and water resources.

Where the project includes the delivery of water to the community or to users of facility infrastructure (such as hotel hosts and hospital patients), where water may be used for drinking, cooking, washing, and bathing, water quality should comply with national acceptability standards or in their absence the current edition of with WHO Drinking Water Guidelines. Water quality for more sensitive well-being-related demands such as water used in health care facilities or food production may require more stringent, industry-specific guidelines or standards, as applicable. Any dependency factors associated with the deliver of water to the local community should be planned for and managed to ensure the sustainability of the water supply by involving the community in its management to minimize the dependency in the long-term.

Water Availability

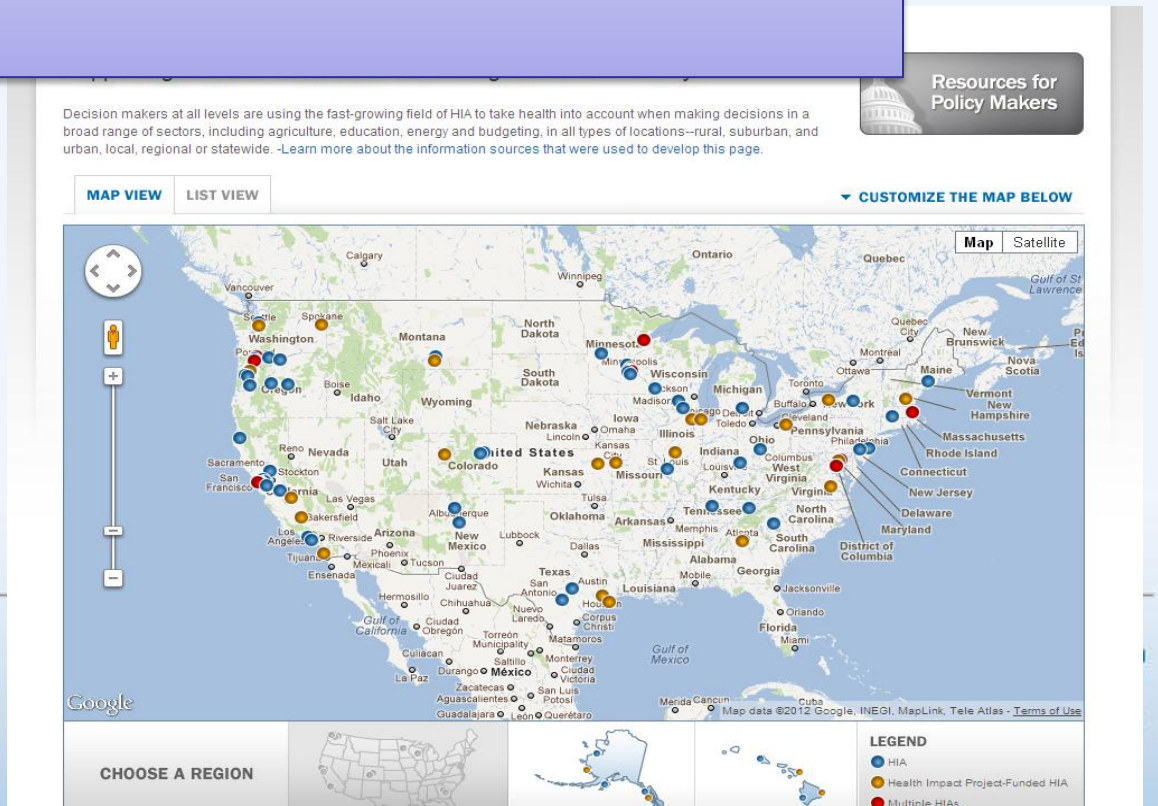
The potential effect of groundwater or surface water abstraction for project activities should be properly assessed through a combination of field testing and modeling techniques, accounting for seasonal variability and projected changes in demand in the project area.

Energy and natural resource development HIAs



U.S. HIAs that have addressed energy and natural resource development decisions

-Biomass (poultry litter, wood) (MA, OR, CA, VA)
-Oil and gas leasing, development (AK)
-Shale gas development (CO)
-Mining (AK)
-Wind energy (OR)



What's unique about this sector?

- Politics and scrutiny:
  - Polarization and politicization common: jobs, national security, environmental concerns.
  - Threat of litigation may make context more challenging.
- Mix of environmental health and socioeconomic risks and benefits.
- Concerns about pollutants can distract attention from other important risks and benefits.

Natural resource development

Common factors that may influence health

Air quality
Water quality
Noise
Subsistence/Agricultural Uses
Demographic change/influx of workers
Traffic patterns
Revenues
Employment and Income

Note: many of these factors are commonly considered in baseline studies, permit applications, and EIA

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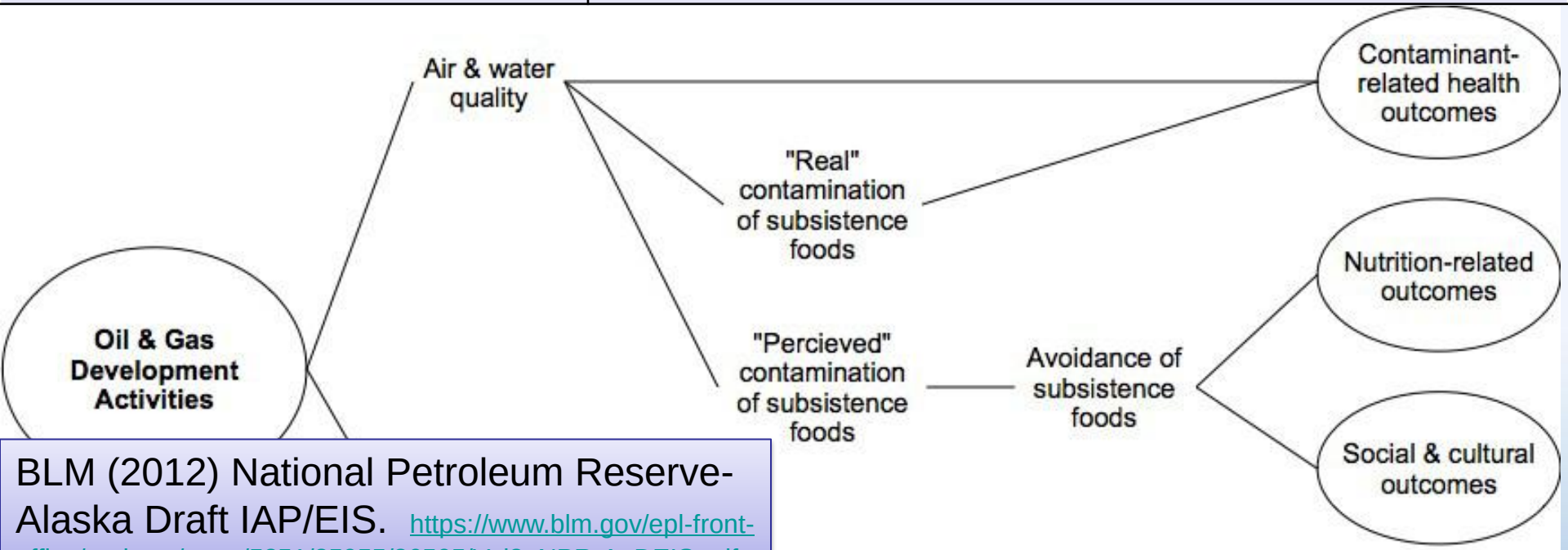
Natural resource development

What does HIA add to other studies & NEPA analysis?

HEALTH INFULENCE (OFTEN PART OF EIS)	INFORMATION ADDED BY HIA
Air—criteria pollutants, HAP	• Baseline prevalence of relevant diseases • Local concerns/TEK • Impact pathways, susceptibility analysis, cumulative impact factors



BLM (2012) National Petroleum Reserve-Alaska Draft IAP/EIS. https://www.blm.gov/epl-front-office/projects/nepa/5251/35055/36505/Vol3_NPR-A_DEIS.pdf

Table 5.8 Air Quality Health Impacts for San Marcos and Railroad Avenue Scenarios Adjusted fo Population

http://www.humanimpact.org/doc-lib/finish/8/93

	Estimated persons living in these conditions	Premature mortality (long-term exposure in ages 30+)*	Asthma hospitalization (ages ≤ 64)	Lower respiratory symptoms (ages 7-14)**
San Marcos				
Residential (non-arterial)	7,482	4	3	8
Residential (arterial)	831	2	2	4
Railroad Avenue, distant from SR 4				
Residential (non-arterial)	4,078	3	2	5
Residential (arterial)	453	<1	<1	1
Residential and Commercial (non-arterial)	4,078	4	3	7
Residential and Commercial (arterial)	453	1	1	2
Railroad Avenue, near to SR 4				
Residential (non-arterial)	215	1	1	3
Residential (arterial)	24	<1	<1	<1
Residential and Commercial (non-arterial)	215	1	1	3
Residential and Commercial (arterial)	24	<1	<1	<1

Typical Health Determinants Addressed

Water Quality, Noise

HEALTH INFULENCE (OFTEN PART OF EIS)	INFORMATION ADDED BY HIA
Water—metals, organics, NORM	• Baseline prevalence of relevant diseases • Local concerns/TEK • Often very simple discussion of potential impacts: what discharges are expected, what health effects do they cause, what are the pathways through which they might contact people? • Impact pathways, diet/subsistence practices, cumulative factors. • Sometimes: incorporating HRA approach

HIAs that have applied a health risk assessment approach for air and water quality

how do I? | our towns | business here | for seniors | do it online | SEARCH

colorado

Departments: Choose

ENVIRONMENTAL HEALTH

public health | preparedness

Battlement Mesa HIA/EHMS

Battlement Mesa Health Impact Assessment (2nd Draft)

pages

Garfield County home
Environmental Health home
Public Health home
Air quality outdoor
Air quality indoor
Battlement Mesa HIA
Burning restrictions
Drinking water
Environmental sustainability
Food safety and licensing
Garfield County CARES
Human health risk
Mosquito control
Radon program
Sewage disposal systems
Contacts

Table of Contents

Executive Summary
Table of Contents
Annotated Acronym Definitions

Part One: Health Impact Assessment

Preface
Regarding Ozone and Human Health
Regarding Climate Change and Human Health

1 Introduction
1.1 Antero's Plan to Drill within the Battlement Mesa PUD
1.2 Community Concerns
1.3 Initial Responses to Community Concerns
1.4 Battlement Mesa Health Profile
1.4.1 Measures of Physical Health
1.4.2 Measures of Community Health

2 Information Gaps
2.1 Information Gaps and Implications
2.2 Remedies

3 Findings and Recommendations
3.1 Findings and Specific Recommendations from Air Quality Assessment

resources

Health Impact Assessment
2nd draft

Health Impact Assessment
1st draft pdf | website page

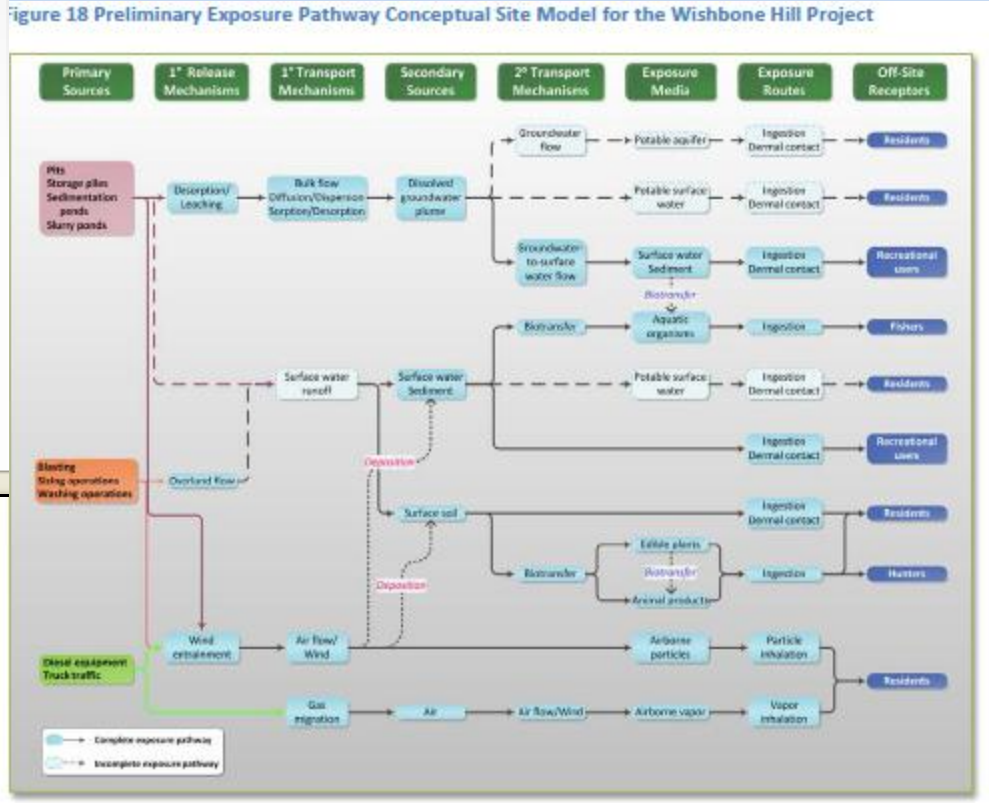
Battlement Mesa HIA:
HIA home page
Background
Project timeline
Media coverage

Internet

http://www.garfield-county.com/environmental-health/battlement-mesa-health-impact-assessment-draft2.aspx

Wishbone Hill Coal Project

http://www.epi.alaska.gov/hia/WishboneHillDraftHIA.pdf



Typical Health Determinants Addressed

Noise

HEALTH INFULENCE (OFTEN PART OF EIS)	INFORMATION ADDED BY HIA
Noise	• Baseline prevalence of relevant diseases • Local concerns/TEK • Identify vulnerable populations (eg. schools), locations relevant to sources (truck traffic, operations equipment) • Mitigations: sound walls and housing modifications, truck routes, hours of operation.

Typical Health Determinants Addressed

Traffic

HEALTH INFULENCE (OFTEN PART OF EIS)	INFORMATION ADDED BY HIA
Traffic—changes in flow; transportation routes; road conditions	• Injury rates • Locations with high injury rates (dangerous roads, intersections) • Location of high-risk groups (eg. school xing)

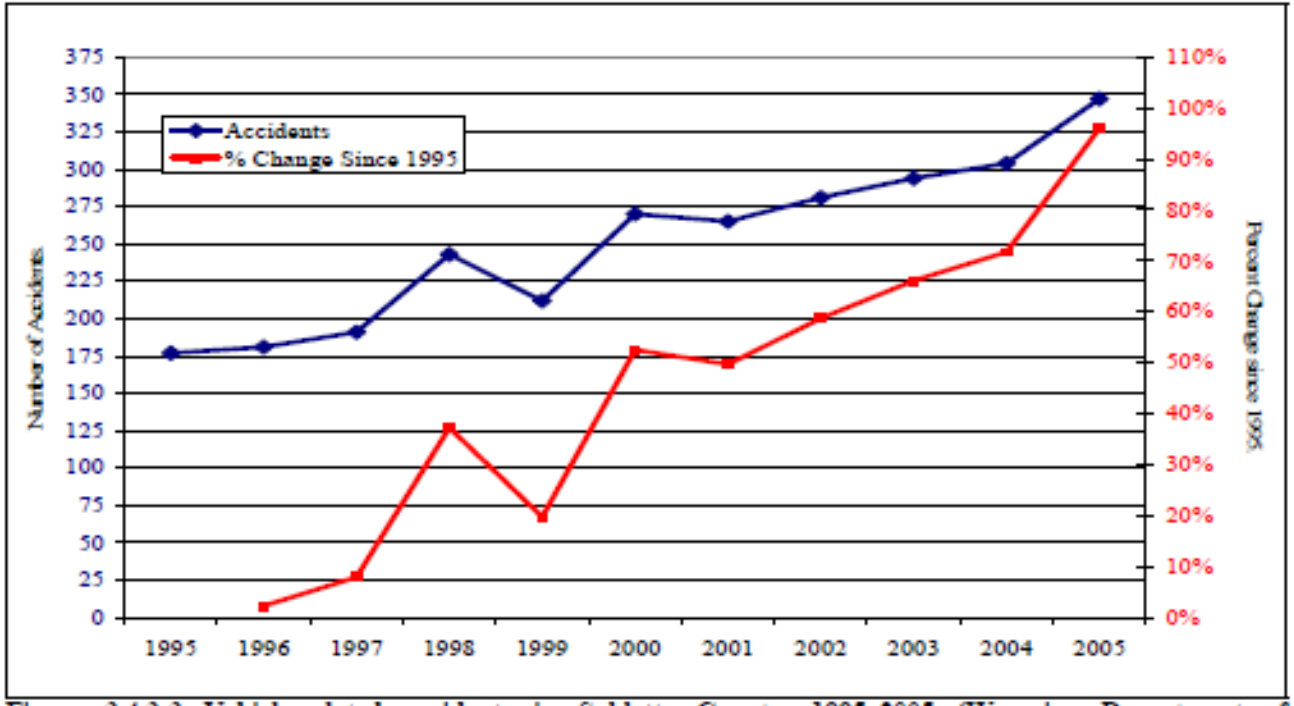


Figure 3.4.3-3 Vehicle-related accidents in Sublette County, 1995–2005 (Wyoming Department of Transportation 2007)

Source:
Sublette County Socioeconomic Study
Draft Report
Ecosystem Research Group
http://www.sublettewyo.com/DocumentCenter/Home/View/363

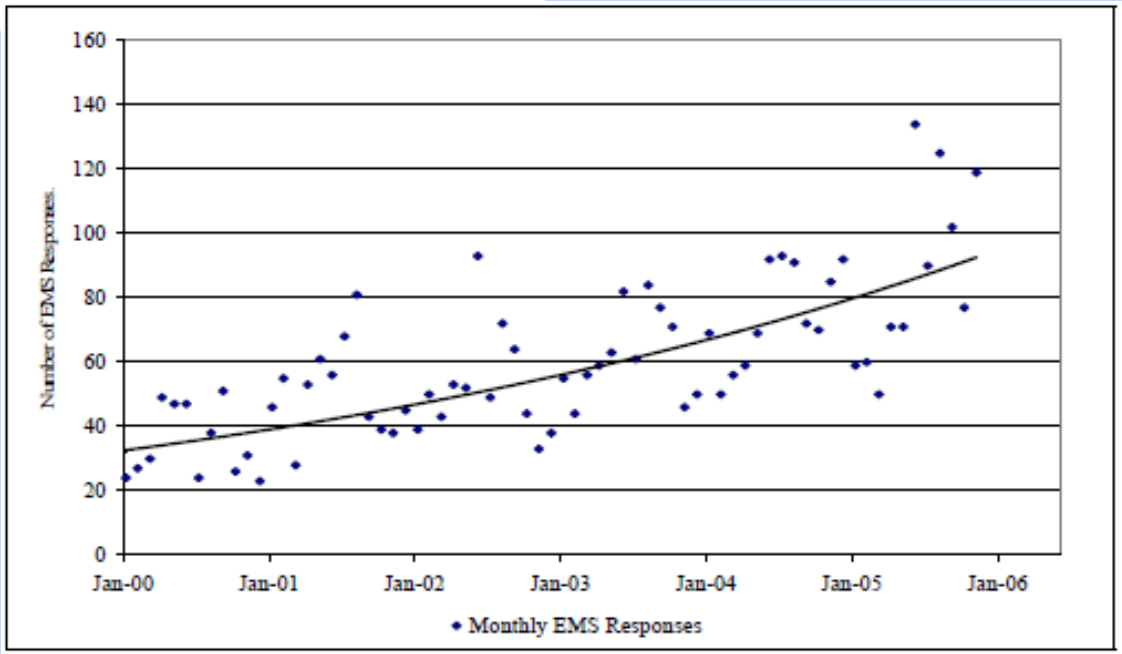


Figure 3.4.5-2 Number of EMS responses (Sublette County Rural Health Care District 2007)

Typical Health Determinants Addressed

Demographic change: "influx"

HEALTH INFULENCE (OFTEN PART OF EIS)	INFORMATION ADDED BY HIA
Demographic change—influx of non-resident workers;	• Potential impact pathways: -Strain on services -Social change: violence, crime -Infectious disease

Good resource: IFC's "Projects and People—http://ifcext.ifc.org/ifcext/sustainability.nsf/Content/Publications_Handbook_Inmigration

Science News *... from universities, journals, and other research organizations*

Mining in Africa Is Spreading TB, Study Suggests

ScienceDaily (June 3, 2010) — Mining for gold, diamonds, and precious minerals is dangerous work, but in sub-Saharan Africa the activity could be driving an entire continent's tuberculosis epidemic, a new Oxford-led study has found.

Data analysis shows a correlation between greater

See Also:

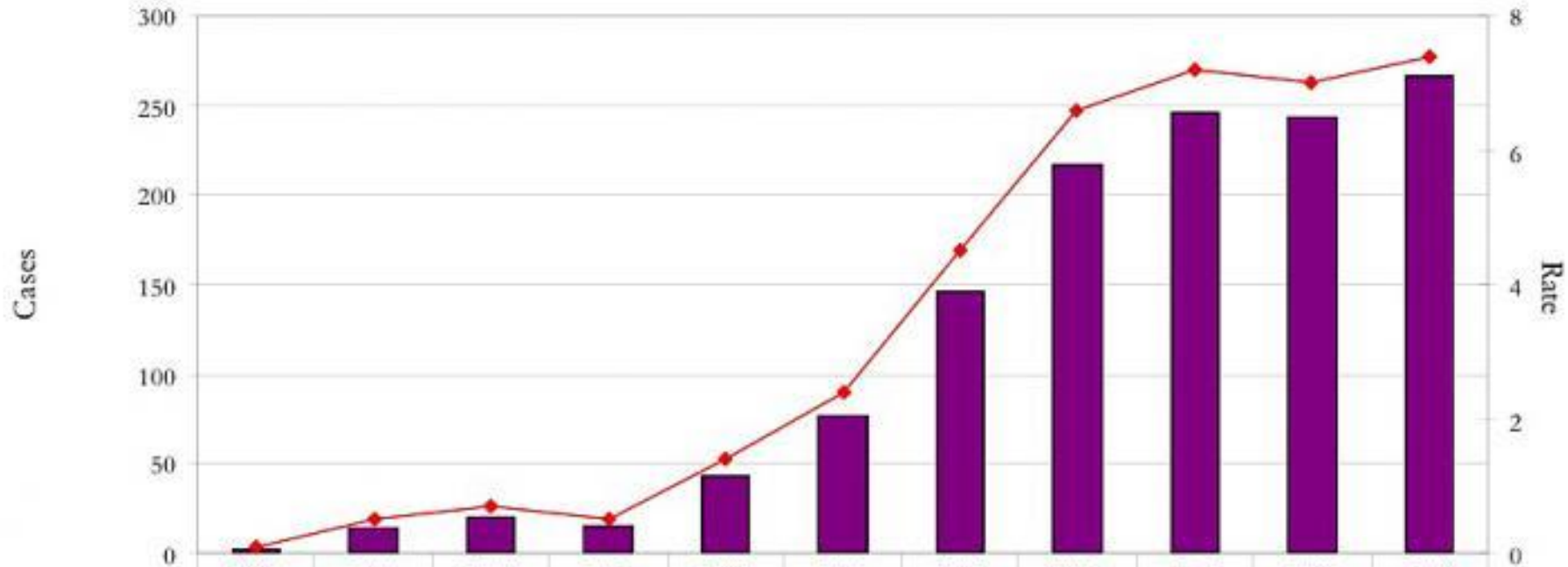
Health & Medicine
- Tuberculosis
- Workplace Health
- Infectious Diseases

Researchers at Oxford and Brown universities, the University of California, San Francisco and the London School of Hygiene and Tropical Medicine estimate that the mining industry in Africa may be implicated in as many as 760,000 new cases of tuberculosis each year

"Rate of syphilis jumps in McMurray"

Posted 2009
By LAUREN CUTLER
Today staff Fortmcmurraytoday.com

Figure 1: Number of infectious syphilis cases and rates per 100,000 by year in Alberta, 2009.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cases	2	15	21	16	43	77	146	217	246	244	267
Rate	0.1	0.5	0.7	0.5	1.4	2.4	4.5	6.6	7.2	7.0	7.4

Typical Health Determinants Addressed

Economic revenues and costs

HEALTH INFULENCE (OFTEN PART OF EIS)	INFORMATION ADDED BY HIA
Economy--Revenues	• Service needs—education, water/sanitation, public safety, clinics/hospitals, EMS
Economy--Costs	• Change in demands/LOS for hospital, emergency services, police, fire

Typical Health Determinants Addressed

Economic revenues and costs

Santa Barbara County Assn. of Governments

"Socioeconomic Monitoring & Mitigation Program"

"…small towns were turned literally overnight into boomtowns. Housing became scarce and community infrastructure was strained to the breaking point. All these problems overwhelmed the financial and technical capabilities of local governments."

http://www.sbcag.org/PDFs/publications/MMSFinalReport.pdf

A few more examples of health-based mitigation

Influence on Health	Sample Recommendations
Air	• Monitoring & adaptive management: developing site-specific, tailored monitoring programs based on local meteorological conditions and population vulnerability • Best control practices near particularly vulnerable communities
Water	• Identification and monitoring for sensitive receptors • Address unique pathways (e.g. subsistence consumption)
Economy—Revenues and Costs	• Monitoring system to identify costs important to health(road wear, EMS calls, school population, policy staffing ratio, etc), and guide use of tax revenues • Impact-benefit agreements with industry • Financial management courses and support for workers

Issues & Challenges for HIA of Unconventional Shale Gas Operations

1. Engaging polarized stakeholders: building common ground between industry, community groups, local, state and federal government, and other interests
2. Data gaps: amount and type of emissions and discharges; baseline disease prevalence in small towns.
3. No clear decision point: Often no federal EIS; many states have not undertaken a comprehensive review prior to permitting.

Resources

Health Impact Project interactive map:

www.healthimpactproject.org/hia/us

-search by sector: “natural resources and energy”

Alaska Health Impact Assessment Program

http://www.epi.alaska.gov/hia/

- Technical guidance for HIA in Alaska: http://www.epi.alaska.gov/hia/AlaskaHIAToolkit_Intro.pdf

International Council on Mining and Metals:

HIA Guidance: http://www.icmm.com/library/hia

Thank you

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